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# Total 911

**TARGA REVOLUTION**  
New 991 pictures & design tech  
plus full Targa history inside



THE PORSCHE MAGAZINE

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ULTIMATE RENNSPORT HEAD-TO-HEAD

# 997 GT3 RS

Two generations, one winner: which is the most electrifying Rennsport driving experience?



**PLUS**  
SC: the forgotten 911? ♥  
Peter Falk speaks ♥  
996 gearbox tech ♥

DigitalEdition  
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ISSUE 1.10



**993  
CARRERA  
BUYERS'  
GUIDE**

**40 YEARS OF TURBO:  
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At the wheel of the 1989 Turbo Limited Edition,  
one of only 14 RHD models worldwide



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# Welcome



**A**s a concept, the Targa has always divided opinion among Porscheheads. There are those who still marvel at the idea of an open-top design that excludes wind-buffeting, and those who lament the extra weight and heightened centre of gravity of Zuffenhausen's supposed sports car.

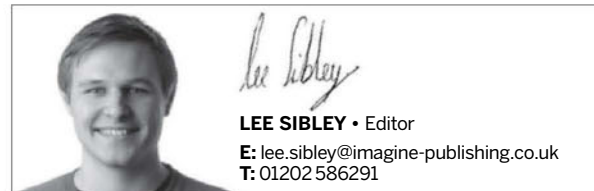
While I struggle to soften to the charm of the classic design, mainly by having to stop the car and reassemble its roof at the hint of bad weather, I've always liked the 'sliding roof' concept. Crucially for me, the 911 silhouette is largely undisturbed on 993, 996 and 997 Targas, while the driver is equipped with an airy, spacious cockpit that when fused with the distinguished pace of a 911, offers a liberating driving experience.

**“The 991 Targa’s new design is seemingly the best of both worlds: classic aesthetics with a modern twist”**

The new 991 Targa's design is seemingly the best of both worlds: classic aesthetics with a modern twist, there's no doubting the new car has returned to its roots by imitating the appearance of the first Targa in 1966. This amalgamation of classic and modern has created a stunning concept, though I have reservations over the kinetics of the retractable roof. The tilting rear window doesn't seem elegant under operation, and the 19-second operation time will be an excruciating period to wait – stationary – while the various arms work their magic.

However, I'm told that when the concept was shown to the global Porsche teams, stunned applause broke throughout the room, such was the admiration for the new design.

The Targa may not be at the top of many people's wish list, but the fact that Porsche have stuck with it for so long is a clear testament to its popularity with the buying public, and this most innovative of new designs fully justifies that the Targa is going to be with us for a long while yet. I'm happy with that.



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PORSCHE

ore memories

# 911 Opening Shot

Hours before the world's media descend upon the Porsche AG stand at the Detroit Auto Show, the innovative new 991 Targa awaits its first public appearance, signalling a new dawn in the history of the 911's Targa model.

Photograph by **Bryn Musselwhite**

# Contents

## 16 RENNSPORT MASTERS

“Both cars have speed and power delivery in abundance”



For back issues, subscriptions and other Total 911 products visit

[www.imagineshop.co.uk](http://www.imagineshop.co.uk)



## Essentials

- 08 **Update**  
The latest news and product reviews – including info on the new 991 Targa
- 14 **Views**  
The very best of your letters, emails and tweets
- 42 **UK subscriptions**  
Latest offers for UK fans of **Total 911**
- 76 **Living the Legend**  
Featuring Turbo geometry, reflection on 997 ownership and the return of the Urban Outlaw
- 81 **USA Subscriptions**  
Our special offer for US readers
- 88 **Data file**  
Essential info on every Porsche 911
- 113 **Coming soon**  
What to look forward to next time
- 114 **Great roads**  
We're back in California for a blast around the famous Palm Springs



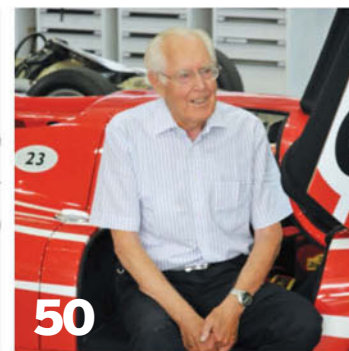
26



34



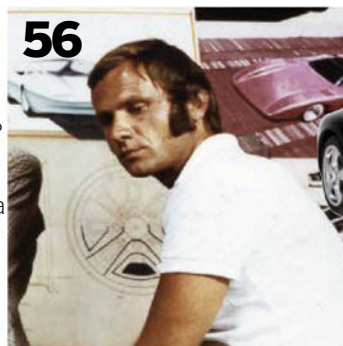
44



50

## Features

- 16 **Rennsport masters**  
Which 997 GT3RS generation is better?
- 26 **SC: the forgotten 911?**  
We take this 204bhp late model SC on a classic test drive in South Africa
- 34 **930 LE driven**  
Behind the wheel of the last 930
- 44 **History of Targa**  
We guide you through the lifetime of Porsche's first open top 911
- 50 **911 Legend: Peter Falk**  
The first man to compete with a 911 talks about his illustrious career
- 56 **Wolfgang Mobious**  
A celebration of the unknown man who created many style icons on the 911
- 58 **Ultimate guide: 993 Carrera**  
Everything you need to know about the last air-cooled 911 Carrera
- 66 **Project Brooklyn**  
Exclusive: Singer Vehicle Design reveal their greatest modified Porsche 911 yet
- 72 **996 troubleshooting**  
Your guide to solving gearbox gremlins
- 84 **The Canepa Collection**  
We visit a Stateside Porsche utopia



56



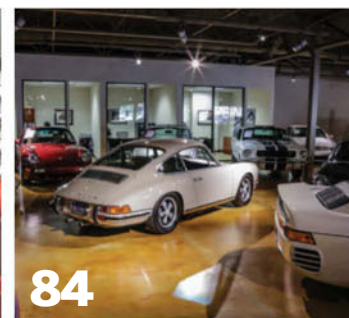
58



66



72



84

# Update

Latest news, key dates, star products and race results from the world of Porsche



## Porsche unveil 991 Targa in Detroit

Targa 4 and 4S confirmed for latest generation at North American Auto Show

**T**he new Porsche 991 Targa has been unveiled at the North American Auto Show in Detroit, heralding a return to the classic silver roll hoop that featured on the original Targa in 1965.

Since the 993 Targa was released in 1996, the alternative open-topped 911 has featured a fully retractable glass roof. However, the 991 marks the return to a removable roof panel and large wraparound rear screen last seen on the 964.

Unlike the 964, though, the steel B-pillar roll hoop is covered with painted aluminium cladding with a flat silver finish, inspired by the Sixties Targa. Similarly, design elements that should suitably please classic fans include the three vertical gills on the B-pillar and raised 'Targa' leitmotif. However, while the roof on the original 911 Targa had to be removed manually, the 991's fabric panel is fully

automated, launching at the push of a button. The new 911 Targa will be available in both 4 and 4S guises, featuring the all-wheel drive model's ubiquitous wider rear track and flared arches. As with other four-wheel-drive 991 models, the new Targa will benefit from Porsche's improved Porsche Traction Management (PTM) system that sends the majority of the engine's power to the rear wheels.

With a 3.4-litre flat-six engine for base models, the 991 Targa 4 turns out 350bhp and is set to be priced from £86,281. The 3.8-litre Targa 4S will benefit from additional options as standard, with pricing bracketed at £96,316.

While the list price may seem high, a host of features come as standard on the two versions, such as Bi-Xenon headlights, Porsche Stability Management (PSM) and the seven-inch colour touch-screen Porsche Communication

Management. The 991 Targa 4S also gains 20-inch alloy wheels. Like every 991, each car is fitted with a Porsche Vehicle Tracking System (approved to Thatcham Category 5 standard in the UK).

Despite the extra 90 kilograms of weight added by the Targa roof and all-wheel-drive system, Porsche have announced that the Targa 4 with PDK and Sport Chrono will hit 0-62mph in 4.8 seconds. The Targa 4S can cover the same sprint in 4.4 seconds, while both models are impressively fuel-efficient, the former capable of 32.5mpg, the latter 30.7mpg.

Both cars are available to order now, with the first customer deliveries expected to take place in May. UK customers will of course benefit from a complimentary course at the Porsche Experience Centre, Silverstone, where they can test the potential of their new 911. Further details of the new Targa's design can be found overleaf.



What's on in 2013-14

October 2013 - March 2014

60 years of super sports cars  
**29 October 2013-14 March 2014**  
The Porsche Museum marks six decades of supercars, featuring a 911 GT1 Stra benversion.

February

Camp4 Finland  
**10-14 February**  
This official Porsche Driving Experience lets you experience 911 ice driving.

March

Geneva Motor Show  
**4-16 March**  
The 84th International Motor Show is sure to see a big Porsche presence.

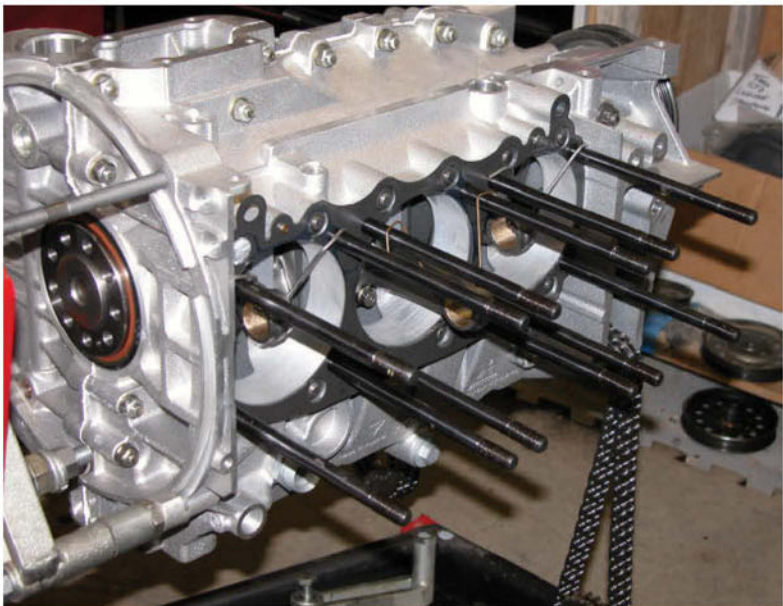
Amelia Island Concours  
**6-9 March**  
The concours d' elegance will display some of the finest automobiles in the world.

May

991 Targa arrival  
**May**  
The first new 911 Targas are expected to land in showrooms in time for summer.

June

Goodwood Festival of Speed  
**26-29 June**  
This year's theme is 'Addicted to Winning - The Unbeatable Champions of Motor Sport'.



## Nine Excellence building 4.1-litre 997 Turbo

Vmax200 outright record holders, Nine Excellence, are developing a new 4.1-litre engine, and are hoping to use it to secure the top three places at the next Vmax event, scheduled for March.

Nine Excellence are building two turbocharged 4.1-litre units, one for the 9EXX (the car that holds the 229.6mph record) and the other for a new 997 Turbo project car. Work is due to be completed by the end of February, ahead of their debuts at the next Vmax event.

By increasing the cubic capacity, Nine Excellence are aiming to improve

the volumetric efficiency of the engine. "Despite changes to help the flow in and out of the engine [in 3.8-litre guise], we are in a position where additional cubic capacity will allow a marked increase in efficiency, and therefore performance," says managing director Ken Napier.

Rather than simply boring out the cylinders on an existing 3.8-litre engine, the new unit will be based around a billet steel version of the 997 GT3 RS 4.0's crankshaft. "Larger pistons and thinner liners are not good for endurance," Napier explains.

"Therefore, it was back to the technical drawing board."

Nine Excellence will undertake substantial work to the cylinder heads, water jacket and crankcase. However, along with custom con rods and studs, these changes should bring greater reliability.

As well as fitting in the 996 and 997 Turbos, the new engine can also be "slotted straight into a 996/997 GT3," according to Napier. "We already have a couple of customers lined up for this during 2014."

## New Wavetrac differential for classic 911s

Wavetrac have announced a new version of their innovative differential designed to work with the original 2.0-litre Porsche 911, built between 1965 and 1968.

Compared to traditional geared limited-slip differentials, Wavetrac's units use two precisely engineered wave profiles, one mounted on the one side gear, and the other on the mating preload hub. When the two side gears rotate, each wave surface climbs over the other, in the process causing them to move apart.

This aims to very quickly reduce the zero axle-load conditions that affect geared LSDs, meaning that even when lifting a driven wheel during hard cornering, torque is still supplied to the wheel in contact with the tarmac.

UK customers can order the new Wavetrac differential through official distributors Regal Autosport. Costing  1,225 (including VAT), Wavetrac's differentials are designed to operate without servicing, with each unit including a limited lifetime warranty.



Furthermore, each differential can be tuned for road or track driving. Call Regal Autosport on 023 8055 8636, or visit [www.wavetrac.net](http://www.wavetrac.net) for more information.

## In brief



### EB Motorsport lightweight doors

EB Motorsport has released new lightweight 911R-esque doors to complement their recently unveiled front wings.

The new '911R' doors take full window regulators and internals. They also accept factory window frames, allowing lightweight glazing to be fitted at a later date if a driver so wishes.

The doors, provided in white gelcoat, are priced at  1,100 per pair, plus VAT and carriage. Visit EB's European distributors, [www.twinsparkracing.com](http://www.twinsparkracing.com) for more details.



### PFC 991 brake pads

After being announced as the official brake partner of the Porsche Mobil 1 Supercup in 2013, US firm Performance Friction has revealed its 991 replacement brake pads, designed to work with the current six-pot OE calliper and disc.

The carbon metallic pads, available initially in PFC's new '11' compound, are designed for fast road and track use, providing improved bite while retaining impressive longevity.

Pricing is still to be confirmed. For more information, head online to [performancefriction.com](http://performancefriction.com).

# Update

## 991 TARGA TECH EXPLAINED

**Total 911** reveals the intricacies behind the innovative new Targa design

Written by **Lee Sibley** Photography by **Porsche AG**

**T**wenty years after the last 911 with that classic Targa top design rolled off the Zuffenhausen production line in the form of the Type 964, Porsche has reinvented the old concept into a brilliant new format for the 991. The complex process of removing the roof has been made effortlessly simple, with the driver only called upon to push a button when stationary for the top to be removed electronically within 19 seconds. Here's what you need to know about the new 991 Targa:



### Fabric roof

Made from premium-quality fabric, the roof is pulled taut at the top of the windscreen and connects to the rollover bar. Beneath the outer roof fabric is a sound absorber with thermally insulating properties.



### Options

The Targa 4 and 4S both come with a wealthy array of options as standard, including a full leather interior, sports seats, Bi-Xenon headlights, PCM, Porsche Stability Management (PSM), Porsche Traction Management (PTM), all-wheel drive and a third year of Porsche warranty. The 4S also gets 20-inch alloy wheels, PASM and Porsche Torque Vectoring with a rear limited-slip differential.



### Rollover bar

In classic tradition, the Targa bar is made from steel to provide adequate rollover protection for the driver and passengers, with a cast aluminium finish on the outside. The vertical external gills on each side of the Targa are a direct styling hue from the first open-top 911, which was revealed in 1965.

**How the roof works**

1. At the push of a button from within the cockpit, the rear window (which is attached to the convertible top compartment lid behind) is opened and tilted backwards as two flaps in the rollover bar are opened, releasing the soft top's arms.
2. The convertible top is then released from the top of the windscreen, folding into a Z shape before being stowed on the shelf behind the rear seats.
3. The flaps in the rollover bar close again as the glass rear window sits back in its original position. Two small wind deflectors protrude from above the windscreen, ensuring wind is pushed away from the cabin when travelling, reducing noise.



**Rear window**

This all-encompassing rear window does away with the typically chunky 'C' pillar on Coupe variants, providing superb all-round visibility for the driver. The rear window is made from two extremely thin and lightweight layers of laminated safety glass, separated by a film interlayer and heated across the entire width of the screen.

**Widebody**

The Targa will once again be offered in wide-body form only, with a choice between the 3.4-litre (350bhp) or 3.8-litre 'S' (400bhp) direct fuel injection engine.



**The view from Porsche**

**Total 911** discusses the innovative technologies behind the new Targa with August Achleitner, Director, 911 Product Line for Porsche AG.

**What brought about the change back to the classic 'Targa' look? Why not continue with the sliding glass design of 993, 996 and 997 models?**

The new Type 991 Coupe is available with two different choices of sunroof: one is a body-coloured solid panel, and the other is made of glass. These are new for the 911 in this model series. The Coupe with the new glass sunroof, thanks to its increased transparency, offers an interior ambience reminiscent of the previous 997 Targa. We expect that many former Targa customers who especially like this aspect will choose this variant for the Type 991.

Considering these new sunroof options – in addition to the traditional Cabriolet – this allows room for us to offer a more traditional Targa layout.

**How difficult was the design concept in applying the classic Targa aesthetics using cutting edge modern technology?**

We started the development of the new Targa roof in 2005 at that time on the Type 997 platform. Due to the short period of the Type 997 life-cycle remaining, we decided to launch this new concept with the Type 991. The integration of the original Type 997-based Targa concept into the 991 has not been easy, because all proportions had to be reworked completely. But then we got the wonderful styling as we have it now.

**What were the most difficult hurdles to overcome in the design of the new Targa's roof kinetics?**

Nothing special, if I am honest. The main task has been to adapt the styling of the pre-developed solution based on the Type 997 to the new proportions of the Type 991.

**Was a traditional, removable Targa top ever mooted for the 991, without the electrics?**

We undertook a short review of this concept to consider its feasibility, but we decided very quickly that times have changed, and that such a simple concept would not appeal to today's Targa customer. **911**





# 911 in Motorsport

## February

**Legend Boucles de Spa 15 February**  
This often-snowy rally is a great chance to watch some historic 911s in stage action.

**Race Retro 21-23 February**  
Europe's historic motorsport show returns to Stoneleigh Park near Coventry, UK.

## March

**12 Hours of Sebring 12-15 March**  
The 62nd running of this event is round two of the 2014 United SportsCar Championship.

**FIA WEC Official Test 28-29 March**  
The Porsche 919 hybrid LMP1 will make its debut in pre-season at Paul Ricard.



## Porsche 911 RSRs top Daytona CORE Autosport line-up for USCC announced

**C**ORE Autosport's Nick Tandy topped the timesheets in the Roar Before the Rolex 24 test at Daytona as the Porsche works team made its United SportsCar Championship debut with the 2014 Porsche 911 RSR.

The British 911 ace, fresh off his first season as a works driver, set a best lap of 1:45.654s on the Florida race track. Tandy's lap meant that the CORE team ended the test nearly half a second faster than the Corvette C7.R of Oliver Gavin.

The 912 RSR also featured towards the top of the timing screens in the eight practice sessions.

However, driveshaft failures curtailed both cars' running during the test.

Tandy will be partnered in the '14 USCC by 2013 24 Hours of Le Mans class winner Richard Lietz, after the pairing was announced by Porsche ahead of the test session. They will be joined in by Patrick Pilet for the three American enduros, starting with Daytona. In the 912 RSR, Patrick Long will be joined by Michael Christensen, with Jörg Bergmeister drafted in for Daytona, Sebring and Road Atlanta.

Full reports and stats of the 24 Hours of Daytona can be found online at Total911.com.

## Q&A with Ben Barker

The young Brit showed flashes of speed in his debut Supercup campaign. In 2014 he hopes to go even faster



### How did the 991 GT3 Cup car compare to last year's 997 Carrera Cup racer?

The Carrera Cup car is a real driver's car. You've got to manhandle it, whereas with the new car you've got to be more polite, because it's wider and longer. But the engine is still in the back and it's still a Porsche, so you get used to it.

### Which team will you be with in 2014?

Parr Motorsport [Barker's 2012 Carrera Cup team] are still trying to get in, but it's still pending. It all depends on sponsorship. I need to find a majority backer for 2014 in order to get back on the grid.

### What is your target for the 2014?

To go for the Supercup championship in 2014. Why not? I'll be going into qualifying with a strong head, I'll know the circuits, and I'm going to really work on my fitness.

To read the interview in full, including Ben's assessment of 2013, head over to Total911.com.

## Makowiecki signs with Porsche

GT ace Frédéric Makowiecki has been announced as a works Porsche driver for 2014 at the annual Night of Champions.

The 33-year old has carved out a reputation as one of the world's fastest GT racers, winning races in all three seasons of the now defunct FIA World GT1 Championship. This led to a drive for Aston Martin in the 2013 FIA World Endurance Championship, where he

was a direct competitor to the works Porsche AG Team Manthey 911 RSRs.

After starting his racing career in single-seaters, Makowiecki switched to the Carrera Cup France in 2003, winning the championship in 2010.

With CORE's USCC line up announced, it's expected that Makowiecki will drive one of the 991 RSRs confirmed for the FIA WEC.



## Racing updates latest news and results from racing series around the globe



### Porsche Motorsport

Martin Ragginger won the 2013 Porsche Cup, awarded to the best non-factory 911 racer on the international stage.



### Porsche Carrera Cup GB

The 2014 911 GT3 Cup racer was unveiled at Autospport International. Head to Total911.com for all the details and bespoke pictures.



### Porsche Motorsport

Marc Lieb's graduation from Porsche's GT class has been confirmed after the German was announced as one of the works 919 Hybrid drivers.

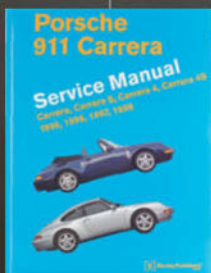
# Porsche lifestyle

**Total 911** brings you some of the best new releases in the world of Porsche 911 literature this issue



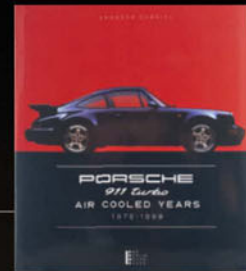
## Porsche 911 50th Anniversary Collection £9.99

From the makers of **Total 911**, this bookazine celebrates 50 years of Stuttgart's iconic sports car. Featuring a wealth of fantastic features, from the first 901 right up to the latest 991 GT3, this is an invaluable addition to any Porscheophile's bookshelf.  
[www.imagineshop.co.uk](http://www.imagineshop.co.uk)



## Porsche 911 Carrera Service Manual: 1995-1998 \$219.95 (£130)

This comprehensive 946-page service manual covers every 993 Carrera, whether Coupe, Cabriolet or Targa. With a focus on simplicity, there are full colour step-by-step guides for everything you need to keep your 993 in fine fettle, from replacing the drive belt to air-conditioning unit repairs.  
[www.bentleypublishers.com](http://www.bentleypublishers.com)



## Porsche 911 Turbo – Air Cooled Years

€49.80

With the 911 Turbo entering its 40th anniversary year, there has never been a better time to read Andreas Gabriel's ultimate guide to air-cooled Turbos. Written in both German and English, this 198-page hardback charts the Turbo's history from the original 3.0-litre 930 right up to the 993 GT2.  
[www.berlinmotorbooks.de](http://www.berlinmotorbooks.de)



## Porsche 911 (997)

£16.95

The 997 provided the most expansive 911 range ever, with over 20 different models built. Written by Grant Neal with contributions from Peter Morgan, this 160-page book provides vital buying and ownership tips, along with complete guides to all Gen1 and Gen2 cars.  
[www.porsche997book.co.uk](http://www.porsche997book.co.uk)



## Porsche 911: 50 Years

£40

Randy Leffingwell's latest title explores the history of the Porsche 911, from its roots in the 356 all the way up to the release of the 991. Featuring previously unseen photos from the Porsche Archive, this glossy hardback features 256 pages of glorious images documenting the history of the most iconic sports car ever built.  
[www.qbookshop.co.uk](http://www.qbookshop.co.uk)

# Views

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@total911

Here are the best photos we've tweeted this month:

This car hasn't been the star of our show today but, @RPMTechnik's 911 RSR IROC replica is stratospherically cool:



## Win CodeClean Luxury Concours Wax

CodeClean's range of automotive care products have been building up a strong reputation within the car valeting and detailing industry. Now, the British cleaning product manufacturer is offering one lucky **Total 911** reader the chance to win a 185ml pot of their new Luxury Concours Wax, worth £50.

Traditionally, car waxes have been made using carnauba wax, with a high carnauba content being used as a selling point. However, developments in wax technology have seen synthetic materials able to replicate the benefits of carnauba wax without any of the substance's downfalls.

Made in Britain, the Luxury Concours Wax is a specially developed blend of synthetic waxes, oils, silane derivatives and solvents. The specific formula of this CodeClean wax has been created with ease of application in mind, while maintaining the durability, gloss, and hydrophobic nature of other waxes. What's more, it contains no harmful acids or alkali, making it pH neutral.

To be in with a chance of winning this great prize, ideal for getting your 911 ready for spring, just answer the following question:

### CodeClean products are made in which country?

Send your answer, along with your name and address, to [competitions@total911.com](mailto:competitions@total911.com) with 'CodeClean' in the subject line before the closing date of 4 March 2013.

## Letter of the month

Write or email in with your Porsche opinions and the author of the letter of the month will receive a complimentary copy of the special **Porsche 911 50th Anniversary Collection** bookazine!

WIN!

50th Anniversary Collection bookazine



## Rest-of-the-world Carrera 2.7

Dear Sir,  
I couldn't help but write in response to the letter published in issue 108 regarding Lex Caldwell's comments about the rest-of-the-world 1975 Carrera 2.7.

Having selected the Carrera 2.7 about 18 months ago as not only an incredible car but also a future appreciating asset (as nicely supported by your article), I meticulously researched these cars and commenced a search for an Australian-delivered, completely original matching numbers car. Living in Australia, this is a must for a collector, despite it being a very small market for rare 911s.

My research identified that the 1974 and 1976 Carrera had chrome window

trim and side mirrors. However, starting late in 1974 for the 1975 production year, the trim and mirror were changed to black as standard. This helps to quickly differentiate the model years on unmodified examples.

As for the tails, the ducktail was indeed synonymous with the 1974 Carrera 2.7, with the whaletail becoming the standard in 1975. The 'tail delete' option for the boot lid was available for each year, while a ducktail could also be specified for the '75 cars.

After all this research in September 2013, I finally located what is considered to be the best example of a 1975 911 Carrera 2.7 in Australia, original in its entirety including paint. It also came with just 136,000 kilometres on the clock.

Finally, great magazine; I certainly look forward to each edition being delivered. As a relatively new entrant into the world of 911 and vehicle investment, the magazine is not only entertaining, but also very informative and helpful. All the best to the team, and keep up the great work.

Regards

*Shane Hogan, via email*

*Thanks for giving us the extra information on this little-known 911 model, Shane. With the Carrera 2.7's rarity, prices are currently very strong despite the fact that the car doesn't wear an 'RS' badge. Well done on finding an original example, it certainly looks fantastic.*



### Selling a 911

Dear Sir,  
You've done plenty of articles for people buying 911s, including the excellent 'Performance Icons' one in issue 107. However, I was wondering if you had considered something about selling 911s? It would be useful to hear what to

do and, more importantly, not to do.

Best wishes,

*Graham Baker, via email*

*Glad you enjoyed the 'Performance Icons' feature. Rest assured, there is something in the pipeline regarding selling your 911.*



Tiptronic 'box on our 993 is jolty, & only 4 forward gears is rather different to the 7 on 991 Carrera. Fun though!



The new Porsche Carrera Cup GB car is here at Autosport Show:



OPC San Diego, USA, took delivery of two 991 GT3s over the weekend, ready for delivery to their new owners:

## Unnecessary solution?

Dear Sir,

It's brilliant to see the new 911 Targa take the model's design back to its roots with the reintroduction of the full-width roll bar. The metallic blue car on show at the Detroit Motor Show looked truly awesome. I certainly liked the small design details on the hoop, including the three gills.

However, I can't help but think that the roof mechanism is overkill. While the Targa's removable roof panel can now retract at the push of a button, the whole process looks incredibly elaborate in order remove just one small panel. Surely it would have made more sense to just make the roof removable in the same way as the original Targa design? After all, either way the car has to be stationary.

Also, at around £95,000 for the 4S model, it's a pretty expensive solution.



For the extra £5,000 I would much rather buy the new GT3!

Best regards,

*Nicholas Miller, via email*

*We certainly approve of the new Targa's looks, but the roof does seem rather complex. Activating that rear*

*screen in heavy traffic could be a bit of a problem if the car behind is stopped particularly close. However, with the previous Targa's glass roof retracting automatically, Porsche needed to keep the process automated in order to make the 991's roof an appealing proposition to a modern 911 buyer.*

# New 911 Targa: Your thoughts

With the 991 marking the return of the classic Targa top, we wanted to know which you preferred: the traditional roll hoop, or the 993/997's retractable glass roof?



Love that they've gone back to the original Targa design.

**@ProfXmom, via Twitter**

Really not sure about this one. One side of me loves the retro look, but that roof mechanism is crazy-stupid - just weird.

**@ImagineMD, via Twitter**

Looks great!! But the way the top goes in with the glass popping out... too much.

**Gary Adam Feldman, via Facebook**

I don't really like the Targa... is that bad?

**Sergio Martinez, via Facebook**

Classic - distinguishes the model clearly.

**Darren Laurie, via Facebook**

New design looks fantastic, much better than retractable roof.

**@racing\_scarlet, via Twitter**

Just have a middle roof section, you unclip it, put it in the back, saves about 250kg, looks good though! #targa

**@Aaronh97, via Twitter**

Prefer the roll bar. New Targa looks fabulous!

**@ArthurDardalis, via Twitter**

The ultimate Marmite 911?

**@AutoPap, via Twitter**

1st Classic. Then 993-997. 3rd 991.

**Nicola D Bonetti, via Facebook**

The one in the 997. It had the Coupe's perfect look. Classic Targa is not for me.

**João M Pina Cardoso, via Facebook**

All pretty awful.

**Henry Boxer, via Facebook**

Classic/new roll hoop.

**Marcel Ruessink, via Facebook**



# Total 911

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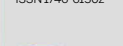
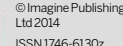
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# RENNSPORT MASTERS

As the current epitome of Rennsport, the 997 GT3 RS offers the purest form of modern Porsche 911 exhilaration. But is the second generation a marked improvement on the first?

Written by **Tony McGuinness** Photography by **Andrew Tipping**



**T**he heat vapour is clearly visible, rising off the black tarmac and dissipating into the air on the desolate Southern California mountain road. It is typically cool in this part of the Temecula Valley, 45 minutes north-east of San Diego, but the day is an abnormally scorching affair, with temperatures hitting 96 degrees Fahrenheit. Among the sintering heat, two of Porsche's finest 911s ever to grace the planet are on a mission and engaged in a duel: like the legendary gunslingers of the old west, Billy the Kid and Jesse James, these modern-day legends are going head to head to see which generation of the 997 GT3 RS is the most electrifying to drive.

Aided by exceptional aerodynamics, both cars have speed and power delivery in abundance, with their stripped-back and cut-throat nature making for one of the purest forms of road-legal driving, such is the moniker of a 911 RS. Where lesser models would find such an environment exhausting, here corners are attacked with aplomb. These two differing 997-generation GT3 RSs are as at home on these mountainous roads as they would be on a race track – which, of course, they were essentially designed for. Both Rennsports jockey for position and exchange leads from the front several times as the howling of the high-revving 'Metzger sixes' resonates. If ever there was an example of heavenly driving, this was it.

The mere mention of 'GT3 RS' ensures 'pinnacle of the 911' is on the cusp of most driving enthusiasts' lips. It doesn't get any better – it's a purist car 🏁

by every definition. By driving or owning one you are experiencing a piece of road-going Porsche racing heritage that is arguably not found with any other manufacturer. The GT3 RS models are exclusive machines, inspiring and leaving you in awe. They are breathtakingly beautiful and staggeringly functional in every sense of the word.

Unlike other 911s, these two naturally aspirated Rennsports are built by the Porsche Motorsport division, the same group that for many years manufactured 911 Cup cars, the RSRs, and even the RS Spyder. Racing is in their DNA.

The RS lineage dates back far with the 911, starting with the introduction of the 1973 Carrera RS. When water-cooling reached the 911 in 1999, Andreas Preuninger and Porsche soon introduced the new RS in 996 GT3 form to great acclaim. With the subsequent introduction of the 997 Gen1 GT3 RS in 2006, the change from the 996 GT3 RS was a substantial evolution of the new RS moniker. The 997.1 GT3 RS – with its wide Carrera 4 body – had purists drooling. While the Gen1 997 was

well received, Porsche was struck by comments from customers that the GT3 RS did not offer considerably more performance over the standard 997.1 GT3. On paper at least, the RS only offered a quicker sprint to 62mph by 0.1 seconds over the GT3, while the official weight saving of just 20kg was noted as somewhat paltry.

The 997.1 GT3 RS is no slouch, but Porsche clearly listened to its customers and set about ensuring vast improvements for the 3.8-litre 997.2 GT3 RS. Duly arriving in 2010, performance was markedly improved above and beyond that of its new GT3 brethren of the same generation.

Four years of manufacturing separate the two 997 GT3 RSs in our pictures (the Gen1 rolled off the production line in 2007, the Gen2 in 2011), but they are different. The changes from Gen 1 to Gen2 are, in Porsche terminology, evolutionary rather than revolutionary. However, there are stark differences. What is immediately noticeable is the magnificent larger, carbon fibre rear wing on the Gen2 supported by forged aircraft aluminium





struts. Although neither are subtle, the wing of the Gen2 is certainly more pronounced than the Gen1, helping the 997.2 to create the same amount of downforce at 100mph as the 997.1 does at 190mph.

Other evolutions include the revision of the front fenders of the Gen2, which are now 26mm wider to accommodate its larger front tyres. Also redesigned in the Gen2 are larger front air intakes and outtakes: they suck in air and push it out again with the utmost efficiency, while the wire mesh covering these openings provides protection to the internal workings in the front. The front splitter on the Gen2 is also larger and more aerodynamic, again contributing to the 997.2's nous for downforce.

Despite its racing pedigree, the GT3 RS retains the 911 spirit of being the everyday supercar, further exemplified by a front lift kit fitted to the Gen2, yet missing from the Gen1. The push of a button inside the cabin raises the front just enough to prevent scraping on driveways and ramps that are not drastically sloped. First available on the Gen2, this is an option that's well worth the money to



“As the RS nears 8,500rpm,  
the engine noise pulsates  
through your body”

	<b>997.2 GT3 RS (2011)</b>	<b>Model Year</b>	<b>997.1 GT3 RS (2007)</b>	
	3,800cc 12.2:1 450bhp @ 7,900rpm 430Nm @ 6,750rpm Six-speed manual	<b>Engine Capacity</b>	3,600cc 12.0:1 415bhp @ 7,600rpm 405Nm @ 5,500rpm Six-speed manual	
	Independent MacPherson struts; Independent multi-link	<b>Compression ratio</b>		
		<b>Maximum power</b>		
		<b>Maximum torque</b>		
		<b>Transmission</b>		
		<b>Suspension Front</b>		
		<b>Rear</b>		
	9x19-inch centre-locking alloys; 245/35/ZR19 12x19-inch centre-locking alloys; 325/30/ZR19	<b>Wheels &amp; tyres Front</b>	8.5x19-inch five stud alloys; 235/35/ZR19 12x19-inch five stud alloys; 305/30/ZR19	
	4,460mm 1,852mm 1,370kg	<b>Dimensions Length</b>	4,445mm 1,852mm 1,375kg	
		<b>Width</b>		
		<b>Weight</b>		
	4.0 secs 192mph	<b>Performance 0-62mph</b>	4.2 secs 187mph	
		<b>Top speed</b>		



“The GT3 RS feels  
edgy and alive.  
What more could you want?”



Unlike their European counterparts, the rear windows in both cars are real glass – not plexiglass – to satisfy US laws

protect the front of your Rennsport 911. Another interesting observation is the side mirrors of the Gen2, which were made bigger to satisfy EU safety laws.

As well as a boost in engine capacity from 3,600cc in the Gen1 to 3,800cc, the jump in power from 415bhp to 450bhp isn't the only engine-based improvement. The all-new dynamic engine mounts on the Gen2 model minimise oscillations and vibrations of the drivetrain, helping you take corners more precisely. The tailpipes are titanium and the single-mass flywheel is lighter in the later variant, as the redline is increased by 100rpm to 8,500rpm. Twinned with the boost in performance are weight-saving improvements in the Gen2, like a lightweight lithium ion battery that saves 22 pounds over the Gen1. This means the later RS is five kilograms lighter than its 997 GT3 RS counterpart.

The stats suggest vast improvements in the second instalment of the 997 GT3 RS, but how does this translate behind the wheel? After all, both cars remind you that they are primarily race cars, and in racing, even the most minute technical improvement can lead to substantial performance gains. So is the Gen2 much better than the Gen1?

I climb in the cockpit of the splendidly outfitted Gen1, with original orange wheels painted black to show off the yellow PCCB brakes nicely. A clear bar has been installed on the front bonnet to repel stones and other shrapnel. Besides this, the car is straight out of the Weissach factory. I take in the view inside. It doesn't have the cloth straps installed on the Gen2, but the orange door handles are striking nevertheless. Moreover, carbon fibre

inserts throughout the interior and door sills are well placed, and provide quality craftsmanship.

The Porsche adaptive sport seats are beautiful with Alcantara inlays, which is also present on the roof of the cabin, and a rich, soft leather dashboard with deviating stitching sets off the whole car. The rear wing sits low and does not obstruct the rear window. Glance over your shoulder, and you'll see the 'RS' badge at the back of the cabin, where the seats would be in a 911 Carrera. The purposeful interior means you can't help but feel excited, even nervous, as you fire up the engine.

Piloting this beautiful Gen1 out in to the hills, I am struck by its raw feeling. I accelerate onto the deserted road which, unfortunately for me, becomes quite bumpy. This isn't something you would necessarily feel in a standard 911, but the stiff chassis communicates that it would prefer to be on smooth tarmac. After a few bone-jarring hiccups, the road becomes smoother. Immediately, I am dealt a left-handed sweeper. I downshift and blip the throttle, hearing a throaty exhaust note from the flat six. The turn-in is crisp and razor sharp. Just before the halfway point, the nose starts to go a little light, and I can feel understeer, which sends adrenaline flowing through my veins. It feels edgy and alive, and wants to challenge you. What more could you want?

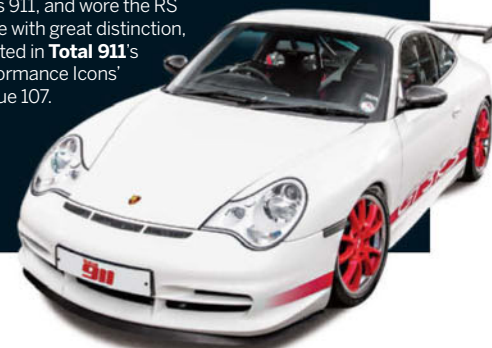
Unwinding the steering wheel and exploding out of the turn, the Gen1 regains its composure. Within seconds I shoot into a right-handed hairpin. Just as I start to feel more confident, the rear end twitches. It wants to swing out as the huge, semi-slick rear tyres try to dance away from me. I am forced to

## 996 GT3 RS: dawn of water-cooled RS

In 2003, the predecessor of the current 997 GT3 RS was introduced. The 996 GT3 RS was Porsche's first water-cooled RS, which trimmed 50kg from the 996 GT3 Clubsport models. Available in white with either blue or red decals, side stripes and matching colour-coded wheels, the 996 GT3 RS utilised a 3.6-litre M96/79 powerplant taken from the narrow-bodied 996 GT3, producing 381bhp at 7,400rpm before shooting on to a top speed of 190mph. Later, the 996's sublime engine was to be utilised in the Gen1 997 GT3 RS, albeit with some reworking.

The 996 GT3 RS featured carbon body parts, which were replicated by the 997 variant, although the carbon front bootlid on the 996 was replaced by an alloy item in the Gen1 997. In true RS weight-saving form, the Porsche crest on the front bootlid was actually a sticker, later replaced with a standard metal-oriented emblem on the 997 Gen1 and Gen2 RS variants. Crucially for track enthusiasts, the 996 GT3 RS came with PCCB as standard, reduced to an option for the 997.

Although road legal, the ride of the 996 GT3 RS was deemed incredibly harsh for anything other than a track. The lessons learned from the first water-cooled RS had a great impact on the development of the 997 GT3 RS, including increased power, comfort, aerodynamics and safety. Not sold in the US or Canada, the 996 GT3 RS was the perfect swansong for the 996 series 911, and wore the RS badge with great distinction, as noted in **Total 911's** 'Performance Icons' in issue 107.





Retailing at £94,000 when new, the first 997 GT3RS had a refined cabin, though a rollcage and cloth bucket seats were options



Differences in the dash and doorcards mark this 997.2 out as more hardcore. Note the transmission: is this the last manual RS?



bring it in with careful corrections. Clearly, this GT3 RS has the devil in it, and tells you so. I exit the hairpin quickly and with much more confidence.

However, as I dip into another sweeping left-handed corner, once again the nose starts to lift and understeer requires correction. As I do so, the back wants to push out. The feeling is one of exhilaration as I make slight inputs and corrections to bring her back in; she settles nicely and is once again balanced. But driving this car this hard isn't for the novice; I am required to be totally involved, alert and focused. It needs you to listen to it and coax it. Tell it what you want it to do and deliver the right inputs, and you will be rewarded. The experience is hair-raising and exhilarating. This is exactly what you require in a car of this magnitude. On the return leg back to where the Gen2 is waiting, I feel

excited and drained in equal measure. Surely that was the ultimate in road-going flat-six thrills?

Climbing into the 1997.2 GT3 RS, I notice it's not too dissimilar to the 997.1. There are slight upgrades in the dashboard layout carried over from the facelifted 997 Carrera, and although the adaptive sports seats in the Gen2 are the same as the Gen1, the Gen2 seems more refined inside. This Gen2 doesn't have the optional leather outfitting from the Gen1, although in the context of what these cars are, I think it is a good thing. It is simply bare bones in comparison, with reduced noise insulation materials in the plastic dashboard and door panels. The orange door handles that were in the Gen1 are now thin red straps. While some people have called them a gimmick, this gives a distinct Cup car feel. It has a stereo and PCM system as per the Gen1, while

both have air conditioning – which, by the way, is one option you should never want to be without. Deleting air-conditioning for the sake of weight saving isn't worth it unless you are in very serious racing competition.

The thick Alcantara steering wheel has a sensational feel to it. Looking over my shoulder to the rear of the interior, the badge no longer merely says 'RS', instead letting you know unapologetically that it's an 'RS 3.8'. I fire up the engine and notice how the rattle at idle of this powerplant is loud and mesmerising. It's a statement of intent: that very light single mass flywheel helps to give it a unique sound.

Taking the same course as with the Gen1, I dump the clutch and accelerate down the deserted, bumpy asphalt. The heavy clutch takes some



## GT3 RS running costs

Ownership of any 911 comes at a price, although these are substantially increased with a 911 of such high motorsporting calibre. Although you'll be covered by a warranty when purchasing from new (usually two years in Britain with the option of the third, or four years/50,000 miles in the US), what this warranty doesn't cover is standard maintenance including fuel, tyres, and typical wear and tear.

Because this Rennsport demands to be driven in a spirited manner, fuel replenishment is obviously required with astonishing frequency. The Gen2 comes factory-equipped with the specially designed Michelin Pilot Sport

Cup Tyres, which are incredibly sticky yet very soft, coming with only 3mm of tread. On the street with spirited driving, the tyres – costing around £250 per corner – could last for 3,000 miles (the wider rear tyres tend to wear out faster with engine load, of course). Also, due to the sticky nature of these tyres when warmed up, they can pick up metal road hazards easily, so require replacing much sooner. The Gen2 in our pictures has covered just over 18,000 miles to date. The rear tyres have been changed four times, with the tyres on the front axle being replaced three times.

Other likely expenses on the GT3 RS include the replacement of the front splitter, which can take some

punishment on the road, even with the optional lift kit fitted. The 997 GT3 RS needs a service every year or 10,000 miles with an oil change, while the Gen2 here benefitted from an additional brake service while back at the OPC.

Ceramic brakes are a well-known yet worthwhile option for a 911 with track ambitions, although their incredible performance, lack of brake dust and longevity makes them extremely desirable. Available from £5,800 as a factory option on the Gen1 GT3 RS, if your GT3 RS has ceramics then expect a hefty bill when it's time for completely new brakes. Running a GT3 RS has significant costs but, for many, the rewards of driving one are well worth the price.

getting used to, but feels great. Likewise, the short throw shifts are fast and precise. Gathering speed over the same bumps I encountered earlier, I'm pleasantly surprised, as the car handles them less jarringly. The upgraded PASM suspension in the 997.2 deals with the bumps with little fuss, and my bones remain intact. Again, the ride isn't as smooth as a 911 Carrera, but these are race cars that happen to have a license plate. Heading into the left-handed sweeper, I downshift and blip the throttle as I prepare for the front end to become light and the car to move into understeer. I am ready to make corrections, but none are needed! The wider front track and revised front end virtually eliminate the lift experienced in the Gen1 GT3 RS. I power out of the corner and prepare for the back end to swing out and misbehave, but

it doesn't happen. The larger wing and wider rear wheels with sticky Michelin Pilot Sport Cup tyres (specifically designed for this Gen2 997) ensure the back end is glued to the road. No loss of grip is experienced, and I am propelled out of the bend and onto the straight. The higher-capacity 3.8-litre flat six begins to wail, and my speed increases until I am forced to brake, the large ceramic brakes bleeding off the speed and preparing the car for entry into the right-handed hairpin turn.

Here, I feel the confidence I didn't experience to the same degree in the Gen1. I can push this car much harder; it begs to be driven hard. Going into this tight switchback, I feel the G forces more, but again, the wider front end with those phenomenal Michelin Pilot Sport Cup tyres, lacking on the Gen1, provide the ability to enter the corner with

more speed and grip. As such, I don't fight with the car as much. While I make slight corrections, they aren't nearly what I needed to do on the Gen1.

I begin my exit out of the corner earlier than I did with the Gen1. I can feel she wants to possibly swing out, but this car – unlike the Gen1 – has stability control to go with the traction control, ideal for wet surfaces. Sure, this car also has the devil in it, but it is kept more in check by the technological upgrades and significantly revised aerodynamics. I am catapulted out of the corner at blistering speed, again reminded of the car's more serious engine growl past 5,000rpm.

Meanwhile, the noise in the cabin is the perfect blend of engagement without irritation. As it nears the 8,500rpm redline, the engine noise in the cabin pulsates through my body. I reach the next ➔



dipping, sweeping left-hander, where the ceramic brakes bite hard and shed speed, yet my entry into the corner is significantly faster than the Gen1. This time I feel a little hint of lift, and slight understeer starts to occur, but with gentle corrections and throttle inputs it is insignificant. Again, the car feels more balanced and planted when near the limit. By now, the warmed-up Sport Cup tyres are in even more love with the road, and don't want to let go. I am propelled out of the corner with only a bit of twitching in the back end. Exploding down the final straight, the RS screams at redline. As I bring the 997.2 GT3 RS back to base alongside the 997.1, I am filled with conflicting thoughts.

When you begin driving these cars, initially it isn't easy to detect differences between the two. From a standing start, the Gen1 in first gear seems quicker than the Gen2. The Gen1 wing provides a virtually unconstructive view from the driver's seat, while the rear wing on the Gen2

largely forces you to rely on your side mirrors. However, pushing the cars begins to reveal the contrasting features of these machines. Steering in both RSs feel direct and tight when turning into corners, although the Gen1 does feel lighter in the front. You have to work with it more than the Gen2, and it requires intense focus, which in itself is gratifying yet slightly unnerving. The clutch on the Gen1 is not as heavy, and is easy to adapt to. While the clutch on the Gen2 is heavy, the shifting in both cars provides an abundance of mechanical feel.

The wheels are a standout difference on the Gen2, where centre-lock wheels fitted with Michelin Pilot Sport Cup tyres provide extra sticky grip, and when warmed up won't betray you. The larger contact patch the Gen2 has over the Gen1 with its wider tyres is no small difference here. Yes, it is fun to let the back end loose, but on the track or street that extra grip is meaningful. It allows you to push the 997.2 harder, as you know it is firmly

planted, and you can feel the limit is extended over the 997.1. Likewise, stability control is helpful in the later variant, and does not take away from the performance and excitement. If anything, it gives you the confidence to push its limits harder.

The Gen1 ticks all the boxes in terms of thrills: it can be scary, and can taunt and excite you. Not having the revised technological changes of the Gen2 isn't necessarily a bad thing either, making it different and challenging in a very special way. In fact, depending on your driving habits and preferences, it is hard to criticise what, in effect, are two perfect cars in their own right. The reality, though, is that Porsche brought out a second generation of the 997 GT3 RS to improve on the previous model. They made the 997.2 lighter, faster, and more aerodynamic. It gives you the thrills, excitement and adrenaline rush of the Gen1, while communicating better. Make no mistake, the 997.1 is a great car, but the 997.2 is even better. **911**





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**964 C2** – The list goes on and on... This really needs to be seen to be fully understood. We are delighted to offer this very unique 964. The list of modifications that have been carried out is overwhelming and the attention to detail is nothing short of outstanding. This 964 provides RS fun at a fraction of the cost of an original. Conversions like these aren't cheap, thousands have been spent and wisely.



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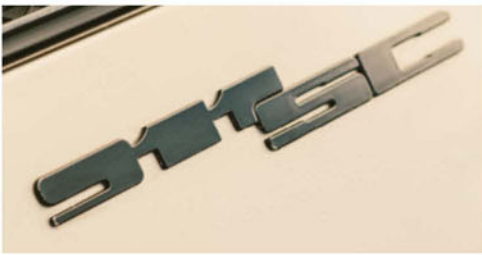
# THE MASTER OF SIMPLICITY

Total 911 investigates the merits of the forgotten  
classic 911: the 204bhp SC

Written by **Wilhelm Lutjeharms**  
Photography by **Sybrand Cillé**







The SC has an abundance of classic charm, and though underpowered, should not be underestimated as an entry-level 911 with an ability to please from the driver's seat

It is easy to pick out the most outstanding cars from Porsche's 911 range over the past five decades. Play with the letters S, R, RS, RSR or the word 'Clubsport', and you would cover pretty much all of the most traditional and iconic 911s.

But most of these cars' values have gone through the roof over the past decade. As such, even if you do have the financial means to purchase them, you need to be patient and wait until an owner is willing to part with one – especially if you're after the earlier, air-cooled models.

However, for a fraction of the money you would pay for one of Porsche's limited number cars, you could have a classic 911 that offers all the necessary ingredients and idiosyncrasies we associate with Zuffenhausen's famous flat-six offerings.

**Total 911** has long championed the entry-level 911 through the generations, be it the Sixties 'T' models that have become highly collectable of late, or the modern 3.4-litre 996 Carrera. For the Eighties generation in between, most think of the 3.2-litre Carrera as the entry-level 911, complete with Guards red paint and tea tray spoiler. However, many overlook the car that originally offered the entry into 911 ownership of the time: the 911 SC.

Traditionally, it can be argued that this was the least-loved 911 for several reasons: it wasn't particularly powerful – power was actually down

from the earlier 3.0-litre Carreras – and it didn't sell in particularly large numbers either. As a result, many SCs were used in backdated RS or Turbo replica projects, so today you might find it hard to acquire an immaculate example that has been well looked after.

However, this Pewter brown 1983 example (paint code UIUI) belongs to an owner with a serious love affair with both of Stuttgart's most famous automotive manufacturers, and as such has nurtured a beautiful SC to relive the merits of a true forgotten classic in. Purchased in 1999 from its second owner with 53,000 miles on the clock, just 8,000 miles have been added since. As can be expected, this SC was in near perfect condition.

## Options

This particular SC is one of the higher-specification 911s of its time. Equipped with leather seats, electric windows, air conditioning and a sunroof, it is thought to have formed part of a package Porsche offered to its South African customers originally. Other options included a full-colour interior. This option – which is still available today – included the seats, carpets, dashboard, door cards, A-pillars and sun visors, which were draped in red. Starting in 1981, the optional M473 rear wing became optional on the SC. The next year sees the launch of the SC Cabriolet, which was the first production 911 convertible. Throughout the SC's lifespan from 1978 to 1983, the SC was also available in Targa form.

As usual, the heart of this 911 is below the louvred rear engine cover. The 2,994cc unit can trace its roots back to the original 3.0-litre turbocharged engine that had been used for the first 930 Turbo (with a matching code of 930/10 for later models). However, the SC relied on naturally aspirated engine breathing.

The first SC made its debut in 1978, developing a mere 180bhp at 5,500rpm and offering a top speed of 141mph and a 0-60mph time of 6.5 seconds. Opinion was initially divided about the clean design, too, and there's no doubting the car looked particularly lean next to the bulky 3.3-litre Turbo that was released at the same time.

The SC was revised only slightly in 1980 when power was increased by a marginal 8bhp, a clear sign that under the guidance of Ernst Fuhrmann, the 911 had no remit for production beyond 1981. However, the arrival of Peter Schutz as CEO signified a turnaround in the 911's fortunes against the new projects of the 924 and 928, and SCs from the 1981 model year were given a further boost in power to 204bhp at 5,900rpm, owing to better combustion efficiency and the implementation of steel injection pipes.

The result was a top speed of 146mph, while the dash to 60mph dropped to a respectable 6.5 seconds. The new 3.2-litre Carrera was introduced in 1984, making this SC one of the later models. ➔

Just over 38,400 SCs were produced from 1978-83, the last of which produced 204bhp from its 3.0-litre engine



“SCs from 1981  
were given a  
further boost  
to 204bhp”

<b>Model Year</b>	<b>911 SC (1983)</b>
<b>Engine Capacity</b>	2,994cc
<b>Compression ratio</b>	9.8:1
<b>Maximum power</b>	204bhp @ 5,900rpm
<b>Maximum torque</b>	267Nm @ 4,300rpm
<b>Transmission</b>	Five-speed manual; rear-wheel drive
<b>Suspension Front</b>	Independent; wishbones; MacPherson strut; torsion bars; hydraulic shock absorbers; antiroll bar.
<b>Rear</b>	Independent; semi-trailing arms; torsion bars; hydraulic shock absorbers; antiroll bar.
<b>Wheels &amp; tyres Front</b>	6x15-inch Fuchs alloys; 185/70 VR15 tyres
<b>Rear</b>	7x15-inch Fuchs alloys; 215/60 VR15 tyres
<b>Brakes Front</b>	283mm discs
<b>Rear</b>	290mm discs
<b>Dimensions Length</b>	4,291mm
<b>Width</b>	1,626mm
<b>Weight</b>	1,160kg
<b>Performance 0-62mph</b>	6.5 secs
<b>Top speed</b>	146mph



Only days before this photoshoot took place, the car was sent for a full service at Porsche Centre Cape Town, South Africa. The result was a serviced car with a perfectly clean bill of health some 30 years after it left the Zuffenhausen factory. The perfect car needed the perfect setting, and the Winelands region of South Africa is littered with several picturesque mountain passes – the one we chose for this sunrise shoot was none other than the Franschoek Mountain Pass (on Google Maps you will find it under Lambrechts Road).

First impressions were that the clean lines of this standard SC, without the optional rear wing, ticked all the boxes for almost any real 911 enthusiast. The tradition continued from behind the wheel, too: in textbook classic design, the front wings were much more pronounced than the water-cooled 911 generations, aiding the thrill of piloting a pure 911.

That solid metal ‘thunk’ on closing the door will be recognisable to anyone who has ever driven an

air-cooled generation 911 and appreciated its build quality. Down at your feet, the off-set pedals grab your attention and further remind you of the charm carried by a Porsche of yesteryear.

A host of options were available to SC buyers, and this example is testament to that. Equipped with a sunroof, leather seats, electric windows and front fog lights (which didn’t become standard until the 3.2-litre Carrera), the spec of this SC doesn’t suggest such a basic, entry-level Porsche sports car, as some contemporary classifieds may suggest.

The factory interior had the same feel of earlier 911s: there were almost no rattles in the cabin, and the controls were still solid. I giggled at the ‘Fasten belts’ sign above the audio system, more commonly seen in aeroplanes these days than classic cars.

The bent gear lever is mounted from the floor just in front of the cassette holders, providing that inspiring long throw that any classic 911 aficionado has long admired. The steering wheel design is not

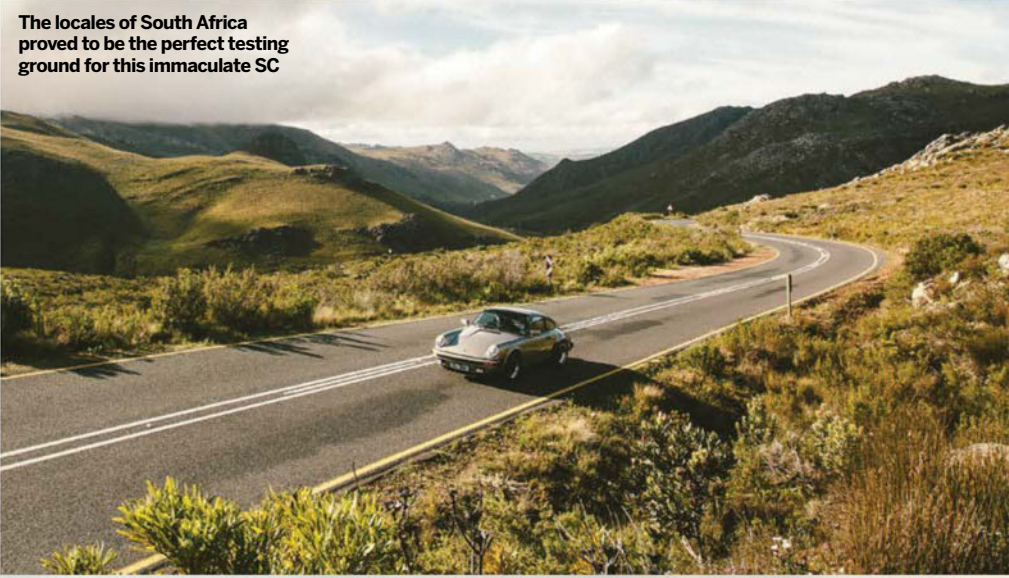
Porsche’s best effort, though those with a penchant for nostalgia will gladly accept this as the same steering wheel design in the 911 that won the 1984 Paris-Dakar Rally.

Despite having no steering wheel adjustment, meaning the wheel is permanently fixed perilously close to the dashboard, I simply needed to move the seat a few inches closer to the wheel and the backrest a little more upright to have the perfect driving position. I then had enough leverage on the steering wheel while my left hand had perfect access to the gear lever. This is rather special, as the cabin, despite being snug, provided enough room for my six-foot-one frame. The rear-view mirror gave good visibility, but there’s no denying the side mirrors were more limited.

As I pulled off and settled into a slow cruise, I was impressed with how much better this five-speed 915 gearbox felt than a 930 Turbo’s four-speed 915 gearbox that I had driven recently. As is the



The locales of South Africa proved to be the perfect testing ground for this immaculate SC



## Famous SCs – SC Safari and SC RS

22 RSs were built, which needed to be homologated for the GT class. Since it was an evolution of the SC, the engine size couldn't exceed 3.0 litres, while the 960kg minimum weight figure was easily achieved thanks to a lightened and reinforced 930 shell.

The basic road versions utilised the Type 917 brakes and also had improved suspension, including Bilstein dampers. Changes to the engine resulted in a peak power output of 276bhp at 7,000rpm, with the red line set at 8,000rpm.

The SC Safari was built in 1978 for Porsche's factory entry into the 26th East African Safari Rally. It featured a plunger pump fuel injection system, limited-slip differential and 28cm of ground clearance. The result was impressive second and fourth place finishes.



case with all 915 gearboxes, you can't rush through the gears, but this unit transmitted a more solid feel than I had expected, inspiring confidence from the driver's seat. Not every gearshift feels the same through its execution, but you quickly learn the best way to handle it as the gearbox oil warms.

Pleasingly, the steering was beautifully direct, especially through the first few degrees on either side of the dead centre position. As I increased my speed, I was buoyed by the realisation of how little body roll there was when I turned into corners.

Use the first 4,000rpm in the rev range, and you can expect to cover ground at a respectable pace. With the 267Nm of torque available at 4,300rpm, I opted several times to leave the car in the selected gear, only to be left surprised by how strongly it pulled. As the only straight on the pass presented itself, I revved second gear past 4,000rpm and delighted in the new engine note. The raw sound of the flat six engine's mechanicals

singing beautifully past 5,000rpm is not dissimilar to that of more modern 911s passing 6,000rpm.

The throttle pedal was another characteristic that still impresses. Although it has a long travel action, it is the first third of pedal travel that is the most important. The accelerator is sensitive to start with, so you almost never use the entire travel range, as the last part before the stop seemingly has little effect on the engine's performance.

Equipped with a fresh set of Pirelli tyres all round, grip levels for this 1,160 kilogram Coupe were rather good, but in the tight confines of the mountain pass I preferred not to experiment with the outer grip limits or try to overcome them. If you own such a car, I can see what an inviting challenge, not to mention exciting experience, it would be to learn to drive this to its maximum grip levels. Should you prefer to cruise along the highway, the engine will sit at a relaxed 2,800rpm in fifth gear, with the speedometer reading 75mph.

As we headed home, one final mountain pass beckoned, with much longer and faster sweeps than the one we had first encountered. Heading into the first corner, I entered with far more commitment than I had done before, and the SC responded admirably with a deft poise through turn in.

For the next few miles I couldn't help but be immersed in the sense of occasion combined with the stimulating dynamics this 30-year old car offered. The faster you go, the better the feel of the steering gets, as the wheel transmits more information from the front wheels and even tramlining. This rarely happens in today's cars.

I don't know how soon I will be able to drive such a well-sorted SC again, as many of these delightful models have suffered from serious neglect under their misnomer as the forgotten, fun 911. But what I've learned is that if Eighties 911s get your heart going, a base 3.0-litre flat-six SC is all you need. **911**

“The clean lines  
of this SC tick all the boxes  
for any classic fan”





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— 40 YEARS OF TURBO —  
**ULTIMATE 930**

It has been 25 years since the original 911 Turbo ceased production. Total 911 goes behind the wheel of the last 930 and finds a surprisingly modern classic

Written by **Josh Barnett** Photography by **Daniel Pullen**



The 930 LE's interior is intimate yet comfortable. The in-car phone (bottom left) is a symbol of capitalist Eighties culture



In 1989, the Porsche 911 was experiencing its greatest overhaul yet, with the 964 platform coming onto production lines. However, the 911 Turbo was not expected to play a part in this revolution. To mark the apparent end for Porsche's forced-induction 911, Zuffenhausen gave the 930 one last hurrah.

The 930 LE was truly limited edition, with Porsche producing just 50 examples. Each Porsche Centre was limited to just one car, making availability incredibly exclusive, just like the price tag. The original list price for the 930 LE was an eye-watering £84,492.

This gave the 930 LE a price tag of over 50 per cent more than that of the average UK house of the time. If Porsche was to release a 911 similarly priced in comparison to today's housing market, it would be yours for £254,000. In other words, it wouldn't happen. Thankfully, the culture of wild excess in the late Eighties made this car a possibility, with Porsche selling all 50 examples (although unsurprisingly, the example before me was initially owned by a London-based investment banker).

With the 930 LE, Porsche went out of its way to create the ultimate Turbo. Each car started life as a standard 3.3-litre Turbo before being passed over to the 'Exclusive' team at Zuffenhausen. Here, each car was rebuilt by hand to include a host of no-cost options, including colour-coded wheel centres and

a top-tinted windscreen. What's more, any colour from the standard range could be used for the body, with colour-to-sample available at an extra cost.

Inside, the choice was similarly expansive, with any combination of standard leather colours possible for the electrically adjustable seats. The use of leather extended to the handbrake gaiter, while the steering wheel was a three-spoke design, similar to the original 1974 Turbo's. Sitting at its centre was a gold Porsche crest, complemented by a similar emblem on top of the gear knob. A final gold plaque on the centre console highlighted the LE's place at the end of the Turbo's 15-year tenure as one of the most fearsome sports cars ever produced.

Of course, Porsche couldn't let the 930 enter the history books without making it just a little bit more formidable. Utilising the SE's revised intercooler (housed inside an aggressive chin spoiler) power was hiked to 330bhp. Also carried over were the air intakes on the rear arches, while at the back, four tailpipes replaced the standard dual side exits.

In the metal, the black example before me is truly intimidating. Although the 930 LE may lack the sheer size of the current 991 Turbo, it more than makes up for this with its menacing stance and styling. The deep chin spoiler, with its lipped lower edge, is reminiscent of the 934 race car, while the SE brake ducts are unmistakably Eighties with their

three horizontal slats. When viewed from the side, the almost-ridiculous end plates on the monstrous tea tray rear wing help to complete the look. The 930 LE's styling certainly seems to take more than a few cues from the proliferation of tuners that sprung up during the decade.

However, while creations like the Rinspeed R69 and Gemballa Avalanche are gauche by many standards, the Porsche 930 LE is unmistakably 911 in its shape; a perfect balance of exaggeration and style. With its traditional, eye-like front end, the LE is less divisive than its flatnose brother, too.

Yet, it is no less visually arresting. Indeed, alongside the car's owner, David Newton, it proves impossible for us to not wax lyrical about the alluring lines of the classic-shelled 911, as there isn't a flat piece of metal on the car. No wonder the Turbo was the poster boy of the Seventies car world when it was unveiled; it's gorgeous.

Despite its innately graceful lines, though, the 930 LE's Eighties visual embellishments make it one of those rare cars that looks fast sitting at rest. Of course, its rest isn't going to last much longer.

David bought his 930 LE (one of 14 right-hand drive examples) at Coys' Ascot auction and, although he has driven just 90 of the 22,000 or so miles, he is one of those truly effervescent enthusiasts who is happy to hand me his keys, even after I tell him I've never driven an



<b>Model Year</b>	<b>930 LE (1989)</b>
<b>Engine Capacity</b>	3,299cc
<b>Compression ratio</b>	7.0:1
<b>Maximum power</b>	330bhp @ 5,500rpm
<b>Maximum torque</b>	432Nm @ 4,000rpm
<b>Transmission</b>	G50 five-speed
<b>Suspension</b>	
<b>Front</b>	Independent MacPherson struts; longitudinal torsion bars; antiroll bar; telescopic dampers.
<b>Rear</b>	Independent semi-trailing arms; transverse torsion bars; double acting telescopic dampers
<b>Wheels &amp; tyres</b>	
<b>Front</b>	7x16-inch Fuchs, 205/55 VR16 tyres
<b>Rear</b>	9x16-inch Fuchs, 245/45 VR16 tyres
<b>Brakes</b>	
<b>Front</b>	304mm cross-drilled discs
<b>Rear</b>	309mm cross-drilled discs
<b>Dimensions</b>	
<b>Length</b>	4,491mm
<b>Width</b>	1,775mm
<b>Weight</b>	1,335kg
<b>Performance</b>	
<b>0-62mph</b>	4.6 secs
<b>Top speed</b>	173mph

“No wonder the Turbo was the poster boy of the Seventies car world”





## 40 years of Turbo: the early years

In 2013, the worldwide Porsche community was celebrating one date: September 1963. This year, fresh off the Porsche 911's 50th anniversary, attention turns to August 1974.

Why? 40 years ago, the first road-going Porsche 911 Turbo was handed over to its new owner, Louise Piech, head of Porsche Austria and daughter of Ferdinand Porsche.

That original 930, devoid of the wide arches that would become synonymous with the car, came with a 2.7-litre engine and, despite the concept's origins in motorsport, was a sports car designed predominantly for comfort. With its narrow body and slender rear wing, Piech's test vehicle appeared rather sedate. However, underneath the rear deck lay a 250bhp engine.

By the time the first real customers got their hands on this new 911 Turbo in 1975, the rear arches had been flared and the engine's displacement ramped up to 3.0 litres. Despite the global oil crisis, the 3.0-litre 930 was an instant sales success, with unprecedented demand for the 260bhp sports car. Posters adorned the walls of many a bedroom, and with a 0-60mph time of just 5.5 seconds and top speed of 155mph, the first 911 Turbo was also the first supercar.

However, with a lot of turbo lag, the car's handling left a lot to be desired, as did the brakes. For 1977, Porsche announced a new 3.3-litre 930, featuring 300bhp and uprated brakes (derived from the cross-drilled 917 discs). The vague four-speed 915 gearbox remained until 1988,

when it was replaced by the shorter ratios and more driveable clutch of the G50 five-speed unit.

During this period, the Sonderwunsch programme (later to become Porsche Exclusive) offered a flatnose option in 1981. However, this wasn't to go into full-scale production until 1986, when the 930 SE was released for general sale. Its uprated 330bhp underpinnings would see out the 930 generation with the 50 LE examples produced 25 years ago.

Gaining 70bhp and 195kg across its 15-year life, the 930 defined the character that we have come to love with the current generation of 911 Turbos. With its 40th birthday to be celebrated in 2014, this is going to be a very special year for a very special Zuffenhausen icon.



The lines of the 911 Turbo are combined with the flamboyance of the 'Flachbau' SE to create the ultimate 930: the 330bhp LE



air-cooled 911 on the road, let alone an air-cooled Turbo.

The first thing that hits me as I lower myself into the 930 LE is how snug the interior is. Although this will come as no surprise to those who are accustomed to a classic 911's charms, the 930 LE's cockpit is incredibly intimate. The five-dial pods loom large, with the steering wheel taking up a greater part of my view thanks to the cockpit's cosy layout and wheel's size. For such a large wheel, the rim is surprisingly thin; perhaps the one part of the interior that doesn't feel ergonomically correct.

While I don't have incredibly broad shoulders, the current generation of Porsche seats feel too narrow for my body, with the side bolsters tapering in too sharply. On the 930 LE, though, the classic seat fits like a tailored suit. I fall straight into their luxurious grasp with minimal adjustment, the bolsters holding me exactly where I want without exerting any undue pressure. They are sublime, instantly making me feel at ease as I spark the 3.3-litre, single turbocharged engine into life.

A gruff growl rumbles before settling down to an almost imperceptible level. With the optional shortened gear lever fitted as standard, the separate dogleg that houses reverse feels close to the G50 gearbox's first gear. After David has shown Zen-like levels of patience, I finally acclimatise myself to the LE's shift pattern, engage first, and move away.

I nearly don't manage this, such is the clutch's severe engagement. Thankfully, pedal travel is plentiful, allowing you to manage the aggressive bite

between centre plate and flywheel. With a little bit of throttle and a good degree of practice, pulling away eventually becomes quite civilised.

The same can't be said for the clutch's weight, however. Like many high-powered, manual 911s, expect your left leg to get a thorough workout when driving the 930 LE. It's not for everyone, but I loved the positive feel that such a heavy, aggressive clutch brings, although I'm not sure how happy I would have been if an hour of city driving lay ahead.

Straight onto a dual carriageway, and the LE shows itself to be incredibly modern, despite celebrating its 25th anniversary in 2014. With minimal road noise and only a whiff of the engine note, fifth gear is serene; you'd be forgiven for thinking you were in a car two decades younger. In such an environment, talking to David proves easy, with his passion for the marque proving infectious.

"I'd been searching for a 930 LE for several months," he explains. "I had looked at a slightly higher-mileage example, but it was in poorer condition. Because of the very limited production run – one of the shortest of any production Porsche – choice was somewhat limited." Thankfully, David (former chairman of the Porsche Club GB) waited before happening upon this truly brilliant example at Coy's October auction. With the hammer falling at £85,000, he appears to have found himself a relative bargain, with LEs of a similar quality fetching closer to – if not over – the six-figure mark.

Back on the road, the suspension is hard without being overly harsh. You can feel the road beneath you, but with nothing like the ferocity of

any modern performance car. Similarly, on roads with particularly extreme cambers, the LE will track slightly without trying to rip your shoulders off.

With the car's rarity sitting quite heavily on my mind (and the fact that the owner was a matter of inches away), I had been wary of driving too exuberantly. However, a 930 with 330bhp is not meant to be driven serenely all the time. Like a modern 911 Turbo, the 930 LE is designed for both speed and comfort. With the road clear of traffic, it's time for my first taste of classic Turbo power, as David urges me to shift down to third gear and floor the throttle – well, it would now seem rude not to.

I put the lever into third and, despite the slippery tarmac, apply the throttle hard and fast. Nothing. "Wait," David says. Without the benefit of electronic wizardry or variable turbine geometry, the LE has a good second of turbo lag but, before I have time to fully rationalise the situation, the single turbocharger spools up, the boost gauge races passed 0.5 bar, and I am shoved back into my seat with a ferocity that belies a car of this age.

This 911 is older than I am, yet it gains speed effortlessly. With the Turbo reaching its comfort zone, the car pulls forward at an alarming rate. Despite the five-ratio 'box providing the LE with shorter gears than the previous four-speed Turbos, in true Porsche fashion the gears are still ridiculously – and fantastically – long. Third gear is enough to break every speed limit around.

During this brutal acceleration, the sound of the air-cooled engine is magical. It is full of character, despite being inevitably muffled by the

turbocharger. While the current 991 Turbo still has a brilliant tone at high revs, the 930 LE's engine note is more mechanical and real. It is almost as if you can hear every component at work in the 3,299cc powerplant, before unburned fuel starts to crackle in the exhaust during the over-run.

The combination of speed and sound is addictive. "Is this your first Turbo?" I ask David. "This is my very first Turbo," he explains. "Back when they were new, I was aware that if I had driven one, I would have wanted one, as the ultimate power on offer is a very corruptible thing." It's the perfect term for the brand of speed that the LE displays. It's like a drug; you want to keep racing for the redline, and I wasn't expecting this from a classic.

Off the dual carriageway, and the 930 LE is a formidable back road weapon, too. While it was certainly no lightweight at the time, its 1,335 kilograms feel lively, aided by the communicative unassisted steering. Everything you feel through the steering is, like the engine sound, organic. You are kept in constant dialogue with the front tyres and, despite the rain, the LE doesn't understeer at fast speeds. Yes, it squats back under acceleration, but

the front end never feels light. It invites confidence on corner entry, even if the brakes don't.

The brake pedal always feels like it is rolling away from your foot, although you get used to the sensation. Luckily, the pedal isn't very long, and offers a good feel, meaning heavy braking is possible without the help of ABS.

With prior knowledge of the turbo lag, cornering isn't as intimidating as the 930 legends make out. If you are sensible with your mid-corner throttle application, you can avoid an unwanted maelstrom of power. It takes some getting used to but, once you master it, you can get on the throttle earlier than you would in a naturally aspirated 911, spooling up the Turbo before heading towards the next curve.

On these roads, the 930's dashboard layout proves invaluable. The boost gauge is inset into the centrally mounted rev counter, giving me a single focal point on the two dials I need to watch. Perennially checking the boost lets you anticipate the moment 330bhp is unleashed upon the rear wheels, while the rev counter is forever sprinting towards 6,700rpm and the next gear change.

With the shortened lever, the vagueness exhibited

by many classic Porsche gearboxes is reduced. However, rushing between gears only makes the gear change feel notchy as you beat the slightly lazy syncromesh. Relaxing slightly makes shifts more positive and enjoyable. Changing gear in the 930 LE needs to be an embodiment of the car's character: controlled mechanical aggression.

Away from the on-boost setting of the country roads, the LE reverts back to its perfectly poised persona as we enter town. Yes, the clutch is heavy, and the steering wheel proving vital for low-speed manoeuvring, but the car is sedate. Just like the new 911 Turbo, the 930 LE can seamlessly switch between comfort and aggression, and often offers both simultaneously.

The 930 LE was not a money spinning run-out produced by Porsche's bean-counters; it was an engineering marvel that feels solid enough to be marketed on the forecourts of 2014. As David perfectly sums up, "It's got that classic Porsche 'hewn from rock' feel to it." The idiosyncratic turbo lag may be a thing of the past, but the 930 LE's overarching modernity may just make this the perfect everyday classic. **911**

“The 930 LE can  
seamlessly switch between  
comfort and aggression”







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# A HISTORY OF TARGA

As the original Targa top returns on the 991, Total 911 looks at the history of this perennial and unusual open-top favourite

Written by **Kieron Fennelly**  
Photography by **Porsche AG**





These early pictures show the first Targas on the Zuffenhausen production line, left, before being put through a performance test on the dynamometer



For the 1968 model year, the removable plastic rear window, left, was replaced with a fixed glass rear window as standard

**W**hen the 901 was launched, there were no plans for a convertible version. In 1962, Porsche had decided that the additional cost of tooling for an open car could not be justified when all its resources were committed to the introduction of only its second ever new model. In any case, sales of the 356 convertible had fallen to below 20 per cent of total 356 output. However, within a few years, Zuffenhausen was already assessing prototype open 911s assembled by Karmann: the company's sales chief Harald Wagner had continued to campaign for an open model, especially in light of the new Mercedes-Benz 230SL, the so-called Pagoda model, presented at Geneva in 1963 and aimed at the same segment as the 356 convertible.

It would not be until 1967 that an open 911 reached the market. Intriguingly, instead of a conventional fold-down hood, the new model featured a broad hoop with a removable roof panel. The more upright rear window was also a detachable, zip-into-place affair made of the same translucent plastic as window panels in a folding

“The Targa started life cautiously, the factory producing seven cars a day against 50 Coupes, but by 1970, production had reached 40 per cent of output”

hood so the car could be converted to (almost) fully top down. The design of this new model is popularly attributed to Butzi Porsche, but recent research by Porsche historian Wolfgang Blau suggests that in reality, Ferry Porsche's eldest son had as little to do with the Targa design as it now seems he had with the final shape of the 901. Interviews with Porsche engineers involved at the time reveal that the two main figures behind the Targa design were Wolfgang Eyb, who headed 901 body construction, and Gerhard Schröder, a convertible specialist who had earned his spurs working on the Karmann Ghia ten years earlier.

When the new-fangled Porsche Targa reached the marketplace, the return of open-air motoring

was welcomed by enthusiasts, but why had Zuffenhausen not made a conventional Cabriolet? Eyb told Blau that unlike the 356, which was conceived as a roadster, the 901 was built as a Coupe, and structurally it could not be adapted to a convertible without critical loss of rigidity. The breakage of the chassis during testing of the open Karmann prototypes proved his point, so for the body to retain its integrity, a substantial brace-like roll over bar, which was styled into that unmistakable hoop, was devised. The management found the design proposals fundamentally unattractive, but Wagner was keen to get an open 911 for the US, and lacking an alternative route, Porsche went ahead with this 'hoop' model. ➔



Porsche advertising, below left, ensured Targa sales gained momentum through to the impact-bumper generation 911, below middle, with production continuing even after the Cabriolet was introduced in 1983



These early Targa pictures, above and below, demonstrate the model's open-air design, save for the rollover bar



## “For Porsche to engineer the latest 991 for such a retro design feature demonstrates if nothing else a huge self-confidence”

The name ‘Targa’ (after Porsche’s many victories in Sicily) was suggested by a Porsche dealer, keen to give the new model a distinct identity, which with its wide ‘roll bar’ finished in brushed steel it certainly had. Porsche would find that more by luck than judgement, it had created an extraordinarily enduring fashion item that spawned such imitators as the Fiat XI9 and the Ferrari 308 GTS. These could not, however, use ‘Targa’ in their names, as Porsche had already registered the title.

The plastic rear window proved unsatisfactory: it was leaky and difficult to refit because it contracted at temperatures much below 15°C. By 1968, Porsche had replaced it – initially as an option – with a neater-looking fixed glass rear window, which also contributed to chassis rigidity. The Targa retailed

at around ten per cent over the price of the Coupe, a differentiation Porsche largely maintained on subsequent generations of Targa models. Under a Vorstand that was still dubious, the Targa started life cautiously, the factory producing seven cars a day against 50 Coupes. But by 1970, Targa production had reached 40 per cent of output, with the 912 US variant proving particularly popular. Clearly, this approach to fresh air motoring was a hit, and the basic design would remain unchanged during the next two decades, fitted also on the 914/6. To the surprise of some, the Targa would survive the introduction of the first Cabriolet 911, the 3.2, in 1983. The convertible 911 had become possible thanks to improved construction techniques: Gerhard Schröder was able to devise a

soft-top linkage with spot-welded sheet metal parts, which overcame most of the rigidity problems. The first conventionally ‘roofless’ Porsche since 1965 was received with great enthusiasm, and it was clear that this new variant would not be a passing phase. Indeed, in 2014 Porsche celebrates 30 years of continuous production of a 911 convertible.

Nevertheless, the company would retain the Targa option, as it already had a defined market segment, even if this was now narrowed by the arrival of the 911 Cabrio. The slump that hit the motor industry in the late Eighties led many to believe that the Targa option would not reappear in the new 964 range. Despite declining 964 sales from 1991, a 964 Targa did reach the showrooms, although relatively few were built: 437 in 1992 and only 287 in 1993 as total 964 production came to a stop. This also marked the end of the removable panel design after a remarkable 27-year life.

High hopes were attached to the next 911, the 993, as the success or otherwise of this model would have a major bearing on the independent future of Porsche. The acclaim afforded to this smoothed

While sales of 964 Targas, bottom, were dwindling, by the start of the 90s, the all-new sliding glass roof design of the 993 Targa proved popular. The arrival of the 996 Targa, right, allowed for the rear window to open via two gas pressure springs, giving access to the shelf behind the rear seats



and more refined 911, in addition to the applause that greeted the 1993 Boxster concept, were signs that recovery was on the way. So when the new Targa appeared, it too bore a new design: gone was the notchback look, replaced by a roofline that was similar to the Coupe's, yet with far slimmer 'C' pillars. Reprising a design that was originally intended for the 924, but for technical reasons was never implemented, Porsche produced a model with a striking glass roof. This retracted inside the rear window to create an aperture equivalent to removing the old Targa's roof panel, all achieved at the touch of a button instead of having to stop the car, lift out the roof panel and stow it. To offset the effect of the sun through the glass, the new system also incorporated an electrically operated blind.

It was an extraordinarily elegant feature, and it suddenly made the 911 Targa seem like an altogether more sophisticated model. Porsche enhanced the subtle visual difference with the 911 Coupe by endowing the Targa with its own five-spoke split rim wheels. Of course, the 993 Targa was not without compromise: any re-engineering



## Sliding top vs removable panel

Owning a 'panel' Targa has much of the charm of running a traditional convertible in that if it starts raining, you have to stop and put the roof up. On the other hand, open-top cars are fun in the right circumstances, and the Targa – with its glass rear window blocking draughts very effectively – represents an entertaining way to enjoy open-air motoring, with the bonus of a rare and stylish 911.

The 993-on versions with their sliding glass are much more urbane grand tourers. The pretty 993 Targa has shortcomings – it is always advisable to ensure the car is on level ground before operating the mechanism, which otherwise can jam. If your heart is set on a glass top Targa, the 996 has a better engineered roof, will probably cost less to buy and run, and be a more usable if less exclusive bet. The slight weight penalty and higher centre of gravity makes these 911s marginally less sporty, but this is unlikely to affect the thinking of typical buyers, whose priority will be touring rather than ultimate handling and performance. The widebody 997 Targa could well become a sought-after model for its looks alone.



997 Targas retained the sliding glass roof, and were now only available in widebody Carrera 4 form

of a 30-year-old design was bound to involve some compromise, and modifying the Coupe's shell to accept the Targa roof mechanism inevitably added about 30 kilograms, and took away some chassis rigidity. Nevertheless, despite a life of only two years, over 7,000 993 Targas (roughly ten per cent of total 993 production) found owners, so when the 996 range was launched, a Targa version was a running certainty.

In fact, it wasn't until 2002 and the start of the so-called 'facelift' range before the Targa did appear. Naturally enough, it followed the same principles as the 993, but starting with an entirely new bodyshell, Porsche had planned for the Targa modifications in advance rather than graft them on as it had with the 993. The result was a far more rigid structure. The shell of the 996 was already much stiffer than the 993's, and in the manufacturing process the Targa mechanism was inserted through the windscreen aperture and lifted into place. Because the effect of speed is to create suction above the car, this would have the effect of pulling the Targa panels upwards, thereby enhancing the effectiveness of their seals when the car was underway. The upshot was much greater refinement, even if the Targa model now weighed 80 kilograms more than the Coupe. This was due in part to the addition of steel strengthening bars welded to the A, B and C pillars on each side along the door line to compensate for the lack of load-bearing roof panel. The Targa's damping was also ten per cent stiffer than the Coupe's to accommodate the greater mass. However, the greater integrity and leak-proof

nature of its structure finally allowed Porsche to introduce a feature it had always wanted on the 911: an opening rear window. The 996 Targa would take refined touring to an altogether higher level.

For the 997 Targa, Porsche added a new dimension: it would be available only in four-wheel drive, and therefore widebody form. In a perceptive marketing move, Porsche recognised that the popularity of the widebody 996S variant could be exploited profitably by combining those irresistible Turbo wings with its other predominantly 'lifestyle' model, the Targa. The Gen2 997 Targa would receive the revised rear light clusters, as well as the distinguishing full-width rear reflector. In 2011, the 997 gave way to the 991. While the 997 was a – admittedly thorough – reskin of the 996, the 991 is an entirely new shell, necessary to accommodate engineering improvements like the wider front track and crash norms, which demand the ability to absorb impacts from more angles. The 991 has not been without exciting surprises either, whether the seven-speed manual gearbox or the extraordinary rear steering feature of the Turbo and GT3. But Porsche seems to have reserved the biggest surprise until now: the new 991 Targa reverts to the original steel rollover bar system. It is true that there has been a wave of nostalgia about the old design, but for Porsche to engineer the latest 991 for such a retro design feature demonstrates, if nothing else, huge self-confidence. It is, however, a fascinating development, and **Total 911** looks forward to seeing in the flesh just how Porsche has modernised its original Targa concept. **911**



The 997 Targa would also benefit from the 2nd-generation facelift, below



## Turbo Targa

With fewer sporting pretensions than other 911s, there were relatively few special versions of the weighty Targa model. However, in the Eighties, Porsche extended the widebody shell to both the 3.2 Cabrio and Targa, and for a couple of years offered the 3.3-litre 930 Turbo with a Targa roof. Like the flatnose Turbo and run-out Limited Edition variants, the blown Targa is rare and very much a collector's car – just 298 Turbo Targas were built, 54 of which were right-hand drive. In line with their Coupe counterparts, the interiors of the Turbo Targa were lavished in leather, while a wide body and three neat external gills on either side of the roll bar provided the aesthetic difference over Carrera Targas.





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# Peter Falk

The bespectacled Peter Falk was the quiet influence behind much of the 911's development from 901 right up to water cooling. Total 911 met him at the Porsche Museum in Zuffenhausen

Written by **Kieron Fennelly**  
Photography by **Kieron Fennelly** and **Porsche AG**



Porsche enthusiasts around the world revere Peter Falk as the engineer whose contributions over 30 years helped to make the 911 the incomparable sports car it has always been. He is one of those seminal Porsche figures

who seems to have been around forever, and his regular attendance at ceremonial and enthusiast organised functions has rather obscured the fact that he retired from Porsche 22 years ago! It was generous but entirely typical of the man that on a dark day early in December, he readily assented to come to the Museum Archive to meet **Total 911**.

#### **Peter Falk, when did you join Porsche?**

I came to Zuffenhausen in 1959.

#### **Was that straight from university?**

No. In fact, my first job was at Mercedes-Benz in Stuttgart.

**You left an engineering career with one of the world's most prestigious automobile manufacturers to join the maker of a VW-derived sports car on the other side of town?**

## ESSENTIAL FACTS

- Falk was born in Athens to an archeologist father. The family returned to Germany in 1938.
- Like his boss of 20 years, Helmuth Bott, he began at Daimler-Benz.
- At Piëch's behest, Falk's department produced the incredible 800kg 911R.
- His traditional trilby hat became a feature of the Porsche pits in the Seventies and Eighties.
- Falk oversaw Porsche's Le Mans dominance in the mid-Eighties as works team manager.
- His 993 paper ensured that 'Wendigkeit' (agility, nimbleness) would include feel and styling too, and would become a key feature of all future 911s.

[Smiles] I loved sports cars, and Mercedes cars were too big and heavy and didn't inspire me. For an enthusiast, the appeal of the Porsche 356 Coupe was obvious, and Porsche had always raced what it built. That's what I liked: the purity and simplicity of it.

#### **What was your first job at Zuffenhausen?**

I was already 26, and I'd had some practical experience, so they put me straight into the experimental department. In the beginning I reported to Helmut Rombold, and later Helmuth Bott. As I

remember, one of my first tasks was to install air conditioning in the 356, which was quite a challenge. But work was certainly varied: in those days it was still a very small company, with production and competition cars built alongside each other, and I could equally be working on the RSKs.

#### **When did you first drive a 901?**

I suppose that would have been late 1961 or 1962.

#### **Had your role changed by then?**

I was doing a lot of development driving: the 901 (911) was scheduled for launch at Frankfurt in September 1963, and we did a lot of kilometres at the Nürburgring that summer to get it ready.

#### **The early 911's handling was a challenge, wasn't it?**

[Smiles] Yes, at the limit, you never knew whether the front tyres or the rear were going to lose their grip first!

#### **It's said you were a very skilled driver.**

Well, let's say I liked that job, which was just as well, because life at Porsche involved a huge amount of road testing, and I had to do big distances. When Piëch took over the Technical department, ↻



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Falk with Turbo specialist Valentin Schaeffer (left) and Norbert Singer (right) at Le Mans in 1985



The 959 undergoes a wheel change, overseen by Falk, at the 1986 Paris-Dakar rally

“Porsche had always raced what it built. That’s what I liked: the purity and simplicity of it all”



everything moved up a gear, and we had the 906 to get ready for competition. I remember 24-hour track tests at Ehra-Lessien (VW’s vast proving ground at Wolfsburg), when an hour at the wheel was all you could tolerate before your hands went numb in the minus temperatures. At least the 911s had heaters!

**You drove a standard 911 to fifth place in the 1965 Monte Carlo Rally, the 911’s first competitive outing...**

We wanted to establish the 911’s sporting credentials and, as you say, it was a normal production car, but Herbert Linge did the special stages. I only drove the transit sections.

**You are also known as the Porsche works team’s race manager.**

When Ferdinand Piëch became motorsport chief, he also took over the experimental department. He wanted to win Le Mans outright. He was extremely energetic, and everything was directed to this goal. He started with a new space frame racer – the 906 – and this was the first of a series of race cars which led to the 917. Although the 917 was a prototype, we still had to build 25 to satisfy the FIA. We built them very fast, and I remember the day in March 1969 with all 25 917s aligned in a perfect row at Zuffenhausen for the FIA inspectors’ approval – well, not all the cars were strictly race ready, but they were all complete and driveable, even if some had 911 brakes and other production components. It’s a big car, the 917, and

was especially so then, but Piëch said openly to the FIA people, “Go ahead – drive one, any one.” None of them accepted his offer!

**Porsche was known for its rear-engined, air-cooled design, yet in the Seventies it struck off in a completely different direction with a conventional front-engined sports car, the 928, which was meant to replace the 911. How did this come about?**

It was Fuhrmann (Porsche’s CEO from 1972-80) who pushed the 928. In the early Seventies we were really worried that the 911 would not meet forthcoming federal emissions and safety legislation. Exactly what the Americans would and would not allow was not clear, but it was a disturbing development. I respected Fuhrmann: he was a fine engineer, and it was he who designed the four-cam flat four that won so many races for Porsche. But in the late Seventies, when he wanted to stop 911 development and go away entirely from the basic 911 design, it was a direction that most of us couldn’t imagine easily. The 911 was the image of Porsche. We worked on the 928 because we had to, but our hearts were always with the 911.

**Nevertheless, you were personally doing test driving on the 928 programme.**

Yes. We went to Africa and did a lot of driving in Algerian desert – 10,000 kilometre tests! Empty roads and no speed limits: I loved it there. Even then we had to disguise the cars, though: we shoehorned

an Opel Diplomat body to clothe the 928 engine and chassis, and later we used an Audi 100 Coupe.

**But the 911 resurfaced shortly afterwards.**

Fuhrmann left the company, and Peter Schutz came and restarted 911 development. By then we could see that the US wasn’t going to ban the 911 design, and customer demand for the ‘Elfer’ was undiminished.

**What was your opinion of Peter Schutz?**

He was a salesman; he just wanted to sell cars. He got the 911 going again, and he made one brilliant decision: to return Le Mans.

**How did that come about?**

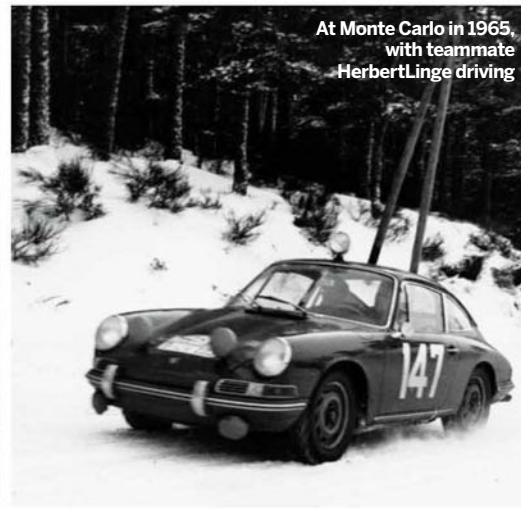
When he arrived at Porsche, he went to see the competition department, and they showed him the 924 GTs they were preparing for Le Mans that Fuhrmann had ordered. Schutz asked if they would win, and when the engineers said a class victory was the best they could hope for, he said Porsche wouldn’t go unless it would win. We thought about what else we could do, and I suggested we could use the 936 from 1977 with the 2.7-litre engine we had developed for the North American CART series. We’d put a huge amount of development into this engine, but US rule changes rendered it ineligible. We converted a pair of engines from methanol to petrol, and installed them in two 936 chassis. Effectively, we made a Le Mans winner in three months, as the Jacky Ickx/Derek Bell car finished first. ➔



At Le Mans in 1986 with  
Walter Naeher



At Monte Carlo in 1965,  
with teammate  
Herbert Linge driving



Falk, seen  
here with his  
famous trilby



**That was one of Porsche's most significant Le Mans wins.**

Yes, because it opened the way for us in Europe in the new Group C, and we developed the 956 (which became the 962), and that was even more successful than the 917, because one basic design had almost a ten-year-winning career.

**You were team manager for most of this period. How did you keep winning?**

Unlike the 917, the 956/962 wasn't much quicker than the competition, but it was more reliable. We picked mature drivers like Ickx, Jochen Mass and Bell who you could depend on to go fast, but also conserve the car. We had two car teams, one managed by Klaus Bischof, and the other by Norbert Singer. I set the overall strategy, but I let them decide how they set the cars up so they could run what best suited their driver combinations.

**Bott had promoted you to head of the competitions department in 1981.**

Yes. I got a new office too, over at the other end of the Weissach track near Flacht. It was the old tank proving ground, and all we had was a few huts! It became known as the Falklands!

**Porsche won the Paris-Dakar in 1984 and '86. What was the appeal of the desert rally?**

It was to develop the 911 4x4, the future 959, which Porsche wanted to compete with the Audi Quattro,

which had done a lot for Audi's sporting image. We needed get into competition, and by going for a desert rally there were very few restrictions, and above all we wouldn't have to build the homologation minimum of 200 cars. But we wanted to show the 4x4 959 could be effective as a track car too, which was why we also built the Typ 961 for Le Mans (which finished seventh in the 1986 24 Hours).

**How did you feel about Porsche's first four-door car, the stillborn 989?**

It was a very good car. We did much of the proving with the engine, gearbox and chassis installed in a Mercedes saloon, and development went well. People also reacted favourably to the 989's proposed shape. But it just kept getting more expensive. Ulrich Bez (technical director 1988-91) was pushing it without quite understanding all the cost implications.

**And the Panamera?**

The Panamera is a fine car, but it isn't a Porsche in the way a 911 is. Of course, the image of the 911 is not as strong now – Porsche makes a wider range of models – but it's still there and it's important. For me, the Panamera is too much of a departure from this tradition.

**You went to Le Mans 30 times for Porsche. Now that a works team is back after a 16-year gap, how do you rate its chances?**

Of course, I want Porsche to win, but it's difficult to

win with an absolutely new car. We did it with the 956, but things were different then. There is no criticism of the technical side: they've had 300 people working full time on this project. That's been done very well. I just don't have a good feeling about the way Porsche goes about it now, and I'm not the only one. The whole thing lacks modesty.

**What was the thinking behind your famous Lastenheft, the technical brief you produced for the 993?**

There were several things we wanted to change about the 964. I suggested that the new 911 should be light, tactile and agile: essentially, I wanted to restore the purity of the relationship between driver and machine, the difference between a Porsche and other cars, which I believed we were in danger of losing. For example, we had wanted to do something about the 911's torsion bar rear axle, and the trailing arm setup of the 964 transmitted noise and spoiled refinement. So for the 993 we devised a variation of the 'Weissach axle', a multi-link rear suspension (and still the basis of 911s today) which improved the 911 without compromising its sporting handling.

**Le Mans is a 15-hour drive from Stuttgart: is it true that you still took the routes nationales, even after the French autoroute network opened in the Seventies?**

Yes, that's true. I'm a traditionalist. I still drove those old roads; they are what a 911 is for! **911**



Möbius, here on right of the picture, and Tony Lapine, director of Porsche Styling from 1970-88, second from left.



Most famous for his 928 design, Möbius also styled the whaletail spoiler on the first Turbo, plus the '73 RS ducktail





# 1939-2013

# WOLFGANG MÖBIUS

Former Porsche designer Wolfgang Möbius is perhaps most associated with the 928, but in a 30-year career at the Weissach Design Centre, Möbius was also a major influence on the iconic styling of several generations of 911, including the whaletail spoiler on the first Turbo 40 years ago

Written by **Kieron Fennelly** Photography by **Porsche AG**

**W**olfgang Möbius joined Porsche from Opel, recruited by Tony Lapine, who had known him since they both worked under GM design supremo Bill Mitchell at Chevrolet in Detroit. When Lapine was appointed design director at Porsche, one of his first recruits was Möbius. A reserved individual whose dour East German sense of commitment did not always endear him to colleagues, the hard-working Möbius was nonetheless both original and highly talented: as studio director, he would effectively become Lapine's right-hand man.

One of his first designs was to take the famous 'ducktail' that the engineering department devised for the Carrera 2.7-litre RS and style it. When it was banned by the German highway authority for being pedestrian-unfriendly, Möbius styled the 'whaletail' with its soft edges, an appendage that became another Porsche icon. As well as his unequivocal imprint on the first Turbo, the G series 911 of 1974 – the so-called impact bumper model – was also penned by Möbius, who melded the 5mph fenders that were demanded by new federal regulations with the 911's body. His magnum opus, though, is the 928, an extraordinarily modern concept that won the 1977 Car of the Year Award – the only sports car to do so.

Proud of this admirably functional yet superbly elegant design, Möbius was reportedly upset when

in the Eighties, external brake vents and a deeper front spoiler were added. Like most of his colleagues – though not Lapine – he was deeply dismayed at Dr Fuhrmann's plan to end 911 production, and leapt at the opportunity when Peter Schutz assumed command to redesign the 911 under project 964. He and Dick Soderberg rose to the challenge of recasting the Porsche icon – a difficult and frustrating brief, as the 'Vorstand' had decreed that the designers were not to change anything above the axle line.

In the late Eighties and early Nineties, a new generation of designers arrived at Weissach, and Möbius's ideas were called upon less and less. He was nevertheless one of six stylists to submit designs for the forthcoming Boxster, and would be one of the main contributors to the 986's coachwork. He was always seen as an exterior – rather than an interior – stylist, and it was the much-younger Matthias Kulla who was mainly responsible for the Boxster's cabin. Möbius's concept was one of four considered for the 996, but in the end it was Pinky Lai's design that Porsche selected.

Möbius retired in 2000 and lived with his wife, Dagmar, in the town of Schwieberdingen, located between Weissach and Stuttgart. He and Lapine were guests of honour at the 25th anniversary celebration of the 928 in 2002, but otherwise his public appearances were rare. He succumbed to cancer after a long battle that saw him hospitalised for his last few months, passing away at the age of 74 at the end of 2013. **911**

## 993 CARRERA



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



16-inch alloys came as standard, although many customers chose to upgrade

“

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**

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



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


**A**s 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



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**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

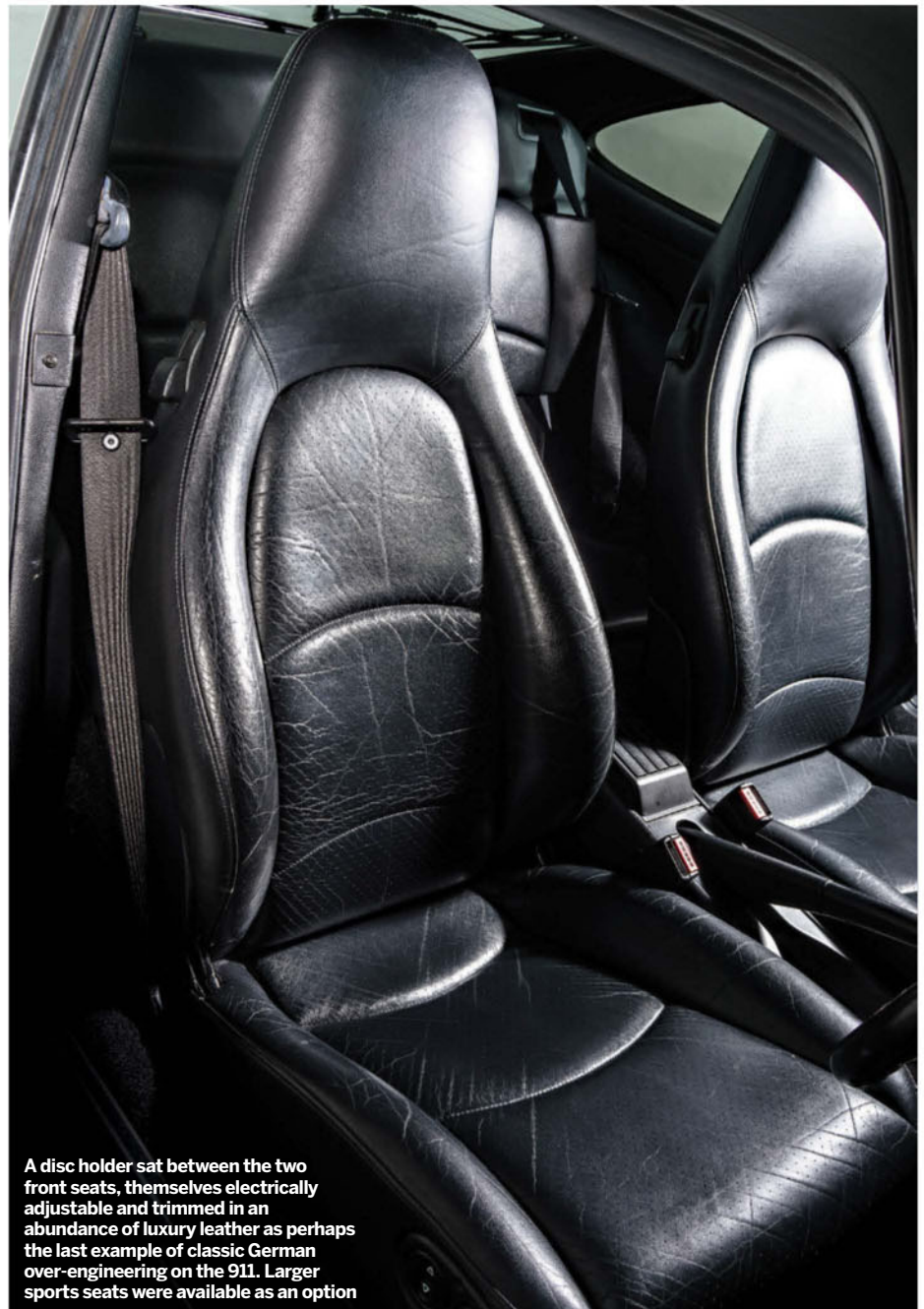


## 993 TARGA

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 crack 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.

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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)

### Thanks

Thanks to Hendon Way Motors for the use of their 993 Carrera, which is currently for sale. Details of the car and all other stock can be found by visiting the website [www.hendonwaymotors.co.uk](http://www.hendonwaymotors.co.uk) or calling 020 8202 8011.

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"

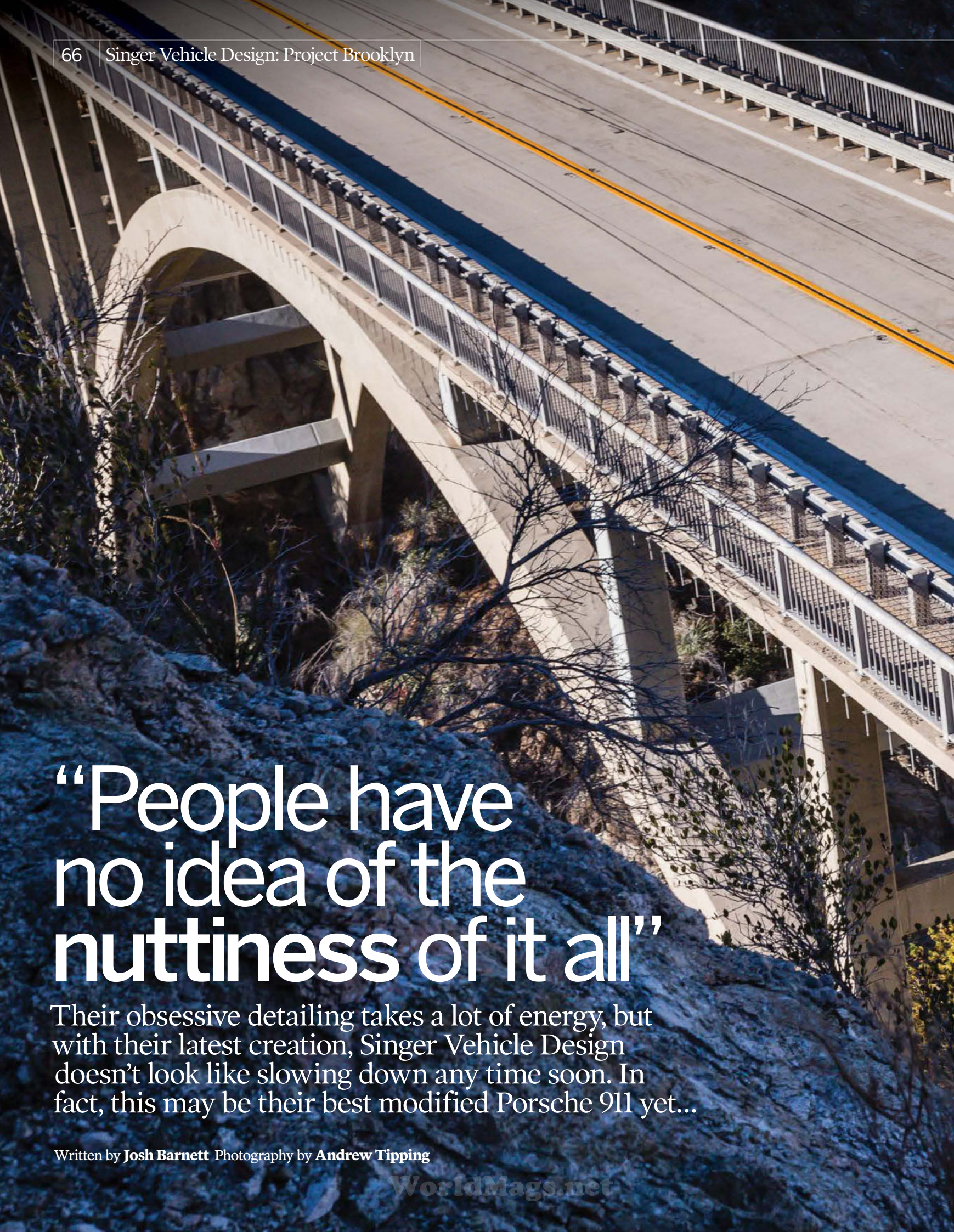
"My 993 was gorgeous: so moulded and sleek, and that rear end was a masterpiece to look at. The interior was something that really did it for me – with all the mod cons and good heaters, it was a godsend compared to the heating units in my older 911 SC.

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**





“People have  
no idea of the  
nuttness of it all”

Their obsessive detailing takes a lot of energy, but with their latest creation, Singer Vehicle Design doesn't look like slowing down any time soon. In fact, this may be their best modified Porsche 911 yet...

Written by **Josh Barnett** Photography by **Andrew Tipping**





**R**ob Dickinson, the man behind Singer Vehicle Design, can't remember if he has ever bought something that exceeded his expectations. "I'm always disappointed," he explains. "I wanted to make our cars good enough so that they didn't disappoint, but the expectations around what we do now are huge. We're trying to remain consistent, and that brings its own challenges."

Formed in 2009, Singer's rise to prominence on both the Porsche modifying scene and global automotive stage has been meteoric, especially as, by Rob's own admission, the company's volumes are "microscopic". In fact, the 911 before you is just the ninth reimagining – that's the official terminology – to roll out of the Sun Valley workshop, located just under 30 minutes north-west of downtown Los Angeles. And Rob can rest assured, as project number nine certainly doesn't disappoint. It is just as incredible as its predecessors, retaining his perfectionism.

Of course, Singer's modified vehicles aren't referred to by their project number. Named after

the car's destination, the company's naming system is both utilitarian and poetic, reflecting the personal nature of each project while providing a simple means of referring to each individual build. "Well, what is the name of this car then?" I can hear you wondering. Brooklyn. Singer's ninth build is the second to head to the City That Never Sleeps and, with its incredible attention to detail, it's sure to turn heads in the metropolitan jungle of New York.

'Brooklyn' started as a humble 1990 Porsche 964 Carrera Coupe, "waiting for its second act" according to Rob. However, the end result is as far removed from this Zuffenhausen production model as possible, without losing its character. Despite the money that goes into each car, Singer will never modify a car that loses that essence; it is at the heart of the company and its founding father, Dickinson.

"I've been obsessed with the 911 since I was five. I was introduced to it on an autoroute in the south of France in 1970 by my father," Rob reminisces. "We were in our VW Beetle on holiday, he pointed out this 911, and I've been smitten ever since." I'm certain that, should any five-year olds be lucky enough to see a Porsche 911 reimagined by Singer, they too would fall in love. It's certainly true of 'Brooklyn', a car designed to be arresting on first sight thanks to its incredible colour scheme.

Started in April 2013, Brooklyn's carbon fibre body shell is finished in a shade of green first introduced to Rob by famous automotive designer (and R Gruppe co-founder) Freeman Thomas, designer of the Audi TT and new VW Beetle. 'Linden green' was also the colour of the very first Ford GT40, meaning that the shade comes with both a star-studded recommendation and history.

Combined with the purple painted Fuchs wheels, the latest Singer creation is eye-catching, possibly

more so than their previous efforts. "We call it the 'hippy car' here," says Rob, "because it reminds us of the [green and purple Martini-liveried] 917s of the early Seventies." Those were similarly popular, so much so that after one longtail example raced at the 1970 24 Hours of Le Mans, the organisers of that year's Six Hours of Watkins Glen asked for a psychedelic painted 917 to appear at their race too.

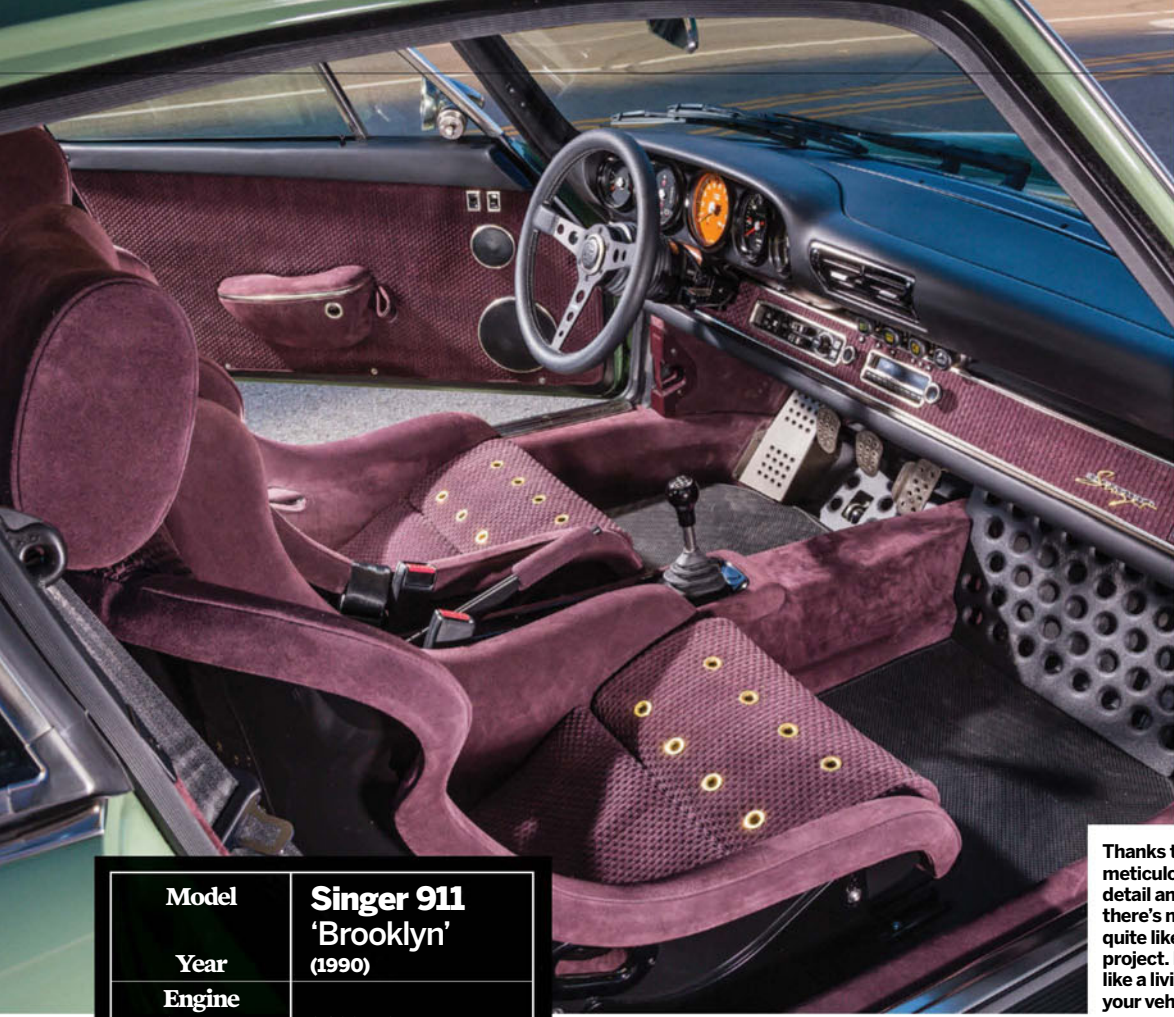
Exterior detailing inspired by 'Brown Bomber' (as seen in issue 95) includes the bullet mirrors and fuel cap in the centre of the bonnet. The latter concept has been refined from its use on Rob's daily driver, with both the fuel cap and external oil filler cap now featuring engraved markings to let the owner know which fluid goes where. It sounds trivial, but it's that fastidious detailing that propelled Singer Vehicle Design into the consciousness of 911 enthusiasts around the world.

It also has a truly practical purpose. Introduced on the E-series 911s, the external oil filler was removed after a year in production. It transpired that some people had mistaken it for the fuel cap, with disastrous consequences for their engines.

While Singer's carbon fibre bodies – produced by the Aria Group – are a thing of beauty, inspired by the flowing lines of the classic-shelled 911s of the Sixties and Seventies, it is the interior of a Singer 911 that is potentially more impressive, owing to the meticulous level of work involved.

Stepping inside Brooklyn, it is clear that the level of craftsmanship involved in producing this car's interior was immense. The purple colour scheme is continued with the extensive use of purple suede. While this sounds questionable, as Rob explains, "the execution and result is actually pretty special." Normally, Singer's interiors make use of the finest leather (sometimes with suede in the woven





Thanks to their meticulous eye for detail and finesse, there's nothing quite like a Singer project. It's almost like a living room in your vehicle...

<b>Model</b>	<b>Singer 911 'Brooklyn' (1990)</b>
<b>Year</b>	
<b>Engine Capacity</b>	3,800cc Cosworth-built flat-six
<b>Maximum power</b>	360bhp
<b>Maximum torque</b>	380Nm
<b>Transmission</b>	Six-speed close ratio
<b>Suspension</b>	
<b>Front</b>	993 RS setup with custom Öhlins dampers
<b>Rear</b>	964 RS setup with custom Öhlins dampers
<b>Wheels &amp; tyres</b>	
<b>Front</b>	8.5x17-inch Fuchs; 225/45 VR17 Michelin PS2 tyres
<b>Rear</b>	10.5x17-inch Fuchs; 265/40VR17 Michelin PS2 tyres
<b>Brakes</b>	
<b>Front</b>	Drilled and vented discs with 993 Turbo 'Big Red' calipers
<b>Rear</b>	Drilled and vented discs with 993 Turbo 'Big Red' calipers
<b>Dimensions</b>	
<b>Weight</b>	1,200kg
<b>Performance</b>	
<b>0-62mph</b>	4.0 secs
<b>Top speed</b>	160mph+

“Singer’s rise to prominence has been meteoric”





The art of Singer doesn't just lie in its restyling of the Porsche 911. The Cosworth-built flat six demonstrates a mission to extend performance, too.



## California hot rods

Singer Vehicle Design, R Gruppe, Magnus Walker. These are three big names in the world of Porsche 911 hot rods, and they all have one thing in common: California. For decades, the Golden State has been the centre of the 911 hot rod universe, giving birth to a wealth of incredible modified Porsches. But why is the west coast of America home to such a vibrant hot rodding culture?

Rob Dickinson partly attributes Singer's success to their California locale. "This car is definitely a product of California. I don't think I could have thought this was possible anywhere else in the world, certainly not England.

"I think everything that drew me here as an individual ten years ago had a lot (unknowingly) to do with this project with Singer Vehicle Design. That clichéd but very true 'can do' spirit – that anything is possible here – is very important to me. I'm surrounded by positive vibes; they're more than abundant in California."

It's surely more than just a state of mind, though? Rob agrees. "Most importantly, California's access to world-class engineering and prototyping is vital to support the hot rodding community. Major car manufacturers having large design studios in southern California has bred a huge network of artisans within a 40-mile radius of where I'm sitting."

And, of course, there's the weather. "We could potentially have done this in Michigan," Rob explains. "But not with the bad weather there. The idea that you can enjoy car culture all year round in California helps."

I'm sure this is something Total 911s own resident Urban Outlaw would have to agree with, too.

leatherweave). However, Brooklyn takes its use to another level; everything not wrapped in black leather is lavished with purple suede.

"We love suede," enthuses Rob. "We're not necessarily huge fans of Alcantara, which is fake suede, though." By opting for the real deal, project number nine's interior is a truly regal environment, worthy of such an opulent car.

The "very, very cool customer knew what the car was going to look like as he let us loose on it," Rob confirms, almost sensing my shock at the colour choices. "He knew what he was going to get, and that was exactly what he wanted. At that point [the start of the build], it's just a case of how individualised and how personalised the client wants to get with the car."

Singer's carbon fibre race seats, taken from the company's moulds and tooling, are tasked with enveloping the driver and passenger. They provide excellent lateral support, especially in the shoulders, without compromising long-term comfort. Based on the early Recaro seats from the STs and RSs of the Sixties and Seventies, they provide balance between a dedicated track seat and one that looks period-correct.

Like all the cars to leave the workshop, under the cloaking of the body and interior Brooklyn's mechanicals are no less fantastic, nor has any less expertise been involved in their creation, despite Rob insisting he is "not an engineer."

"My background is from design; an artistic, creative background. I don't know much about engines. But the ambition we had at the beginning of this adventure [the formation of Singer] was that we would make our car such an inviting proposition that we would be able to attract brilliant engineers to help us with the areas of the car that we didn't have expertise in. We've managed to do that," explains Rob proudly, and rightly so.

The names of those involved with Singer's reimagined 911s reads like a who's who of industry icons. At the heart of Brooklyn is the top-of-the-range 3.8-litre flat six, co-developed and built by Cosworth's North American arm.

While the powerplant, with Cosworth's motorsport heritage, could have been a highly tuned race engine, that direction "doesn't really work for these cars," according to Dickinson. "We thought we could develop something that would be more fine-tuned to the role these cars were going to have." While the rear roll cage suggests a 911 for the track, most of Singer's cars are unlikely to see extensive circuit use. Therefore, the engine was prepared to provide the "thrilling high-end horsepower and high-revving characteristics of an early 911 race engine combined with the punchy, low-end torque of a GT3 water-cooled engine."

Mated to a close ratio six-speed transmission and limited-slip differential, Brooklyn is capable of 0-62mph in four seconds. Stopping is the job of the

“The amount of work that goes into a Porsche 911 by Singer is truly staggering”



'Big Red' Brembo brake system, taken from a 993 Turbo. It's possibly over the top for a 911 that weighs 1,200 kilograms, but isn't that the point of a Singer 911 – to create the ultimate specification sports car?

Road holding is taken care of by the custom Öhlins TTX dampers which, like the Cosworth engine, were fine-tuned in collaboration with Öhlins' own US engineers. With 993 RS front suspension and 964 RS units on the rear, Singer's suspension setup was developed with the help of journalist Dickie Meaden, a “firm friend and fantastic ‘development’ driver.” At Sears Point (previously Infineon Raceway), the recreated 964s are put through their paces on the undulating circuit and the mountain roads that surround it.

With custom valving and spring rates, the result is a package that is popular with Singer's clientele. “It just makes the car feel extremely rounded and capable in a very effortless way,” explains Rob.

The amount of work – and standard of craftsmanship – that goes into a Porsche 911 reimagined by Singer is truly staggering. On average, 4,500 man hours are needed to turn a Porsche 964 into something worthy of the company's name. Combined with the host of exotic materials used (titanium engine components and structural carbon fibre to name just two), Singer's work doesn't come cheap. The cars start at around \$350,000 (£213,000), with a couple of particularly extravagant builds nudging \$500,000 (£305,000).

Brooklyn's high level of spec means that it is most likely to lean towards the ‘über expensive’ end of that spectrum. However, 2.7-litre Carrera RSs have been selling for similar money, with over 1,500 examples of that iconic 911 having been built. With the number of Singer projects only just nudging double figures, exclusivity is guaranteed.

Furthermore, while there are other companies around the world producing bespoke rebuilds of old 911s, there are none that truly match Singer's efforts.

Rob explains: “There are bespoke builders in England that could be seen to be doing something similar, like Paul Stephens. Some people ask me, ‘How are you different?’ The only way I can look at it is that we obsessed very genuinely and sincerely about every corner of the car. I don't know of any other company that deals with modified cars that produces the kind of services we do – that stresses as much about the leather colours and textures as we do about the weight of the connecting rods.”

Such a focus on the aesthetic would appear to be at odds with the functionality needed for a car to operate as a simple mode of transport. However, thanks to the almost prohibitively high cost, Singer are able to produce an end product that really doesn't disappoint. A 911 reimagined by Singer is like having your cake and eating it.

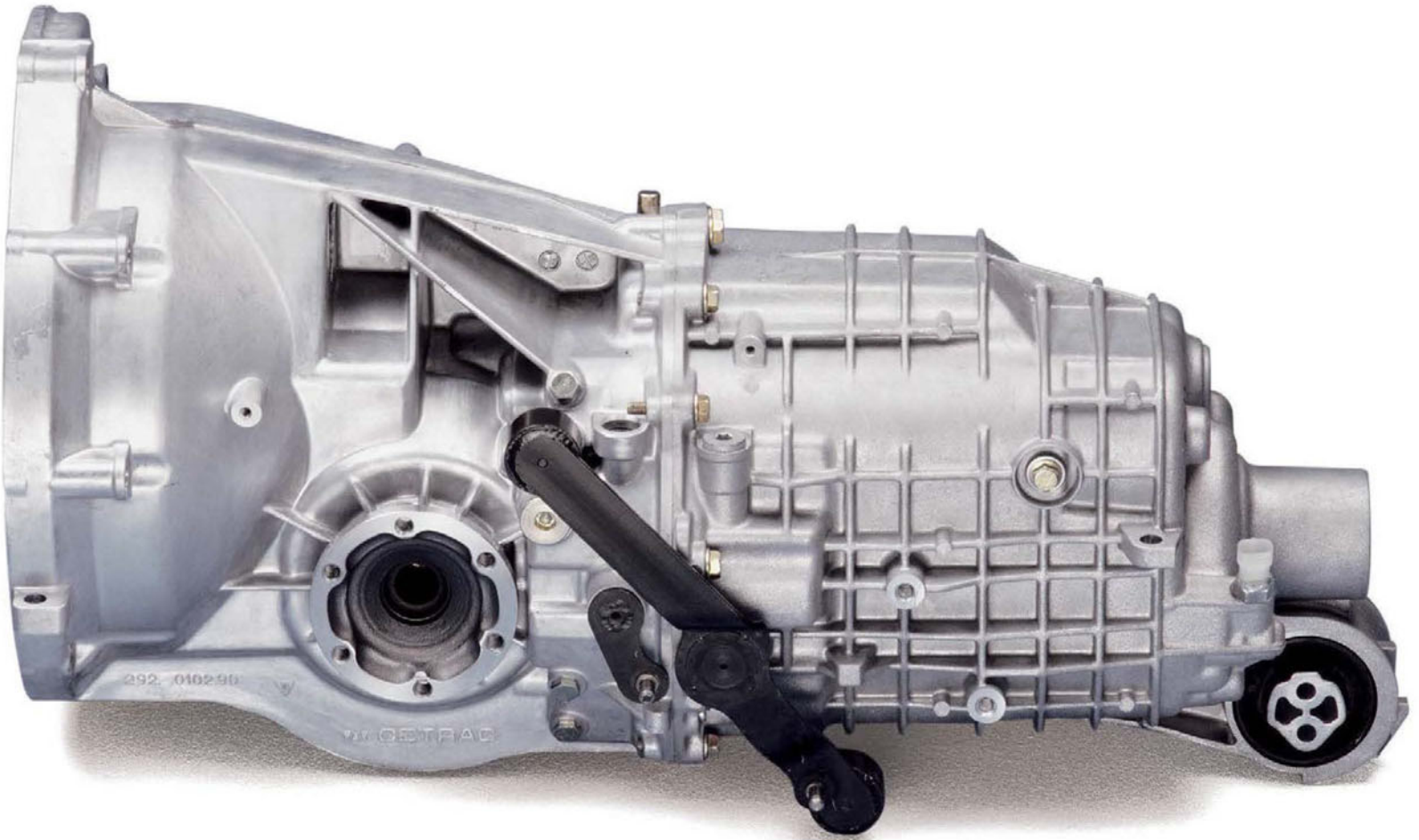
From the outset, the company truly embraced the necessary costs. As such, it is able to produce possibly the ultimate embodiment of the air-cooled

Porsche 911 without the car losing any of its do-it-all capacity. Despite jewellery-like detailing and the finely tuned mechanicals, Brooklyn still has to cope with driving in one of the busiest cities in the world, a task Rob is adamant the car is up to. “That's what a 911 has to be: tough, bulletproof and practical.

“It has to have that duality of being able to be used every day or, when you're in the mood, taken by the scruff of the neck and shown around a track, or a mountain road. Maybe we are transcending just building cars – though that sounds pretentious – but the car still has to operate. The practicalities are implicit.” Brooklyn's owner is likely to be using his new 911 on a near-daily basis, according to Rob.

Similarly, there is a Singer project being used as a daily driver in Paris, “driven through snowstorms and parked outside on the street,” according to Dickinson. It sounds almost sacrilegious, but that is what a 911 has to be capable of in order to earn the coveted name. Singer haven't neglected this fact, and it is possibly for this reason that the company has been so earnestly embraced by the Porsche community.

Modifying 911s used to be something of a fringe activity. However, thanks to the likes of Rob Dickinson, Magnus Walker and a host of other California-based individuals, hot-rodding has become this season's fashion. Like a Savile Row suit, each car fits its new owner perfectly. Brooklyn looks to be no exception. **911**



# 996 GEARBOX TROUBLESHOOTING

Total 911 explores causes and solutions to wearing of the Getrag G96 and G96.1 gearbox

Written by **Joel Newman** Photography by **Sports and Classic**

**N**ow up to 15 years old, many examples of 996-generation 911s have consumed thousands of happy motoring miles. Such sustained usage can naturally cause wear and tear of parts, with the Getrag G96 and G96.1 gearbox being no exception. There are two particular issues we are keen to address here: an ominous whine emanating from the gearbox (usually starting when engaged in a particular gear, but eventually pertaining to them all), and second-gear engagement issues referred to as 'pop out'.

If you've experienced these problems and have stuck within the main OPC dealer network,

you may have discovered that Porsche generally prefers to replace rather than fix a 996 gearbox – a first-class solution, albeit an expensive one. The price of a new gearbox is life-threatening to a 996, and with values being as low at £8,500 for a high-mileage C2/C4, these are the sort of anomalies that could potentially make a solid 911 uneconomical to fix. This doesn't have to be the outcome, though, and we've enlisted the help of UK-based Sports and Classic, independent Porsche specialists and experts in gearbox replenishment, to understand what these problems are, how to look out for their symptoms and, crucially, how to get the problem rectified without the need for a new gearbox.



## The causes

Sports and Classic rebuild around four gearboxes per week from all models dating back to the Sixties, so owner Michael Bourke is well-placed to identify common issues and demonstrate how these can be fixed without the need for a new transmission.

Michael believes the whine some 911 owners experience relates to the pinion shaft support bearing, which is susceptible to failure in 996s manufactured before 2001. "These bearings were sourced from Brazil, unlike the later versions that were sourced from Germany from 2001 onwards," he says. "It is possible there was a quality issue with earlier bearings, and later this was resolved, but these pinion bearings are a root cause of a growl or whining, and if left unchecked could lead to the disintegration of the gearbox internals."

Naturally, a broken bearing can cause havoc among the rest of the gearbox components if left, in particular to the differential 'planet and sun' wheels.

Michael continues: "In over 90 per cent of pinion bearing failure, we have seen these teeth damaged and in need of replacement, as they've digested parts of the bearing as it breaks up. The small needle roller bearings that support all the loose gears on the shafts are also affected, as the needle roller bearings are housed in a plastic cage, which can overheat as the oil supply is starved and what oil is getting through is full of debris."

While the pinion shaft support bearing mainly affects early Carrera models, gear engagement issues can be a problem for 996s of any age, including the GT3, GT2 and Turbo models. The main cause relates to an incorrectly set gear stack height, and so the engagement depth between the selector sliding sleeve and the loose second-gear-wheel dogteeth ring is too shallow. The teeth that are actually being driven are very small and fragile, so it only takes a small number

of mis-shifts before they become damaged. Once the tops of the teeth are chipped, they deteriorate at a rapid rate every time the gear is used, as the structural integrity of the tooth has now been compromised. Sports and Classic say: "The contact area of the dog ring tooth is only small, and in our experience only approximately 70 per cent of the tooth is actually being used, so when the tooth gets damaged it starts to break up and then reduces the contact area even further, so second gear is difficult to engage, and may in fact pop out under load or when coasting."

A quick test is to get the car up to almost redline revs while rolling in second gear before releasing the accelerator pedal and letting it coast down by itself, almost to a standstill. If it pops out of gear, it may be an idea to get the problem looked at before it causes more unnecessary damage and incurs further costs.



Here you can see the damage to the 2nd gear dog teeth ring, contributing to 'pop out'



Damage to the planet and sun wheel can be seen here



A Porsche 996 magnet, full of grease and debris from an exploded bearing



This damaged pinion bearing occurred after 55,000 miles



The damage from 2nd gear pop out also affects the selector hub



Sport and Classic heat up the crown wheel ready for installation



Specialist tools are needed to dismantle and reassemble the gearboxes, including the pinion height setup tool, bottom right, and Kukko puller set, top right



## The solutions

For both problems, the Porsche gearbox needs to be taken apart, as Michael explains: "For the whine issue caused by the pinion bearing, we have a 50-ton press that is required for dismantling and assembling the 996 Getrag gearbox, as it requires 40-46 tons to press gears off the shafts, which are a tight interference fit. We also employ a bearing removal press and use Kukko gear puller tools, factory pinion height setup equipment and seal insertion tooling."

The bearing needs to be replaced with a later item from Germany, but the process can still be complex: "Most gearboxes have the gears splined to the shafts to lock them in, but the 996 gearbox uses an interference press fit, and as such are labour-intensive to dismantle and reassemble. We have to warm gears on a hot plate to around 120 degrees Celsius and then press them on the appropriate shaft again," Michael says.

Few will know that the gears can be pressed off and on the shafts around four times, including the

original build by Getrag, as the interference fit will reduce. Sports and Classic know when it is time to replace shafts and gears by the amount of force required to dismantle and build the gear sets.

Second gear engagement and pop out is a slightly more complex issue to solve, requiring the dismantling of the gearbox with that press. Michael explains the process: "We have a full range of different thickness shims to select the correct shim for each bearing and gear. We use these shims in the gearbox or differential when we need to shim or pre-load a taper roller bearing to make sure there is the correct manufacturer pre-loading on the taper rollers: too much and you run the risk of over-heating the roller bearings, and this causes premature failure of the bearing; too little pre-loading on the taper rollers, and you would have movement or end float and a running clearance that would constantly change under load operation." Needless to say, this would cause mechanical failure of the components

being supported by the bearings, not to mention failure to the bearing itself.

Once open, the gearbox may require some modification in the way of machining of the new components, as well as correction of the engagement depth and gear stack heights. This is so that the sliding sleeve engages fully onto the dogteeth ring. If you go too far then you will end up with a sliding hub that is overthrown onto the gear, which may break the dog teeth ring end stops, along with a few classified modifications that are all carried out in-house. All the manual gearboxes that are rebuilt by Sports and Classic are modified internally, with there being as many as ten modifications per rebuild in order to ensure the correct engagement of gears and pre-loading of shift forks. These are tried and tested upgrades that prolong the service life of the internal components. Not one detent spring is left unchecked before the gearbox is put back together.

## Conclusions

Looking out for symptoms of any potential gearbox failure is crucial, and getting the gearbox fixed attentively is even more so. Refreshingly, the gearbox can actually be strengthened for future use while being fixed, and for less than half the price of a mere replacement unit from Porsche (based on Sports and Classic's quote of £2,700 + VAT for a 996 C2 or C4 gearbox rebuild). Turbo and GT2 prices are even more pleasing, with Sports and Classic able to rebuild a unit for around £4,200 + VAT in comparison with Porsche's figure of £7,870 (Turbo) and £8,254 +vat for a GT2 'box. Each Sports and Classic gearbox comes with a 12-month/25,000 mile warranty, and most interestingly, the firm has never had an issue with any gearbox they have fixed.

Sports and Classic are keen to stress the need for correct tooling and the knowledge required to repair and overhaul these gearboxes. With so much experience, they are well versed in receiving gearboxes complete (ready for dismantling), partially stripped, and in some cases random boxes of gears, shafts and bearings to replenish. Porsche gearboxes are incredible mechanisms, but if they go wrong, enlisting in the help of a specialist should give you thousands more happy miles with your 996.

While the huge saving and associated warranty may be the biggest draw, the fact is that specialists such as Sports and Classic are doing far more: they are providing a lifeline and a true alternative for 996 owners who have found themselves in a potentially car-ending predicament. **911**



A final clean of the casing precedes the gearbox being rehomed in your 911



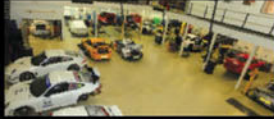
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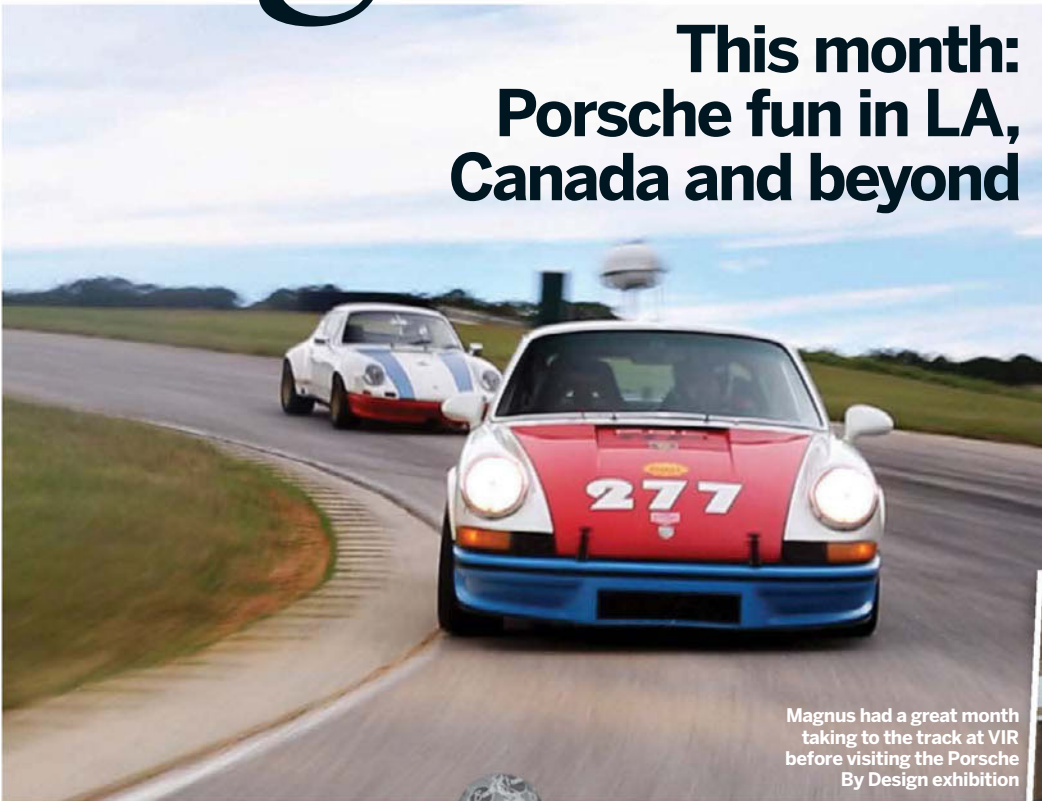
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# Living the Legend

Our band of contributors from around the world share their real-life experiences with their Porsche 911s

## This month: Porsche fun in LA, Canada and beyond



Magnus had a great month taking to the track at VIR before visiting the Porsche By Design exhibition



### Magnus Walker

• Los Angeles, USA

### 1971 911T



**Date acquired:**  
1999  
**Last report:**  
Issue 105  
**Total miles:**  
I never check  
**Costs:**  
Classified!

**T**he end of 2013 was a blur for me. In mid-October, my wife Karen and I were invited down to Raleigh, NC, to attend the NCMA (North Carolina Museum of Art) 'Porsche By Design: Seducing Speed' exhibition. This is a spectacular event curated by Ken Gross and featuring 22 Porsches, ranging from a Gmund Coupe to a Carrera GT. It was great seeing these cars in a museum environment.

I should mention that we had my favourite car – #277, a 1971 911T – with us for the week. This was much better than a rental car, and allowed me to do a trackday at the Virginia international Raceway.

Located 90 minutes away from Raleigh, the trackday was put on by Road Scholars, and Cam Ingram had brought a few cars along from his collection that included a 356 Carrera GT, a 904, a '68 L Sport-purpose

Trans-Am and two Synergy Cup cars for a few of their customers to sample on the track. I had never driven to VIR, so before I got there I did my homework and watched a few videos, downloaded the track map and hoped for the best!

We were actually attending the Inaugural Ingram Driving Experience trackday held on the south course at VIR. The track is a challenging, twisty, 1.6-mile undulating route with some fun turns. Cam showed me the line around the track in my first session, which is always a little different from how the videos appear! After a few sessions I was feeling comfortable, and started to get on with the program. A couple of soldiers from nearby Fort Bragg were in attendance, and I gave one a ride around for a few hot laps – it was fun chasing down a few cars on the twisty 1.6-mile course!

During the day, my buddy Frazer Spowart was on hand to shoot a little track footage for an upcoming video. He was in a GT3 RS camera car, I was in #277, and my former '72 STR 02 was also on the track. Later in the day, I got to drive the '68 L Trans car on the track along with a 904 and 356 Carrera, which was an amazing experience. The '68

Trans-Am had some of the best handling I've ever seen; it does everything great.

The next day was spent driving some great roads through the North Carolina countryside for my 'Southern Charm and Hospitality' video. It was great to be able to experience a different environment from behind the wheel of my favourite car, although it rained during the day, meaning I had to bolt on a set of windshield wipers and go a little easy on the old Hoosier R6 tires!

A few days later, #277 was picked up and shipped out to Toronto for the opening of Canada's largest and newest Porsche centre in Oakville. We had been invited there for the opening of the dealership, and would join the car a few days later. Karen and I had never been to Toronto, so we accepted the invitation and hopped on a plane.

We were met at the airport by our loan 911, a blue seven-speed manual 991 Carrera with a ducktail spoiler. This story began almost a year ago when we hosted a party for Porsche during the LA Auto Show at our DTLA loft. There, I met a guy by the name of Francesco



Magnus' car proved to be a hit among 911 enthusiasts in Canada



Policaro, who told me he was going to be opening up a Porsche dealership in Canada, and would be inviting us when it opened. Naturally, I thanked him for the invite and forgot all about it – until I received a phone call around six weeks prior to the event!

I soon got used to Sport mode and the seven-speed gearbox as we played tourist and explored the city. The opening night of the 60,000-foot Porsche Centre Oakville was very well attended; Bernd Maier and Detlev von Platen were among the Porsche executives on hand.

Back in LA, it was non-stop Porsche playtime. I had been invited to bring out a car for the opening press day launch of the LA Auto show, and as the convention centre was less than three miles away this was a no-brainer. Naturally, I chose my trusty '71 911T. Once I got that over to the show, I was asked if I could bring a couple more cars over as well! I also took my '67 911S, along with my '76 930, the first US production car. My cars were out front along with 30 or so others, including the Batmobile and a host of hot rod and exotics.

This was all part of the press day launch, and it seemed like automotive journalists

were on hand from all over the world. After a few hours of meeting and greeting outside, during which many people stopped by for a chat and to look at my cars, I went into the show for a look around the Porsche display.

The Porsche hall is always buzzing, and this year was no exception, with all the big names from Germany in attendance for the launch of the new models, along with a never-ending flow of press. In a strange way it took me right back to 1977 and my trip to the London car show, where I fell in love with Porsche for the first time.

Friday was the set-up day for a two-day Porsche classic/exclusive workshop PIOM event that we were hosting over the weekend. Over 250 worldwide importers and dealers would attend the event, which was split into two sections.

It was an honour and a privilege to have been asked to host the event, and much to my surprise I was given a microphone and the floor for ten minutes, where I spoke about my Porsche passion and showed those in attendance a sneak peek of my latest film, *Desert Outlaw*. It sure feels great to be a part of the Porsche family in some small way. **911**



## Maxie Islam

2006 997 Carrera 4S

Date acquired: August 2010 Total miles: 41,000

Costs this month: £70 (fuel)

**Lowlights:** Because of the recent climate, it's been tucked underneath a cover and not doing very much.

**Highlights:** A minor celebrity has enquired about the possibility of using the car for some publicity shots!



## Richard Klevenhausen

1979 930

Date acquired: May 2012 Miles this month: 179

Costs this month: Fuel + Repaint of the alternator fan

**Lowlights:** I had the alternator fan repainted, as it wasn't particularly well done on the first occasion.

**Highlights:** We are having a wonderful summer this year, so I spent some time driving the car along the beaches of Rio!



## Gina Purcell

1989 964 Carrera 4

Date acquired: September 2004 Miles this month: 0

Costs this month: Going up!

**Lowlights:** The heater problem was almost vanquished, but not quite. More work is needed, so the heater has been sent away.

**Highlights:** Having not seen my car for a few weeks, it's nice to remind myself what a stunning transformation Wolfi undertook.



## Tony McGuinness

2010 Gen2 997 Turbo

Date acquired: January 2010 Total miles: 26,643

Costs this month: £186

**Lowlights:** Scraped the front spoiler lip on a steep dip. Needs to be replaced at San Diego Porsche – \$309 with installation.

**Highlights:** The weather has been spectacular this winter, and I've been able to drive the Turbo along the coast and in the mountains.



## Joel Newman

1999 996 Carrera 4

Date acquired: December 2011 Total miles: 100,500

Costs this month: Thousands!

**Lowlights:** It may soon be time for me to commence my search for a new car, although I fancy a 996 Turbo.

**Highlights:** There are lots of updates to report, including treating the plastic trim and a wheel refurb!



## Maurice Tillaard

1972 911T/RS Hot Rod

Date acquired: February 2012 Miles this month: 0

Cost this month: £0

**Lowlights:** Preparation for my military tour means that I won't see my 911 for at least a few months.

**Highlights:** As I won't be driving, I will instead be getting my 911 fix by reading this great magazine.



## Ben James

996 GT3

Date acquired: March 2012 Total miles: 51,800

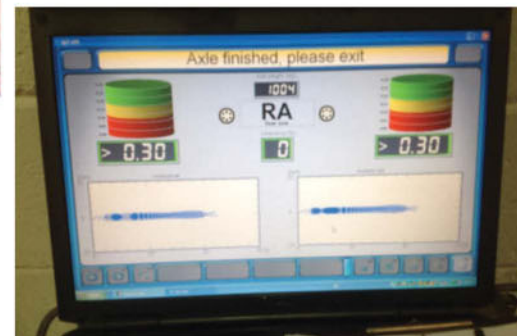
Costs this month: Yokohama AD08R tyres

**Lowlights:** Having to buy a set of tyres prematurely! The tread on the rears was scrubbed off thanks to a poor geometry setup.

**Highlights:** We've got another track day booked at Brands Hatch, which will be a good test for the new Yokohama tyres.



et



## Ray Chandler

• London, UK

### 2003 996 Turbo



## This month: Geometry check at Center Gravity

#### Date acquired:

August 2011

#### Last report:

Issue 107

#### Month miles:

100

#### Costs:

£995

**O**n a recent PCGB Region 20 trip with my 911 Turbo, I became less and less confident on every bend. Further notice of the need for a geometry check came when I spotted the abnormal tyre wear at the front. I booked the 911 in at Center Gravity, where Chris Franklin (owner and CEO) set about analysing what was wrong with the car. He did this via a visual inspection, followed by road, camber, tramline, thrust and pavé tests.

When this was done, the Turbo was put on the Beissbarth damper (shock absorber) test equipment. Dampers do one thing: contain the springs' natural movement (oscillation). The springs are there to remove/reduce/contain the kinetic energy and subsequent inertia that results from them being forced up and down by the road surface. The better the dampers, the more the road/tyre contact is maintained. The damper energy absorption rate for my car should be 0.3; which, when measured on the system, it was.

Next up was the tyre pressures, which were corrected. A visual inspection of the underside revealed a bent diagonal radius

arm. The car had some minor waxoil top-up work done the month before, which is where they had, in ignorance, jacked the car up on it. The parameter it affected most was the caster (self-centering effect).

The new computerised 3D alignment technology was set up, which found toe-in at the front and too much camber. Camber is where the top of the wheel leans inwards towards the middle of the car (negative) or outwards (positive). Porsche give the range of  $-1^{\circ} 40'$  to  $-1^{\circ} 10'$ . Mine was  $-1^{\circ} 51'$  – well outside the range. Worst was to come, though, when we looked at the rear tyres. It should have been  $-0^{\circ} 05'$  to  $-0^{\circ} 15'$ , but mine was  $-0^{\circ} 50'$ . This meant they weren't parallel, thus rolling forward in the same direction, but twisting inwards. No wonder tyres weren't lasting. After spotting the worn tyres in August 2013, Porsche OPC said to me, "You've been enjoying the performance, then!" I hadn't really; those tyres only lasted around 4,000 miles. To confirm we had a problem, the current ones, only changed in August 2013, were showing 3.8mm tread instead of 7mm.

Peter looked at the struts, mounts, coffins and links, and pronounced himself satisfied.

That's thanks to John Hawkins at Specialist Cars of Malton, whose technicians prepared the car for sale. Peter also checked the inner wing marking, as well as the alignment of the steering shaft to the steering rack. Lastly, he looked underneath the car to determine if it was still an all-Porsche affair, or if it had lots of third-party pieces added. It turns out they were all genuine.

After this, an itemised quote was given, and work started immediately. Off came the wheels, and the free visual brake inspection began. Disc and pad wear were noted, and a visual inspection made on the hoses and brake lines. My OSF brake pipe to flexible hose was leaking. As it may have caused complications, it was cleaned and left.

The steering rack inner ball joint replacement was the first job. With the steering rack bellows gaiter off, Chris got the offending part out. Next was the bent cast aluminium diagonal radius arm, which took a few minutes to replace.

We were almost ready for the laser alignment bit, with just one more thing to check – then it got worse! Neither one of the steel cam bolts would move, despite a lot of



Center Gravity comes highly recommended for a thorough geometry setup



One of the main issues to be discovered was a bent radius arm, highlighted left

leverage being applied, so they had to be cut out. That meant inserting a pneumatically operated hacksaw blade between the bush and its chassis support mount and sawing away, which took an hour.

With the old toe-in cam bolts and link arms removed and new ones fitted, I had the option of using Powerflex bushes on the old link arms which, as the bushes are made of polyurethane, have a different compliance compared to the standard Porsche rubber ones. This would alter the car's handling characteristics, which I didn't want. Plus, to remove the old seized bushes would have cost the same as replacing the whole link with TRW-sourced parts. Everything touched by Chris was coated with a special inhibitor grease that stops the galvanic reaction between two dissimilar metals.

Finally, we were at the final setup, where the electronics come in to play, constantly analysing and

displaying Chris's changes. It is an interactive process, where if you change one setting at the rear, the front also changes.

This took all day, after which we did the road test circuit again. Chris drove, pointing out the changes. Next was my turn, with Chris insisting that I feed back to him. Needless to say, the improvement in handling was marked.

I've come to a few conclusions. This is my first Porsche so I had no knowledge of what was normal in terms of handling, noise and tyre wear. So to someone who has just bought or is about to buy their first pre-owned 911, I'd say this: either insist on a full geometry setup check and, most importantly, get the printout showing you what it should be for your model, and what it is now. Failing that, book it in at Center Gravity; you won't regret it and your "new" car will handle as sweetly as Ferdinand Porsche intended it should. **911**



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## Chris Wallbank

• Leeds, UK



### 2005 997S Cabriolet

## This month: 997S ownership a year on...

**Date acquired:**  
November 2012  
**Last report:**  
Issue 107  
**Total miles:**  
27,090  
**Costs:**  
Fuel!

I can't believe it has been over a year now since I purchased my 997S back in late December 2012 – that first 12 months of 911 ownership has absolutely flown by!

As I look back over the past year, I've been on some amazing drives up in the Welsh mountains, North Yorkshire Dales and even a four-hour trek down to Brighton. This makes it easy to see just how I've accumulated 5,000 miles in that time, and I've loved each and every one of them.

One thing I've loved about owning a 997S so far is that it hasn't cost me a penny to run – apart from fuel – which just proves how

affordable and easy to maintain modern 911s can be. In fact, it hasn't even needed a drop of oil until this very week, when it fell just below half on the oil gauge, which I have to say did surprise me, having covered such little ground in that time.

However, I've been positively surprised with the fuel consumption of the 3.8-litre M97 engine. On long runs I've managed to get an astonishing 38mpg, which is better than the 2.0l petrol BMW 1 Series I used to run.

It has been through a few aesthetic transformations over the year, too, one being the full-colour change to Gloss white. As

much I like the look of it, I can't help but wish it was the original Basalt black every time I see my friend's gleaming black 997 4S. In light of this, I've made the decision to restore it back to its former glory at the beginning of March. Hopefully, the 3M wrap will have done its job of protecting the original paint!

As for the year ahead, I will possibly lower the car and change the wheels, and hopefully embark on a European road trip across to Germany and down some of the amazing driving roads in the south of France, with the infamous Route Napoléon firmly on the hit list. Watch this space... **911**





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**DATA FILE 88**



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# CANEPA

Just over an hour south of San Francisco lies Canepa, a car collector's dream. However, as Total 911 found out, this company is more than just a trader of high-end automobiles...

Written by **Josh Barnett** Photography by **Andrew Tipping**



Everywhere you look at Canepa's 70,000-square foot facility there are fantastic 911s, from RSRs and 934s (top left) to 930s and 959s (below)



**Y**ou could easily spend an entire day browsing Canepa's website, trawling through the multitude of incredible road and race cars listed for sale by the Californian company.

In a similar vein, it would be possible to write an entire feature on Bruce Canepa, the man behind this incredible collection of cars. At the age of 12, his father had taught him to drive pretty much any vehicle, including a ten-wheeled diesel truck. By 1979, after a year of racing in the IMSA and Trans-Am series, Canepa was racing for his own team in a Porsche 934.5. Alongside Rick Mears and Monte Shelton, he finished third in that year's 24 Hours of Daytona.

A year later, Bruce set up his eponymous business, Canepa. A 'multi-faceted automotive organisation', it provides a wealth of services, from buying and selling valuable and rare cars to creating state-of-the-art vehicle transporters.

Providing exceptional cars to collectors is probably what Canepa is best known for. Among the Mercedes 300SLs (both Gullwing and Roadsters) and the original 1967 Shelby Cobra 427, one car stands out at the core of the business. Luckily, it is the one we are really interested in: the Porsche 911.

"Usually, the 911 occupies at least 20 to 25 per cent of our business," explains John Ficarra, Canepa's

marketing director. "At least from the early 911s to the later 993s. It's such an iconic sports car, and Bruce has a long relationship with Porsche, having raced with them in his 935 and 934."

Canepa's apparent love affair with the 911 is not just because of the owner's "visceral connection to the model," though. Zuffenhausen's finest is also a fine economic prospect in the current market, as Ficarra clarifies, "The 911 market is just really exploding, and if they weren't moneymakers and they weren't selling well, we probably wouldn't carry as many of them."

It may be something of an oxymoron, but rare 911s are pretty common at Canepa. Recently, early 3.0-litre 930s have entered through their doors, along with a host of 993s that have passed through Porsche's 'Exclusive' department. Ficarra describes one such example, a 1997 993 Turbo finished in Zenith blue, as if the original owner was "given the option sheet and they ticked everything."

Most of the cars in Canepa's inventory are owned by the business. As well as one full-time car chaser who travels all over the USA finding suitable cars for collectors, Bruce also plays an integral role in sourcing rare cars and, with years of experience, he isn't afraid of a hard buy. "I've seen him bully a 935 out of somebody's hands," laughs John. "He was like, 'You've got to sell that car to me. You've got to

sell that car to me now." It's an incredible way of going about business, but many of these cars are so rare that finding another example would be near impossible. You've got to take your chance when it presents itself.

While Canepa acts as a dealer with the majority of its stock, special customers and special cars sometimes turn the company into a broker. "We don't do a lot of consignment," Ficarra explains, "but somebody might say, 'I'm looking at moving my collection.'"

Dealing with such rare and historically important cars brings with it large sums of money. Quite a few vehicles have changed hands for upwards of \$5,000,000 (£3,000,000), with John knowing a few private deals that have gone for three to four times that figure. "Since the auctions have come along, people have been like, 'Woah, that car sold for \$5,500,000,' but in private hands it's like, 'Big deal.'"

The nature of private sales means Ficarra is understandably coy about providing exact figures for some of the most expensive transactions in Canepa's 34-year history. "A lot of these guys don't want the public knowing, their businesses knowing or their wives knowing," says John. Elaborating on the latter, he provides a wonderful anecdote: "I've seen deals unravel when the wives came along! They'd say, 'You did what? No! You're not



The '73 911T Targa (top left) undergoes a complete component restoration. Just as incredible is the 962-engined 1989 Speedster with 690bhp (below)



## “Many of the racers that Canepa took to the tracks are on display”

taking that home,' and there are these billionaires sat begging, 'please honey, why can't I have it?'"

Despite the large sale values, the volumes of the car dealing arm are impressive. A good month would see six to ten cars shifted, with a good year totalling around 100 deals. When you consider that many of these sales involve multi-million-dollar cars, those numbers appear even more impressive.

Of course, as we alluded to earlier, car dealing is just one of the strings in Canepa's expansive bow. Canepa Motorsport provides the company with a racing division dedicated to the restoration, preparation and running of historic racing cars, predominantly from the Seventies and Eighties. While 911 variants such as the 934 and 935 make up around ten per cent of the division's business, the motorsport arm also deals with other exotica, such as Group C, IMSA GTP, and Can-Am machinery.

Continuing the racing theme is the Canepa Motorsports Museum, where the public is allowed free access to some of the most historically important race cars ever produced. Names like

Richard Petty, Mark Donohue, Brian Redman and Jacky Ickx adorn the sides of these cars, while many of the racers that Canepa himself took to the tracks in are also on display. If that wasn't enough, Canepa Design is renowned for its custom car building. From hot rods to modified motorcycles, the Design arm is known to create fully functioning prototypes for clients, too.

One of the most impressive aspects of Canepa, though, is its restoration services. Sheet metal work, show-level paint jobs and extensive mechanical work all fall under Canepa's remit. As well as full rebuilds (with all the necessary parts replacements they entail), Canepa also does a 'bring back', where a car is completely disassembled before every component is meticulously cleaned. The results are nothing short of miraculous.

The 1979 Porsche 935 K3 that featured in issue 105 is one such car to have been carefully restored by Canepa's expert craftsman. It went on to record class wins in the Pebble Beach and Amelia Island Concours d'Elegance competitions.

## Company profile

- **Owner:** Bruce Canepa
- **Founded:** 1980
- **Location:** Scotts Valley, California
- **Most unusual 911:** A 1989 Porsche 911 Speedster featuring a 690bhp engine from a 962, full 934 bodykit, and 935 suspension and brakes.
- **Rarest 911 encountered:** Plenty of firsts and lasts, including the first 911 that ever raced in the United States.
- **Bruce Canepa's first car:** A 1929 Ford Model 'A' that he learnt to drive when just 12 years old.

## Contact

- **Website:** [www.canepa.com](http://www.canepa.com)
- **Telephone:** 001 (831) 430-9940

Economically, the Porsche 911 may not always represent the core of Canepa's business. However, with Bruce's in-built passion for the model, it is sure to always have a place in the 70,000 square-foot building that houses this remarkable company. And even if it doesn't, the collection at Canepa is still worth a visit. Just don't bring your chequebook. **911**



# 911 PREMIER PORSCHE

# Data file

## Definitive facts and figures for every 911 model from 1963 – present

Welcome to the Total 911 data file, the definitive verdict to assist you in the world of 911s. All data here has been compiled, where possible, from Porsche's own figures. The cars are organised in rows according to release date beginning with the very first model, the 901 in 1963, right up to today's latest 991. Many models were available in Coupe, Targa and Cabriolet forms, with the option of automatic transmission. Data here has been provided from the Coupe variants unless stated.

**Ratings:** ★★★★★

Each model is rated according to performance, handling, appearance and desirability. Do you agree? Tell us your thoughts: [editorial@total911.com](mailto:editorial@total911.com).

**ULTRA RARE** You'll be lucky to see one on the road.

**GREAT VALUE** Provides a generous dose of 911 for your money.

**INTRO 911** An ideal first 911 – affordable and largely trouble-free.

### Sales debate: are classic 911 Targas a good first buy?



Pre-1989 Porsche 911 Targas, with their attractive prices, appear to offer a good way into classic-shelled Porsche ownership. Total 911 consulted Paul Stephens, head of the eponymous Paul Stephens independent Porsche specialists, to explain if this is truly the case.

"They certainly do here, in right-hand drive," Stephens explains. "They're valued differently abroad. You'll see left-hand drive ones make quite a bit more in Europe because the Europeans have cottoned on to the concept. I think it's to do with our weather. Targas are ten per cent cheaper in the UK, sometimes more."

"The stupid thing is that a Targa drives really well. It's quite a rigid car, but it's perceived that when you chop the top off it lessens the driving

experience. Compared to most convertibles, it's brilliant."

Of course, Targas only offer good value for money if you find the right car. "It's more critical that the structure is in good condition, because you obviously don't have a roof to hold the top together," explains Stephens. "It is worth looking closely to see if it has been restored correctly on a jig."

"Once you cut the sills off, and the posts, there's not a lot holding them together. So if they don't put them back together absolutely spot on, you will see inconsistent panel gaps where the doors open up at the top."

At ten per cent cheaper, pre-'89 Targas do appear to offer the best way into classic-shelled ownership. Just make sure any repairs are carried out to a high standard.

### 911 2.0-litre **ULTRA RARE** (O series) 1963-67



The 911 that started it all off exactly 50 years ago when the prototype appeared in 1963, this is the car that set the style for all 911s to follow. Developed to eventually replace the 356,

the 911 was an all-new design that was undoubtedly a better all-round drive than its predecessor.

**Capacity:** 1,991cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 130bhp @ 6,100rpm  
**Maximum torque:** 149Nm @ 5,200rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x4.5J, 165HR (15x5.5J, 185HR from 1967); Rear: 15x4.5J, 165HR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,075kg  
**0-60mph:** 7.9 sec  
**Top speed:** 152mph

**RATING:** ★★★★★

### 911S (O and A series) 1966-68



Porsche soon started off something that would continue to be popular throughout the 911's history: producing more powerful variants. The first of these was the 911S (for Super), which had a higher compression engine and twin Weber 40IDS carburettors.

**Capacity:** 1,991cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 160bhp @ 6,800rpm  
**Maximum torque:** 180Nm @ 5,200rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x4.5J, 165HR (15x5.5J, 185HR from 1967); Rear: 15x4.5J, 165HR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,075kg  
**0-60mph:** 7.9 sec  
**Top speed:** 152mph

**RATING:** ★★★★★

### 911E (C & D series) 1969-71



The C series saw an increase in engine capacity to 2,195cc. Other minor improvements made to the engine included revised cylinder heads, larger valves and stronger connecting rods. In 1970 the D series cars had hot-zinc coated undersides and other minor changes.

**Capacity:** 2,195cc  
**Compression ratio:** 9.1:1  
**Maximum power:** 155bhp @ 6,200rpm  
**Maximum torque:** 191Nm @ 4,500rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,020kg  
**0-60mph:** 7.5 sec  
**Top speed:** 137mph

**RATING:** ★★★★★

### 911S (C & D series) 1969-71



An upgrade in engine size from 1,991cc to 2,195 gave the 911S a useful 10bhp hike in power to 180bhp. Unlike the 911E, though, the S didn't gain such an improvement in low-down power and torque, so you had to keep the revs up to get the full benefit of the extra horsepower.

**Capacity:** 2,195cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 180bhp @ 6,500rpm  
**Maximum torque:** 199Nm @ 5,200rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J, 185HR; Rear: 15x6J, 185HR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,020kg  
**0-60mph:** 6.6 sec  
**Top speed:** 155mph

**RATING:** ★★★★★

### 911S (F series) 1973



For the F series, the 190bhp 911S followed the same upgrades as the 911E, the most significant being the deletion of the external oil-filler flap in the right-hand rear wing. It also adopted black trim around the front and rear lights and black front quarter grilles.

**Capacity:** 2,341cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 190bhp @ 6,500rpm  
**Maximum torque:** 216Nm @ 5,200rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,050kg  
**0-60mph:** 6.6 sec  
**Top speed:** 144mph

**RATING:** ★★★★★

### 911T (F series) 1973



US-bound F series 911Ts were the first 911s to have Bosch K-Jetronic fuel injection. This was fundamentally mechanical with some electronic sensors. It gave precise injections of fuel as required, in the process keeping emissions down and improving economy.

**Capacity:** 2,341cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 165bhp @ 6,200rpm  
**Maximum torque:** 206Nm @ 4,500rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
**Length:** 4,163mm  
**Width:** 1,610mm  
**Weight:** 1,050kg  
**0-60mph:** 7.0 sec (est)  
**Top speed:** 140mph (est)

**RATING:** ★★★★★

### 911 Carrera (G & H series) 1974-75



From 1974, Porsche used the Carrera name on its range-topping 911. The 911 Carrera used essentially the same 2.7-litre, 210bhp engine as the previous year's RS for all markets except the USA. In 1975 it was available with an optional new whaletail spoiler.

**Capacity:** 2,687cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 210bhp @ 6,300rpm  
**Maximum torque:** 255Nm @ 5,100rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J, 185VR; Rear: 15x7J, 215VR  
**Length:** 4,291mm  
**Width:** 1,610mm  
**Weight:** 1,075kg  
**0-60mph:** 6.1 sec  
**Top speed:** 149mph

**RATING:** ★★★★★

### 911 Carrera 3.0 (I & J series) 1976-77




Not sold in the US, the Carrera 3.0 was basically the same model as the previous Carrera, only fitted with a new 2,994cc engine, which was essentially that from the 911 Turbo. This engine, with the addition of some minor changes, continued to power the 911 until 1989.

**Capacity:** 2,994cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 200bhp @ 6,000rpm  
**Maximum torque:** 255Nm @ 4,200rpm  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 15x6J; Rear: 15x7J, 215VR  
**Length:** 4,291mm  
**Width:** 1,610mm  
**Weight:** 1,093kg  
**0-62mph:** 6.3 sec  
**Top speed:** 145mph

**RATING:** ★★★★★



**911L** (A series) 1967-68



In 1967, the 911 received its first update with the A-series. This coincided with an expansion to the range: the standard car became known as the 911L (Lux) and sat alongside the high-performance 911S and the entry-level 911T

Capacity: 1.991cc  
 Compression ratio: 9.0:1  
 Maximum power: 130bhp @ 6,100rpm  
 Maximum torque: 173Nm @ 4,200rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x5.5J, 185HR; Rear: 15x5.5J, 185HR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,075kg  
 0-60mph: 8.4 sec  
 Top speed: 132mph

**RATING:** ★★☆☆☆

**911T** (A & B series) 1967-68



The entry-level 911T had a 110bhp engine that, to save money, used cast-iron cylinder heads (as opposed to the Biral aluminium/iron items which gave more efficient cooling) and carburetors instead of fuel injection. The interior specification was similar to that of the 912.

Capacity: 1.991cc  
 Compression ratio: 8.6:1  
 Maximum power: 110bhp @ 5,800rpm  
 Maximum torque: 156Nm @ 4,200rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x5.5J, 165HR; Rear: 15x5.5J, 165HR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,020kg  
 0-60mph: 8.8 sec (est)  
 Top speed: 124mph

**RATING:** ★★☆☆☆

**911E** (B series) 1968-69




In 1968 the 911 received its first significant update, enabling it to evolve into what is known as the B series. Central to the new model line-up was the 911E, which replaced the 911L as the 'standard' car. The 'E' stood for 'Einspritz', which is German for injection.

Capacity: 1.991cc  
 Compression ratio: 9.1:1  
 Maximum power: 140bhp @ 6,500rpm  
 Maximum torque: 175Nm @ 4,500rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,020kg  
 0-60mph: 7.6 sec  
 Top speed: 130mph

**RATING:** ★★☆☆☆

**911S** (B series) 1968-69




The 911S was updated to B series specification in line with the 911E. Like the E, the more sporty S gained a fuel injection, boosting power to a useful 170bhp. To help cope with the extra demands this put on the engine, an additional oil cooler was fitted in the front right-hand wing.

Capacity: 1.991cc  
 Compression ratio: 9.9:1  
 Maximum power: 170bhp @ 6,800rpm  
 Maximum torque: 183Nm @ 5,500rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J, 185HR; Rear: 15x6J, 185HR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 995kg  
 0-60mph: 6.6 sec  
 Top speed: 155mph

**RATING:** ★★☆☆☆

**911T** (C & D series) 1969-71




When the 911E and 911S increased their engine capacity to 2.2 litres, their little brother followed suit. Like the 911E, the torque curve was now flatter, in the process making the car more driveable. Ventilated discs from the S were fitted and a five-speed gearbox became standard.

Capacity: 2.195cc  
 Compression ratio: 8.6:1  
 Maximum power: 125bhp @ 5,800rpm  
 Maximum torque: 177Nm @ 4,200rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x5.5J, 165HR; Rear: 15x5.5J, 165HR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,020kg  
 0-60mph: 7.0 sec (est)  
 Top speed: 123mph

**RATING:** ★★☆☆☆

**911E** (E series) 1972




An increase in engine capacity to 2.341cc was achieved by increasing the stroke from 66mm to 70.4mm while at the same time leaving the bore unchanged. The new 915 transmission was a stronger unit, making it better suited to the extra power.

Capacity: 2.341cc  
 Compression ratio: 8.0:1  
 Maximum power: 165bhp @ 6,200rpm  
 Maximum torque: 206Nm @ 4,500rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,050kg  
 0-60mph: 7.5 sec  
 Top speed: 137mph

**RATING:** ★★☆☆☆

**911T** (E series) 1972




The entry-level 911T received a boost in engine size to 2.341cc in 1972 to compensate for its increased power. However, a lower compression ratio and the inclusion of Zenith 40 TIN triple-choke carburetors led to the relatively lower power output of 130bhp.

Capacity: 2.341cc  
 Compression ratio: 7.5:1  
 Maximum power: 130bhp @ 6,200rpm  
 Maximum torque: 196Nm @ 4,000rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x5.5J, 165VR; Rear: 15x5.5J, 165VR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,050kg  
 0-60mph: 7.6 sec  
 Top speed: 128mph

**RATING:** ★★☆☆☆

**911E** (F series) 1973



After a number of incidents in which people filled E series 911s with petrol via the external oil-filler, the filler returned to under the engine compartment lid. The 911E was fitted with a new type of ATS cast-aluminium wheels and had the front spoiler of the 911S.

Capacity: 2.341cc  
 Compression ratio: 7.5:1  
 Maximum power: 130bhp @ 6,200rpm  
 Maximum torque: 196Nm @ 4,000rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x5.5J, 165VR; Rear: 15x5.5J, 165VR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 1,050kg  
 0-60mph: 7.6 sec (est)  
 Top speed: 140mph (est)

**RATING:** ★★☆☆☆

**911** (G, H, I, J series) 1974-77




For 1974, the entry-level car was badged '911' and fitted with a 2.7-litre engine. Bumpers were added to conform to US regulations, and from 1976 all 911s were hot-dip coated and fitted with 'elephant ear' mirrors.

Capacity: 2.687cc  
 Compression ratio: 8.0:1  
 Maximum power: 150bhp @ 5,700rpm (165bhp @ 5,800 from 1.976)  
 Maximum torque: 235Nm @ 3,800rpm (235Nm @ 4,000rpm from '76)  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J; Rear: 15x6J, 185VR  
 Length: 4,291mm  
 Width: 1,610mm  
 Weight: 1,075kg  
 0-60mph: 8.5 sec  
 Top speed: 130mph

**RATING:** ★★☆☆☆

**911S** (G, H, I, J series) 1974-77




For 1974, Porsche realigned its model line-up, and the 911S was no longer the range-topping car, but rather a mid-range model comparable to the previous 911E. It had the same body changes as the base model, and came as standard with 15-inch ATS 'cookie cutter' wheels.

Capacity: 2.687cc  
 Compression ratio: 8.5:1  
 Maximum power: 175bhp @ 5,800rpm  
 Maximum torque: 235Nm @ 4,000rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J, 185VR; Rear: 15x6J, 185VR  
 Length: 4,291mm  
 Width: 1,610mm  
 Weight: 1,075kg  
 0-60mph: 7.0 sec  
 Top speed: 142mph

**RATING:** ★★☆☆☆

**ULTRA-RARE MODEL**

## 1972-73 Carrera 2.7 RS



The RS had a 2.681cc engine that developed 210bhp. The body was lightened and fitted with flared rear arches and an optional ducktail spoiler. The RS Sport was an ultra-light model, while the Touring car retained some creature comforts.

Capacity: 2.681cc  
 Compression ratio: 8.5:1  
 Maximum power: 210bhp @ 6,300rpm  
 Maximum torque: 255Nm @ 5,100rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x6J, 185VR; Rear: 15x7J, 215VR  
 Length: 4,163mm  
 Width: 1,610mm  
 Weight: 975kg (Sport)  
 0-60mph: 5.6 sec  
 Top speed: 153mph

**RATING:** ★★★★★

**930 3.0** 1975-77




Fitted with a KKK turbocharger, this was the world's first production car to be turbocharged. Flared arches and a whaletail spoiler created a look that would become legendary. Brakes weren't good on early Turbos, and the four-speed gearbox was standard.

Capacity: 2.994cc  
 Compression ratio: 8.5:1  
 Maximum power: 260bhp @ 5,500rpm  
 Maximum torque: 343Nm @ 4,000rpm  
 Brakes: Front: 282mm discs; Rear: 290mm discs  
 Wheels & tyres: Front: 15x7J, 185/70VR; Rear: 15x8J, 215/60VR  
 Length: 4,291mm  
 Width: 1,610mm  
 Weight: 1,195kg  
 0-62mph: 5.3 sec  
 Top speed: 168mph

**RATING:** ★★☆☆☆

**930 3.3** 1978-83




A larger engine led to an extra 40bhp of power, and an intercooler on top of the engine led to the adoption of a new 'teatray' spoiler. The brakes were upgraded with 917 racecar-based items, larger discs and four-piston calipers.

Capacity: 3.299cc  
 Compression ratio: 7.0:1  
 Maximum power: 300bhp @ 5,500rpm  
 Maximum torque: 343Nm @ 4,000rpm  
 Brakes: Front: 304mm discs; Rear: 309mm discs  
 Wheels & tyres: Front: 15x7J, 185/70VR; Rear: 15x8J, 215/60VR  
 Length: 4,491mm  
 Width: 1,775mm  
 Weight: 1,300kg  
 0-62mph: 5.0 sec  
 Top speed: 160mph

**RATING:** ★★☆☆☆

**911 SC** INTRO 911 1978-83




From 1978, the SC was the only normally aspirated 911. It was a development of the Carrera 3.0, but the engine produced less power to suit all markets. A Sport option allowed for the inclusion of front and rear spoilers, 16-inch Fuchs alloy wheels, sports seats and dampers.

Capacity: 2.994cc  
 Compression ratio: 8.51/8.61/9.8:1  
 Maximum power: 180/188/204bhp @ 5,500rpm  
 Maximum torque: 265/265/267Nm @ 4,300rpm  
 Brakes: Front: 287mm discs; Rear: 295mm discs  
 Wheels & tyres: Front: 15x6J, 185/70VR; Rear: 15x7J, 215/60VR (16-inch optional)  
 Length: 4,291mm  
 Width: 1,626mm  
 Weight: 1,160kg (1978 Coupe)  
 0-62mph: 6.5 sec  
 Top speed: 141mph

**RATING:** ★★☆☆☆

**930 3.3** 1984-89



A revised engine added more power and torque in 1984, while in 1987 Motronic engine management improved efficiency and emissions when the car returned to the US market. Perforated brake discs later appeared in 1988, while a five-speed gearbox arrived in 1989.

Capacity: 3.299cc  
 Compression ratio: 7.0:1  
 Maximum power: 300bhp @ 5,500rpm  
 Maximum torque: 432Nm @ 4,000rpm  
 Brakes: Front: 304mm discs; Rear: 309mm discs  
 Wheels & tyres: Front: 16x7J, 205/55VR; Rear: 16x9J, 245/45VR  
 Length: 4,491mm  
 Width: 1,775mm  
 Weight: 1,335kg  
 0-62mph: 4.8 sec  
 Top speed: 173mph

**RATING:** ★★☆☆☆

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## Carrera 3.2 INTRO 911 1984-89



The Carrera 3.2 had almost the same galvanised body as the SC. The engine was claimed by Porsche to be 80 per cent new, and was the first production 911 motor to feature an ECU to control the ignition and fuel systems. The Getrag G50 gearbox appeared in 1987.

Capacity: 3,164cc  
Compression ratio: 10.3:1  
Maximum power: 231bhp @ 5,900rpm  
Maximum torque: 284Nm @ 4,800rpm  
Brakes: Front: 304mm discs; Rear: 309mm discs.  
Wheels & tyres: Front: 15x7J, 195/65VR; Rear: 15x8J, 215/60VR (16 inches for 1989)  
Length: 4,291mm  
Width: 1,650mm  
Weight: 1,210kg  
0-62mph: 5.6 sec  
Top speed: 148mph

**RATING:**  
★★★★☆

## 930 LE ULTRA RARE 1989



Essentially an SE without a slantnose front, the LE had the same engine, front spoiler, sill extensions and rear air intakes. The fully spec'd interior and 'Limited Edition' status meant the LE was initially thought by many to be the last ever 911 Turbo. Of course, that wasn't the case...

Capacity: 3,299cc  
Compression ratio: 7.0:1  
Maximum power: 330bhp @ 5,500rpm  
Maximum torque: 432Nm @ 4,000rpm  
Brakes: Front: 304mm discs; Rear: 309mm discs  
Wheels & tyres: Front: 16x7J, 205/55VR; Rear: 16x9J, 245/45VR  
Length: 4,491mm  
Width: 1,775mm  
Weight: 1,335kg  
0-62mph: 4.6 sec  
Top speed: 173mph

**RATING:**  
★★★★★

## 964 Carrera 2 1990-93



Not everyone wanted four-wheel drive. Reflecting this attitude, the rear-drive Carrera 2 offered an emphatically more traditional 911 experience and was 100kg lighter, but

looked identical to the Carrera 4. Tiptronic automatic transmission was a new option.

Capacity: 3,600cc  
Compression ratio: 10.3:1  
Maximum power: 250bhp @ 6,100rpm  
Maximum torque: 310Nm @ 4,800rpm  
Brakes: Front: 298mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 16x6J, 205/55ZR16; Rear: 16x8J, 225/50ZR16 (17-inch rims optional)  
Length: 4,250mm  
Width: 1,650mm  
Weight: 1,350kg  
0-62mph: 5.5 sec  
Top speed: 164mph

**RATING:**  
★★★★☆

## 964 Turbo 1990-92



This used the revised 964 body shell, extended arches and 'teatray' spoiler. The engine was essentially the 3.3-litre unit from the previous model, but updated to give more power.

Brakes were ABS-equipped. 17-inch Cup wheels were a new design, as were the 'teardrop' door mirrors.

Capacity: 3,299cc  
Compression ratio: 7.0:1  
Maximum power: 320bhp @ 5,750rpm  
Maximum torque: 450Nm @ 4,500rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 17x7J, 205/50ZR17; Rear: 17x9J, 255/45ZR17  
Length: 4,250mm  
Width: 1,775mm  
Weight: 1,470kg  
0-62mph: 5.0 sec  
Top speed: 169mph

**RATING:**  
★★★★☆

## 964 Turbo 3.6 1993-94



The Turbo received an engine based on the 3.6-litre 964 unit, albeit one that had been modified. Distinctive 18-inch split-rim Speedline wheels covered the big-red brake calipers. Suspension was lowered by 20mm (not in the US) and a front strut-brace was fitted.

Capacity: 3,600cc  
Compression ratio: 7.5:1  
Maximum power: 360bhp @ 5,500rpm  
Maximum torque: 520Nm @ 4,200rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs.  
Wheels & tyres: Front: 18x8J with 225/40ZR18 tyres; Rear: 18x10J with 265/35ZR18 tyres  
Length: 4,250mm  
Width: 1,775mm  
Weight: 1,470kg  
0-62mph: 4.8 sec  
Top speed: 174mph

**RATING:**  
★★★★★

## 964 3.8 RS 1993



Identified by a lightweight Turbo bodysell, large rear spoiler and 18-inch Speedline wheels. Power came from a new 3.8-litre unit with hot-film air sensor and twin exhaust.

Suspension was RS-derived, while brakes were a mix of RS and Turbo 3.6 items.

Capacity: 3,746cc  
Compression ratio: 11.6:1  
Maximum power: 300bhp @ 6,500rpm  
Maximum torque: 359Nm @ 5,250rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs.  
Wheels & tyres: Front: 18x9J, 235/40ZR; Rear: 18x11J, 285/35ZR  
Length: 4,250mm  
Width: 1,775mm  
Weight: 1,210kg  
0-62mph: 4.9 sec  
Top speed: 169mph

**RATING:**  
★★★★★

## 993 Turbo 1996-98



The Turbo was fitted with two KKK turbochargers in order to reduce lag. Also, the power went to all four wheels using the Carrera 4's transmission system. Brakes were distinctive 'big reds' under hollow-spoked 18-inch wheels.

Capacity: 3,600cc  
Compression ratio: 8.0:1  
Maximum power: 408bhp @ 5,750rpm  
Maximum torque: 540Nm @ 4,500rpm  
Brakes: Front: 322mm discs; Rear: 322mm discs  
Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x10J, 285/30ZR18  
Length: 4,245mm  
Width: 1,795mm  
Weight: 1,500kg  
0-62mph: 4.3 sec  
Top speed: 180mph

**RATING:**  
★★★★★

## 993 GT2 1995-96



Basically a 911 Turbo, but with reduced equipment. It also included rear-wheel-drive, making it a better track car. The massive front and rear spoilers and bolt-on wheel-arch extensions give it a distinctive appearance.

Capacity: 3,600cc  
Compression ratio: 8.0:1  
Maximum power: 430bhp @ 5,750rpm  
Maximum torque: 540Nm @ 4,500rpm  
Brakes: Front: 322mm discs; Rear: 322mm discs  
Wheels & tyres: Front: 18x9J, 235/40ZR18; Rear: 18x11J, 285/35ZR18  
Length: 4,245mm  
Width: 1,855mm  
Weight: 1,290kg  
0-62mph: 3.9 sec  
Top speed: 189mph

**RATING:**  
★★★★★

**930 SE** ULTRA RARE **1986-89**




Slantnosed and based on that of the 935 racecars, with pop-up headlamps. The front spoiler was made deeper in order to accommodate the extra oil cooler, while intakes in the rear wings fed air to the brakes. The larger turbocharger and four-outlet exhaust gave 30bhp of extra power.

Capacity: 3,299cc  
Compression ratio: 7.0:1  
Maximum power: 330bhp @ 5,500rpm  
Maximum torque: 432Nm @ 4,000rpm  
Brakes: Front: 304mm discs; Rear: 309mm discs  
Wheels & tyres: Front: 16x7J, 205/55VR; Rear: 16x9J, 245/45VR  
Length: 4,491mm  
Width: 1,775mm  
Weight: 1,335kg  
0-62mph: 4.6 sec  
Top speed: 173mph

**RATING:**  
★★★★★

**3.2 Clubsport** **1987-89**




Removing the 'luxuries' from the Carrera 3.2 sliced around 40kg off the car's weight. Revised engine management gave a higher rev limit of 6,840rpm, but Porsche never claimed there was any increase in power. Suspension uprated and limited-slip differential standard.

Capacity: 3,164cc  
Compression ratio: 10.3:1  
Maximum power: 231bhp @ 5,900rpm  
Maximum torque: 284Nm @ 4,800rpm  
Brakes: Front: 304mm discs; Rear: 309mm discs.  
Wheels & tyres: Front: 15x6J, 195/65VR; Rear: 15x7J, 215/60VR  
Length: 4,291mm  
Width: 1,650mm  
Weight: 1,170kg  
0-60mph: 5.1 sec  
Top speed: 151mph

**RATING:**  
★★★★★

**Speedster** **1989**




Essentially a Carrera 3.2 with a chopped, more steeply raked windscreen and hood and stripped-out interior. Most had wide Turbo bodies. Porsche insisted that the simple hood was not designed to be 100 per cent watertight. 2,065 examples of this model were built.

Capacity: 3,164cc  
Compression ratio: 10.3:1  
Maximum power: 231bhp @ 5,900rpm  
Maximum torque: 284Nm @ 4,800rpm  
Brakes: Front: 304mm discs; Rear: 309mm discs.  
Wheels & tyres: Front: 15x7J, 195/65VR; Rear: 15x8J, 215/60VR  
Length: 4,291mm  
Width: 1,650mm  
Weight: 1,210kg  
0-60mph: 5.6 sec  
Top speed: 148mph

**RATING:**  
★★★★★

**964 Carrera 4** **1989-93**



Heavily revised bodywork, deformable bumpers over coil-spring suspension and four-wheel-drive marked this radical overhaul of the 911, which Porsche claimed was 87 per cent new. The 3.6-litre engine featured two spark plugs per cylinder and ceramic exhaust port liners.

Capacity: 3,600cc  
Compression ratio: 10.3:1  
Maximum power: 250bhp @ 6,100rpm  
Maximum torque: 310Nm @ 4,800rpm  
Brakes: Front: 298mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 16x6J, 205/55ZR16; Rear: 16x8J, 225/50ZR16 (17-inch rims optional)  
Length: 4,250mm  
Width: 1,650mm  
Weight: 1,450kg  
0-62mph: 5.7 sec  
Top speed: 162mph

**RATING:**  
★★★★★

**964 RS** **1991-92**



Around 120kg was lost by deleting 'luxuries' and fitting magnesium Cup wheels. Power was boosted by 10bhp and fed through a flywheel and uprated clutch. Suspension was lowered by 40mm and uprated, as were the brakes. Sport and Touring versions were also offered.

Capacity: 3,600cc  
Compression ratio: 10.3:1  
Maximum power: 260bhp @ 6,100rpm  
Maximum torque: 310Nm @ 4,800rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 17x7.5J, 205/50ZR17; Rear: 17x9J, 255/40ZR17  
Length: 4,250mm  
Width: 1,650mm  
Weight: 1,230kg (Sport)  
0-62mph: 5.2 sec  
Top speed: 162mph

**RATING:**  
★★★★★

**964 C2 Speedster** **1993-94**



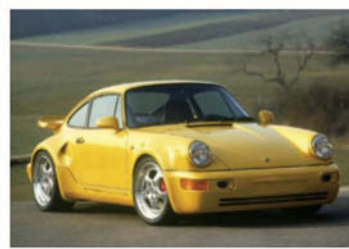
This combined the 964 bodysell with the hood and windscreen of the Carrera 3.2 Speedster plus the RS interior. It is thought that Porsche planned to build around 3,000, but only 936 were made, many in bright colours such as yellow or red with colour-coded wheels.

Capacity: 3,600cc  
Compression ratio: 10.3:1  
Maximum power: 250bhp @ 6,100rpm  
Maximum torque: 310Nm @ 4,800rpm  
Brakes: Front: 298mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 16x6J, 205/55ZR16; Rear: 16x8J, 225/50ZR16 (17-inch rims optional)  
Length: 4,250mm  
Width: 1,650mm  
Weight: 1,340kg  
0-62mph: 5.5 sec  
Top speed: 164mph

**RATING:**  
★★★★★

**ULTRA RARE MODEL** ULTRA RARE

**1992-93 964 Turbo S**




Essentially a 911 Turbo, but with 180kg of weight saved. Intakes in the rear arches funnelled air to the brakes, while the engine power was boosted by 61bhp thanks to the larger turbocharger, bigger valves and revised engine management, with the suspension uprated as per the RS. Just 80 examples were built.

Capacity: 3,299cc  
Compression ratio: 7.0:1  
Maximum power: 381bhp @ 6,000rpm  
Maximum torque: 490Nm @ 4,800rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 18x8J, 235/40ZR18; Rear: 18x10J, 265/35ZR18  
Length: 4,250mm  
Width: 1,775mm  
Weight: 1,290kg  
0-62mph: 4.6 sec  
Top speed: 180mph

**RATING:**  
★★★★★

**993 Carrera** **1993-97**




Restyled bodywork had swept-back headlamps, curvaceous wings and blended-in bumpers. The engine was revised with hydraulic tappets and hot-film air flow sensor, plus VarioRam from 1996. All-new multilink rear suspension gave improved handling.

Capacity: 3,600cc  
Compression ratio: 11.3:1  
Maximum power: 272bhp @ 6,000rpm  
Maximum torque: 330Nm @ 5,000rpm  
Brakes: Front: 304mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 16x7J, 205/55ZR16; Rear: 16x9J, 245/45ZR16 (17-inch rims optional)  
Length: 4,245mm  
Width: 1,735mm  
Weight: 1,370kg (Coupe)  
0-62mph: 5.6 sec  
Top speed: 168mph

**RATING:**  
★★★★★

**993 Carrera 4** **1994-97**




As per the 993-model Carrera, but with four-wheel-drive. Transmission was half the weight of the previous Carrera 4, and was designed to give the driving experience a more rear-drive-esque feel. Automatic Brake Differential (ABD) compensated for wheelspin.

Capacity: 3,600cc  
Compression ratio: 11.3:1  
Maximum power: 272bhp @ 6,000rpm  
Maximum torque: 330Nm @ 5,000rpm  
Brakes: Front: 304mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 16x7J, 205/55ZR16; Rear: 16x9J, 245/45ZR16 (17-inch rims optional)  
Length: 4,245mm  
Width: 1,735mm  
Weight: 1,420kg  
0-62mph: 5.8 sec  
Top speed: 166mph

**RATING:**  
★★★★★

**993 Carrera RS** **1995-96**




Had a lightweight body as per RS tradition, but teamed with a 3.8-litre engine. VarioRam intake system and remapped ECU to create 200bhp, fed to the rear wheels only, with suspension and brakes all uprated. It is recognisable by the fixed rear whaletail and large front spoiler.

Capacity: 3,746cc  
Compression ratio: 11.5:1  
Maximum power: 300bhp @ 6,000rpm  
Maximum torque: 355Nm @ 5,400rpm  
Brakes: Front: 322mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x10J, 265/35ZR18  
Length: 4,245mm  
Width: 1,735mm  
Weight: 1,279kg  
0-62mph: 5.0 sec  
Top speed: 172mph

**RATING:**  
★★★★★

**993 Carrera 4S** **1995-96**




The 4S was effectively a Carrera 4 with a Turbo wide bodysell (albeit lacking a fixed rear spoiler). It also boasted Turbo brakes and suspension, and the 18-inch wheels were aesthetically similar to the equivalent Turbo items.

Capacity: 3,600cc  
Compression ratio: 11.3:1  
Maximum power: 285bhp @ 6,100rpm  
Maximum torque: 340Nm @ 5,250rpm  
Brakes: Front: 322mm discs; Rear: 322mm discs  
Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x10J, 285/30ZR18  
Length: 4,245mm  
Width: 1,795mm  
Weight: 1,520kg  
0-62mph: 5.3 sec  
Top speed: 168mph

**RATING:**  
★★★★★

**993 Carrera S** **1997-98**




The features that come with the Carrera S are similar to the Carrera 4S's, only in rear-wheel-drive. Sought after for its superb handling and looks, the split engine cover lid and wide body give it a distinctive appearance.

Capacity: 3,600cc  
Compression ratio: 11.3:1  
Maximum power: 285bhp @ 6,100rpm  
Maximum torque: 340Nm @ 5,250rpm  
Brakes: Front: 322mm discs; Rear: 322mm discs  
Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x10J, 285/30ZR18  
Length: 4,245mm  
Width: 1,795mm  
Weight: 1,450kg  
0-62mph: 5.4 sec  
Top speed: 168mph

**RATING:**  
★★★★★

**993 Turbo S** **1998**




The 993 Turbo S was a fitting final hurrah to the last air-cooled 911. With 450bhp for UK models, it was the fastest and most luxurious road going model Stuttgart had ever produced. Manual only as Tiptronic had not been developed to manage the abundance of torque.

Capacity: 3,600cc  
Compression ratio: 8.0:1  
Maximum power: 450bhp @ 5,750rpm  
Maximum torque: 585Nm @ 4,500rpm  
Brakes: Front: 320mm discs; Rear: 322mm discs  
Wheels & tyres: Front: 18x8J, 225/40/18; Rear: 18x10J, 285/30/18  
Length: 4,245mm  
Width: 1,795mm  
Weight: 1,583kg  
0-62mph: 4.1 sec  
Top speed: 186mph

**RATING:**  
★★★★★

**996 Carrera** INTRO 911 **1998-2001**



An all-new 911 with larger, restyled bodywork and a 3.4-litre water-cooled engine. The interior was redesigned in order to enable better ergonomic efficiency and allow for more room. The Carrera was a rear-wheel-drive, entry-level model, ideal for first-time Porsche drivers.

Capacity: 3,387cc  
Compression ratio: 11.3:1  
Maximum power: 300bhp @ 6,800rpm  
Maximum torque: 350Nm @ 4,600rpm  
Brakes: Front: 318mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 17x7J, 205/50ZR17; Rear: 17x9J, 255/40ZR17 (18-inch rims optional)  
Length: 4,430mm  
Width: 1,765mm  
Weight: 1,320kg  
0-62mph: 5.2 sec  
Top speed: 174mph

**RATING:**  
★★★★★

**996 Carrera 4** **1998-2001**



Four-wheel-drive transmission fed only five per cent of power to front in normal driving, increasing to up to 40 per cent when required. Porsche Stability Management combined traction control, anti-slip control and Automatic Braking Differential.

Capacity: 3,387cc  
Compression ratio: 11.3:1  
Maximum power: 300bhp @ 6,800rpm  
Maximum torque: 350Nm @ 4,600rpm  
Brakes: Front: 318mm discs; Rear: 299mm discs  
Wheels & tyres: Front: 17x7J, 205/50ZR17; Rear: 17x9J, 255/40ZR17 (18-inch rims optional)  
Length: 4,430mm  
Width: 1,765mm  
Weight: 1,375kg  
0-62mph: 5.2 sec  
Top speed: 174mph

**RATING:**  
★★★★★

**911 technology explained**



**PDK**

With Porsche Doppelkupplung (PDK) now the only gearbox option on new 911 Turbos and GT3s, Total 911 goes behind the casing to explain how this slick shifter works

Starting at the bellhousing end (far left), the PDK gearbox uses two concentrically mounted wet clutches connected to two separate input shafts. The 202mm outer clutch is attached to the solid inner shaft, with the 153mm inner clutch connected to the hollow outer shaft. This effectively splits the gearbox in two, with the solid inner input shaft used to drive the odd-numbered ratios (centre) and the even-numbered gears connected to the outer shaft (far right).

When accelerating in first gear, the outer clutch is fully engaged, while the electro-hydraulically actuated selector forks preselect second gear in the other half of the gearbox. When the ECU determines that it is time to shift, an electronic signal is sent to the clutch actuators, disengaging the outer clutch and engaging the inner unit. The same

process happens under braking (for example, from fourth gear, where the gearbox would preselect third in readiness for the engagement of the outer clutch).

The ECU measures all of the car's vital dynamics (including throttle and brake travel, acceleration and deceleration) in order to determine the next suitable gear to select. In automatic mode, the mode selected (Normal, Sport, Sport Plus) determines how long the PDK gearbox holds onto each gear. A manual override allows the drivers to take control (via buttons or paddles) and determine the gear shifting.

PDK's ability to shift in less than 100 milliseconds, coupled with the wet clutch system's small degree of slip, means that normal driving changes are smooth and efficient, reducing CO2 emissions and improving fuel efficiency as well as performance.

**Head to head: 996 GT3 v 997 GT3**



When the 996 GT3 was released in 1998, purists rejoiced. After the largely negative reception to the 996 Carrera, the GT3 variant was hailed in the motoring press. French weekly *AUTOhebdo* lauded it as "set out to satisfy the real enthusiast."

Built exclusively at Porsche's motorsport factory, the highly sought after Gen1 996 GT3s are regarded as the 'Weissach cars'. Turning out 360bhp, the 3.6-litre 'Mezger' engine was a revision of the block used in the GT1 racer of

the Nineties. Combined with pin-sharp handling and a lack of driver aids, the original GT3 became an instant classic.

Just over a decade later came the 997 Gen2, the last manual GT3. Featuring a 3.8-litre powerplant (still a derivative of the Mezger unit) the car turned out 435bhp, while an increase in torque made for a car with great driveability and performance.

To find out how they compared against each other, pick up issue 99 from the Imagine Shop: [www.imaginestop.co.uk](http://www.imaginestop.co.uk).

**996 GT3**

1998-2000



Commonly called the Gen1 GT3, this was a lightweight 996 with a 3.6-litre engine driving the rear wheels. Suspension was lowered by 30mm and brakes upgraded.

Available in Clubsport and Comfort guises, 1,890 were built, of which 103 were right-hand-drive.

Capacity: 3,600cc  
 Compression ratio: 11.7:1  
 Maximum power: 360bhp @ 6,300rpm  
 Maximum torque: 370Nm @ 5,100rpm  
 Brakes: Front: 330mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x10J, 285/30ZR18  
 Length: 4,430mm  
 Width: 1,765mm  
 Weight: 1,350kg  
 0-62mph: 4.8 sec  
 Top speed: 188mph

**RATING:**  
 ★★★★★

**996 Turbo**

2000-05



Distinguished by wide rear arches, air intakes and a deep front spoiler, plus part-fixed, part-retractable rear spoiler. The 3.6-litre engine is different to the naturally aspirated 996

unit and fitted with twin KKK K17 turbochargers and VarioCam Plus. PSM is standard.

Capacity: 3,600cc  
 Compression ratio: 9.4:1  
 Maximum power: 420bhp @ 6,000rpm  
 Maximum torque: 560Nm @ 2,700 to 4,600rpm  
 Brakes: Front: 330mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x11J, 295/30ZR18  
 Length: 4,435mm  
 Width: 1,830mm  
 Weight: 1,540kg  
 0-62mph: 4.2 sec  
 Top speed: 189mph

**RATING:**  
 ★★★★★

**996 GT2**

2001-03



A lightweight, Turbo-bodied 996 with upgraded turbocharged engine that produced 460bhp and drove the rear wheels. The suspension was upgraded.

while brakes had ceramic discs. Revised ECU later gave extra 21bhp and came with PCCB as standard.

Capacity: 3,600cc  
 Compression ratio: 9.4:1  
 Maximum power: 462bhp @ 5,700rpm  
 Maximum torque: 620Nm @ 3,500 to 4,500rpm  
 Brakes: Front: 350mm discs; Rear: 350mm discs  
 Wheels & tyres: Front: 18x8.5J, 235/40ZR18; Rear: 18x12J, 315/30ZR18  
 Length: 4,435mm  
 Width: 1,830mm  
 Weight: 1,440kg  
 0-62mph: 4.1 sec  
 Top speed: 195mph

**RATING:**  
 ★★★★★

**Gen2 996 C2**

2001-04



Face-lifted with Turbo-style headlamps and revised front and rear bumpers. Fitted with the more powerful 3.6-litre engine, VarioCam Plus and other refinements. Manual

and Tiptronic transmission was also improved on. Moreover, the cabin received minor updates.

Capacity: 3,596cc  
 Compression ratio: 11.3:1  
 Maximum power: 320bhp @ 6,800rpm  
 Maximum torque: 370Nm @ 4,250rpm  
 Brakes: Front: 318mm discs; Rear: 299mm discs  
 Wheels & tyres: Front: 17x7J, 205/50ZR17; Rear: 17x9J, 255/40ZR17 (18-inch rims optional)  
 Length: 4,430mm  
 Width: 1,765mm  
 Weight: 1,345kg  
 0-62mph: 5.0 sec  
 Top speed: 178mph

**RATING:**  
 ★★★★★

**996 GT3 RS**

2004-05



Same 3,600cc engine as in GT3, but with excessive weight saving, offering 280bhp per ton – an improvement of four per cent over the Clubsport version of the 996

GT3. Moreover, it also came with PCCB included as standard. White with side inscriptions in blue or red.

Capacity: 3,600cc  
 Compression ratio: 11.7:1  
 Maximum power: 381bhp @ 7,400rpm  
 Maximum torque: 385Nm @ 3,500 to 5,000rpm  
 Brakes: Six piston calipers front, four piston rear  
 Wheels & tyres: Front: 18x8.5J, 235/40ZR18; Rear: 18x11J, 295/30ZR18  
 Length: 4,435mm  
 Width: 1,770mm  
 Weight: 1,360kg  
 0-62mph: 4.4 sec  
 Top speed: 190mph

**RATING:**  
 ★★★★★

**996 Turbo S**

2004-05



A 911 Turbo with the previously optional 30bhp power upgrade, consisting of larger turbochargers, upgraded intercoolers and revised ECU. The ceramic brakes were

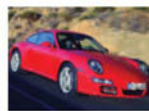
standard, and 18-inch alloys finished in GT Metallic Silver paint, in addition to the highly specced interior.

Capacity: 3,600cc  
 Compression ratio: 9.4:1  
 Maximum power: 450bhp @ 5,000rpm  
 Maximum torque: 620Nm @ 3,500 to 4,400rpm  
 Brakes: Front: 350mm discs; Rear: 350mm discs  
 Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x11J, 295/30ZR18  
 Length: 4,435mm  
 Width: 1,830mm  
 Weight: 1,590kg  
 0-62mph: 4.1 sec  
 Top speed: 191mph

**RATING:**  
 ★★★★★

**997 Carrera 4**

2005-08



The Carrera 4 was much like the 997 Carrera, but with drive to all four wheels via a multi-disc viscous coupling that transferred between five and 40 per cent of traction to

the front wheels. It was 44mm wider at the rear than the Carrera in order to allow for wider wheels.

Capacity: 3,596cc  
 Compression ratio: 11.8:1  
 Maximum power: 325bhp @ 6,800rpm  
 Maximum torque: 370Nm @ 4,250rpm  
 Brakes: Front: 318mm discs; Rear: 299mm discs  
 Wheels & tyres: Front: 18x8J, 235/40ZR18; Rear: 18x11J, 295/35ZR18  
 Length: 4,427mm  
 Width: 1,852mm  
 Weight: 1,495kg  
 0-62mph: 5.1 sec  
 Top speed: 174mph

**RATING:**  
 ★★★★★

**997 Carrera 4S**

2005-08



The same 3.8-litre, 355bhp engine as the Carrera S, but coupled with the four-wheel-drive system on the Carrera 4. It also had 44mm wider rear arches to compensate

for the 11-inch wider wheels and helped give a more aggressive look.

Capacity: 3,824cc  
 Compression ratio: 11.8:1  
 Maximum power: 355bhp @ 6,800rpm  
 Maximum torque: 400Nm @ 4,250rpm  
 Brakes: Front: 330mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 19x8J, 235/35ZR19; Rear: 19x11J, 295/30ZR19  
 Length: 4,427mm  
 Width: 1,852mm  
 Weight: 1,550kg  
 0-62mph: 4.8 sec  
 Top speed: 179mph

**RATING:**  
 ★★★★★

## GREAT VALUE GREAT

## 2001-2005 996 Carrera 4S

Basically a Carrera 4 with the Turbo bodyshell, without rear air intakes, and with a full-width rear reflector panel. The suspension and brakes were similar to the Turbo, while wheels were 18-inch items. The interior spec was higher than that of conventional Carrera 4.

Capacity: 3,596cc  
 Compression ratio: 11.3:1  
 Maximum power: 320bhp @ 6,800rpm  
 Maximum torque: 370Nm @ 4,250rpm  
 Brakes: Front: 330mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 18x8J, 225/40ZR18; Rear: 18x11J, 295/30ZR18  
 Length: 4,435mm  
 Width: 1,830mm  
 Weight: 1,495kg  
 0-62mph: 5.0 sec  
 Top speed: 175mph

**RATING:**  
 ★★★★★



## Gen2 996 C4

2001-04



Face-lifted in line with the rear-drive Carrera, this was the four-wheel-drive incarnation of the aforementioned earlier model. For most people who have experienced it, it drove

a lot like the Carrera and, indeed, there is very little to choose from between them.

Capacity: 3,596cc  
 Compression ratio: 11.3:1  
 Maximum power: 320bhp @ 6,800rpm  
 Maximum torque: 370Nm @ 4,250rpm  
 Brakes: Front: 318mm discs; Rear: 299mm discs  
 Wheels & tyres: Front: 17x7J, 205/50ZR17; Rear: 17x9J, 255/40ZR17 (18-inch rims optional)  
 Length: 4,430mm  
 Width: 1,765mm  
 Weight: 1,405kg  
 0-62mph: 5.3 sec  
 Top speed: 175mph

**RATING:**  
 ★★★★★

## Gen2 996 GT3

2003-05



Also known as the GT3 Gen2, it was based on the facelifted 996 Carrera, but with new spoilers. The 3.6-litre engine produced 381bhp. Suspension was lowered and

uprated, and ceramic brakes optional. The interior was full-spec unless you opted for the Clubsport.

Capacity: 3,600cc  
 Compression ratio: 11.7:1  
 Maximum power: 381bhp @ 7,400rpm  
 Maximum torque: 385Nm @ 5,000rpm  
 Brakes: Front: 350mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 18x8.5J, 235/40ZR18; Rear: 18x11J, 295/30ZR18  
 Length: 4,435mm  
 Width: 1,770mm  
 Weight: 1,380kg  
 0-62mph: 4.5 sec  
 Top speed: 190mph

**RATING:**  
 ★★★★★

## 997 Carrera

2004-08



Fully revised 911 with 993-influenced bodywork and a new interior. The 3.6-litre engine was like the 996, but refined for more power.

Additionally, twin exhaust tailpipes were coupled with rear-wheel drive via six-speed Tiptronic transmission.

Capacity: 3,596cc  
 Compression ratio: 11.8:1  
 Maximum power: 325bhp @ 6,800rpm  
 Maximum torque: 370Nm @ 4,250rpm  
 Brakes: Front: 318mm discs; Rear: 299mm discs  
 Wheels & tyres: Front: 18x8J, 235/40ZR18; Rear: 18x10J, 265/40ZR18  
 Length: 4,427mm  
 Width: 1,808mm  
 Weight: 1,395kg  
 0-62mph: 5.0 sec  
 Top speed: 177mph

**RATING:**  
 ★★★★★

## 997 Carrera S

2004-08



As per the 997 Carrera, but with the more powerful 3.8-litre engine and PASM. 19-inch wheels came as standard, with larger 330mm ventilated discs. It had Quad

exhaust tailpipes, and was available as rear-wheel-drive only.

Capacity: 3,824cc  
 Compression ratio: 11.8:1  
 Maximum power: 355bhp @ 6,800rpm  
 Maximum torque: 400Nm @ 4,600rpm  
 Brakes: Front: 330mm discs; Rear: 330mm discs  
 Wheels & tyres: Front: 18x8J, 235/40ZR18; Rear: 18x10J, 265/40ZR18  
 Length: 4,427mm  
 Width: 1,808mm  
 Weight: 1,495kg  
 0-62mph: 4.7 sec  
 Top speed: 182mph

**RATING:**  
 ★★★★★

## 997 Turbo

2005-10



Similar to the 997 Carrera 4S body, but with extra intakes at the front and sides. It essentially had the 996 Turbo engine, but with all-new twin turbos, Variable Turbine

Geometry (VTG) that effectively gave the best of both small and large turbochargers.

Capacity: 3,600cc  
 Compression ratio: 9.0:1  
 Maximum power: 480bhp @ 6,000rpm  
 Maximum torque: 620Nm @ 2,100-4,000rpm  
 Brakes: Front: 350mm discs; Rear: 350mm discs  
 Wheels & tyres: Front: 8.5Jx19, 235/35/ZR19; Rear: 11Jx19, 305/30/ZR19  
 Length: 4,450mm  
 Width: 1,852mm  
 Weight: 1,585kg  
 0-62mph: 3.9 sec  
 Top speed: 193mph

**RATING:**  
 ★★★★★

## 997 GT3

2006-07



Track-focused car based on narrow-bodied Carrera and with reworked 996 GT3 engine. PASM was standard, but reworked to suit the sporting traits. Revs to

8,400rpm, 200rpm higher than 996 GT3. VarioCam was used on the 997 GT3 to improve torque.

Capacity: 3,600cc  
 Compression ratio: 12.0:1  
 Maximum power: 415bhp @ 7,600rpm  
 Maximum torque: 405Nm @ 5,500rpm  
 Brakes: Front: 380mm discs; Rear: 340mm discs  
 Wheels & tyres: Front: 19x8.5J, 235/35ZR19; Rear: 19x12J, 305/30ZR19  
 Length: 4,445mm  
 Width: 1,808mm  
 Weight: 1,395kg  
 0-62mph: 4.3sec  
 Top speed: 192mph

**RATING:**  
 ★★★★★

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### 997 GT3 RS

2006-07



The RS was similar to GT3, but with the inclusion of the wider rear bodyshell of the Carrera S. 20kg of weight was saved from the original model thanks to carbon fibre engine cover and rear wing and plastic rear window, not to mention the relatively lightweight interior.

Capacity: 3,600cc  
Compression ratio: 12.0:1  
Maximum power: 415bhp @ 7,600rpm  
Maximum torque: 405Nm @ 5,500rpm  
Brakes: Front: 380mm discs; Rear: 340mm discs  
Wheels & tyres: Front: 19x8.5J, 235/35ZR19; Rear: 19x12J, 305/30ZR19  
Length: 4,445mm  
Width: 1,852mm  
Weight: 1,375kg  
0-62mph: 4.2 sec  
Top speed: 187mph

**RATING:**  
★★★★★

### 997 GT2

2007-08



Essentially the 997 Turbo, but with rear-wheel-drive only. Also enjoyed a more track-orientated suspension and brake setup, with GT3-style interior and extra power at 523bhp. Porsche Stability Management and Porsche Active Suspension Management used.

Capacity: 3,600cc  
Compression ratio: 9.0:1  
Maximum power: 530bhp @ 6,500rpm  
Maximum torque: 680Nm @ 2,200-4,500rpm  
Brakes: Front: 380mm discs; Rear: 350mm discs  
Wheels & tyres: Front: 8.5Jx19, 235/35/ZR19; Rear: 11Jx19, 305/30/ZR19  
Length: 4,469mm  
Width: 1,852mm  
Weight: 1,440kg  
0-62mph: 3.7 sec  
Top speed: 204mph

**RATING:**  
★★★★★

### Gen2 997 GT3

2009-2012



This was updated as per the Carrera, but with a unique front spoiler and rear wing, revised PASM, centre-lock wheels and better brakes. An already great car made better.

Problems with rear hubs led to a recall for model year 2010 GT3s.  
Capacity: 3,800cc  
Compression ratio: 12.2:1  
Maximum power: 435bhp @ 7,900rpm  
Maximum torque: 430Nm @ 3,250rpm  
Brakes: Front: 380mm discs; Rear: 350mm discs  
Wheels & tyres: Front: 8.5Jx19J 235/35 ZR19 Rear: 12x19J 305/30 ZR19  
Length: 4,460mm  
Width: 1,808mm  
Weight: 1,395kg  
0-62mph: 4.1sec  
Top speed: 194mph

**RATING:**  
★★★★★

### Gen2 997 Turbo

2009-13



Basically the same as the original 997 Turbo, but with new LED taillights and driver lights up front. Features larger tailpipes, plus a larger 3.8-litre engine with direct fuel injection. PDK transmission is optional. Fuel consumption cut by 16 per cent.

Capacity: 3,800cc  
Compression ratio: 9.8:1  
Maximum power: 500bhp @ 6,000rpm  
Maximum torque: 650Nm @ 1,950-5,000rpm  
Brakes: Front: 350mm discs; Rear: 350mm discs  
Wheels & tyres: Front: 8.5Jx19, 235/35/ZR19; Rear: 11Jx19, 305/30/ZR19  
Length: 4,450mm  
Width: 1,852mm  
Weight: 1,570kg  
0-62mph: 3.4 sec  
Top speed: 194mph

**RATING:**  
★★★★★

### 997 C4 GTS

2010-



As Carrera 2 997 GTS but slightly heavier with four-wheel drive. In either C2 or C4 form, the 997 GTS represented a great saving over optioning up a 997 Carrera counterpart.

Capacity: 3,800cc  
Compression ratio: 12.5:1  
Maximum power: 402bhp @ 7,300rpm  
Maximum torque: 420Nm @ 4,200 - 5,600rpm  
Brakes: Front: 330mm discs; rear: 330mm discs  
Wheels & tyres: Front: 8.5Jx19, 235/35/ZR19; Rear: 11Jx19, 305/30/ZR19  
Length: 4,435mm  
Width: 1,852mm  
Weight: 1,555kg  
0-62mph: 4.6 sec  
Top speed: 188mph

**RATING:**  
★★★★★

### 997 GT2 RS

2010-



The GT2 went back to its roots, with an RS-style lightweight body and interior, plus extra power (620bhp). Instantly recognisable over standard GT2 thanks to lashings of carbon fibre on bonnet, air intake and mirrors.

Capacity: 3,600cc  
Compression ratio: 9.0:1  
Maximum power: 620bhp @ 6,500rpm  
Maximum torque: 700Nm @ 2,500 - 5,500rpm  
Brakes: Front: 380mm discs; Rear: 350mm discs  
Wheels & tyres: Front: 9Jx19, 245/35ZR19; Rear: 12Jx19, 325/30ZR19  
Length: 4,460mm  
Width: 1,852mm  
Weight: 1,370kg  
0-62mph: 3.5 sec  
Top speed: 205mph

**RATING:**  
★★★★★

### 991 Carrera 4

2012-



This model enjoys a wider body, with rear fenders pulled out by 22mm on each side. A major telltale sign that tells it apart from the Carrera 2 is the connecting rear tail light that comes as standard. Also features a torque distribution indicator, which keeps you informed on where the car is distributing torque.

Capacity: 3,436cc  
Compression ratio: 12.5:1  
Maximum power: 350bhp @ 7,400rpm  
Maximum torque: 390Nm @ 5,600rpm  
Wheels & tyres: 8.5Jx19 235/40 ZR19 Rear: 11Jx19 295/35 ZR 19  
Length: 4,491mm  
Width: 1,852mm  
Weight: 1,450kg  
0-62mph: 4.9sec  
Top speed: 177mph

**RATING:**  
★★★★★

### 991 Carrera 4S





2012-







Has the same wider body styling as the Carrera 4, with a rear connecting tail light coupled to 3.8-litre 400bhp flat six engine. Also features six-piston brake calipers at front as opposed to four. Seven speed manual or PDK gearbox option available. Bigger wheels than C4 and 15kg heavier.

Capacity: 3,800cc  
Compression ratio: 12.5:1  
Maximum power: 400bhp @ 7,400rpm  
Maximum torque: 440Nm @ 5,600rpm  
Wheels & tyres: Front: 8.5Jx20, 245/35 ZR 20; Rear: 11Jx20, 305/30 ZR 20  
Length: 4,491mm  
Width: 1,852mm  
Weight: 1,450kg  
0-62mph: 4.5sec  
Top speed: 185mph

**RATING:**  
★★★★★


<p><b>Gen2 997 C2</b> 2008-12</p>  <p>Revised with restyled LED rear lights and front driving lights. M97 engine replaced with a 91 DFI unit, using fewer parts (with no problematic Intermediate Shaft) and direct-fuel injection to give much-improved economy. Seven-speed PDK transmission was a new option.</p> <p><b>Capacity:</b> 3.614cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 345bhp @ 6,500rpm <b>Maximum torque:</b> 390Nm @ 4,400rpm <b>Brakes:</b> Front: 330mm discs; Rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 18x8J, 235/40ZR18; Rear: 18x10.5J, 265/40ZR18 <b>Length:</b> 4.435mm <b>Width:</b> 1.808mm <b>Weight:</b> 1.490kg <b>0-62mph:</b> 4.9 sec <b>Top speed:</b> 180mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>Gen2 997 C2 S</b> 2008-12</p>  <p>Revised as per the Carrera, but with larger 3.8-litre engine – again using fewer components and Direct Fuel Injection. The engine stroke was reduced from 82.8mm to 77.5mm, while the bore went up by 3mm to 102mm, in the process reducing the capacity to exactly 3,800cc.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 385bhp @ 6,500rpm <b>Maximum torque:</b> 420Nm @ 4,400rpm <b>Brakes:</b> Front: 330mm discs; Rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 19x8J, 235/35ZR19; Rear: 19x11J, 295/30ZR19 <b>Length:</b> 4.435mm <b>Width:</b> 1.808mm <b>Weight:</b> 1.500kg <b>0-62mph:</b> 4.7 sec <b>Top speed:</b> 188mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>Gen2 997 C4</b> 2008-12</p>  <p>There were numerous engine and body changes as per the Carrera, but with a wider rear end plus the welcome return of the full-width rear reflector, situated between the light clusters. The new all-wheel drive was appropriated from the 997 Turbo.</p> <p><b>Capacity:</b> 3.614cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 345bhp @ 6,500rpm <b>Maximum torque:</b> 390Nm @ 4,400rpm <b>Brakes:</b> Front: 330mm discs; Rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 18x8J, 235/40ZR18; Rear: 18x10.5J, 265/40ZR18 <b>Length:</b> 4.435mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.545kg <b>0-62mph:</b> 5.0 sec <b>Top speed:</b> 176mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>Gen2 997 C4S</b> 2008-12</p>  <p>The bodywork was as per the Carrera 4, but with the larger 3.8-litre engine. Utilised the 997 Turbo's four-wheel-drive, and Porsche Traction Management. Viscous coupling gives way to electromagnetically controlled multi-plate clutch.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 385bhp @ 6,500rpm <b>Maximum torque:</b> 420Nm @ 4,400rpm <b>Brakes:</b> Front: 330mm discs; Rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 235/30ZR19; Rear: 19x11J, 295/30ZR19 <b>Length:</b> 4.435mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.555kg <b>0-62mph:</b> 4.7 sec <b>Top speed:</b> 185mph</p> <p><b>RATING:</b> ★★★★★</p>
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<p><b>Gen2 997 GT3 RS</b> 2009-</p>  <p>Has wider front arches and a larger spoiler. Dynamic engine mounts and PASM are standard. Air con is optional, with no door handles, wheel brace or sound proofing. Had the lap record for road models at the Nürburgring.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.2:1 <b>Maximum power:</b> 450bhp @ 7,900rpm <b>Maximum torque:</b> 430Nm @ 6,750rpm <b>Brakes:</b> Front: 380mm discs; Rear: 380mm discs <b>Wheels &amp; tyres:</b> Front: 9Jx19, 245/35ZR19; Rear: 12Jx19, 325/30ZR19 <b>Length:</b> 4.460mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.370kg <b>0-62mph:</b> 4.0sec <b>Top speed:</b> 192mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>997 Turbo S</b> 2011-13</p>  <p>As standard 997 Turbo, but with face-lifted body, more power (530bhp) and higher levels of standard equipment, including PCCB, centrelock wheels and ceramic brakes to go with unique two-tone interior and Sport Chrono Plus.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 9.8:1 <b>Maximum power:</b> 530bhp @ 6,250 - 6,750rpm <b>Maximum torque:</b> 700Nm @ 2,100 - 4,250rpm <b>Brakes:</b> Front: 380mm discs; Rear: 350mm discs <b>Wheels &amp; tyres:</b> Front: 8.5Jx19, 235/35ZR19; Rear: 11Jx19 on 305/30ZR19 <b>Length:</b> 4.435mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.585kg <b>0-62mph:</b> 3.3sec <b>Top speed:</b> 195mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>997 Sport Classic</b> <span style="background-color: orange; color: white; padding: 2px;">ULTRA RARE</span> 2010</p>  <p>Based on a 3.8-litre, rear wheel-drive Carrera S, but with 44mm wider rear arches. Several instances of retro styling including iconic ducktail spoiler and large Fuchs wheels. Only 250 examples have been sold worldwide.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 408bhp @ 7,300rpm <b>Maximum torque:</b> 420Nm @ 4200 - 5600rpm <b>Brakes:</b> Front: 350mm discs; Rear: 350mm discs <b>Wheels &amp; tyres:</b> Front: 19x8.5J, 235; Rear: 19x11J, 305 <b>Length:</b> 4.435mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.425kg <b>0-62mph:</b> 4.1sec <b>Top speed:</b> 194mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>997 C2 GTS</b> 2010-</p>  <p>Features the C4's wider rear body and is powered by the 3.8-litre Carrera S engine with a powerkit producing 25bhp extra. The GTS is laden with Porsche options, including PASM, sports exhaust and centre-locking alloys.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 402bhp @ 7,300rpm <b>Maximum torque:</b> 420Nm @ 4,200 - 5,600rpm <b>Brakes:</b> Front: 330mm discs; Rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 8.5x19, 235/35/19; Rear: 11x19, 305/30/19 <b>Length:</b> 4.435mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.420kg <b>0-60mph:</b> 4.6sec <b>Top speed:</b> 190mph</p> <p><b>RATING:</b> ★★★★★</p>
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## 2010 997 GT3 RS 4.0





The pinnacle of 997 ownership, just 600 units were produced. The engine was upgraded and aerodynamically tweaked, too, with angle of rear wing increased and dive planes on either side of the front nose. A future collectors' gem.



**Capacity:** 3.996cc  
**Compression ratio:** 12.6:1  
**Maximum power:** 493bhp @ 8,250rpm  
**Maximum torque:** 460Nm @ 5,750rpm  
**Brakes:** Front: 380mm discs; Rear: 380mm discs  
**Wheels & tyres:** Front: 9Jx19, 245/35ZR19; Rear: 12Jx19, 325/30ZR19  
**Length:** 4.460mm  
**Width:** 1.852mm  
**Weight:** 1.360kg  
**0-62mph:** 3.5 sec  
**Top speed:** 193mph

**RATING:**  
★★★★★

<p><b>991 Carrera</b> 2011-</p>  <p>The first 911 of the newest and latest seventh generation, the Carrera features a 350bhp 3.4-litre engine and takes styling hues from the 993. Completely redesigned chassis, with lengthened wheelbase reducing overhang of engine weight. Panamera-esque interior.</p> <p><b>Capacity:</b> 3.436cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 350bhp @ 7,400rpm <b>Maximum torque:</b> 390Nm @ 5,600rpm <b>Brakes:</b> Front: 330mm discs; rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 8.5Jx19, 235/40ZR19; Rear: 11Jx19, 285/35ZR19 <b>Length:</b> 4.491mm <b>Width:</b> 1.808mm <b>Weight:</b> 1.380kg <b>0-62mph:</b> 4.8sec <b>Top speed:</b> 179.6mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>991 Carrera S</b> 2011-</p>  <p>Same as Carrera, including seven-speed manual box, but utilising 400bhp from a bigger 3.8-litre engine. Slightly larger front brakes than the standard Carrera (10mm bigger discs), with MacPherson front axle and multi-link suspension at the rear. Distinctive 'S' badging on rear decklid.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.5:1 <b>Maximum power:</b> 400bhp @ 7,400rpm <b>Maximum torque:</b> 440Nm @ 5,600rpm <b>Brakes:</b> Front: 340mm discs; rear: 330mm discs <b>Wheels &amp; tyres:</b> Front: 8.5x20, 245/35ZR20; Rear: 8.5x20, 245/35ZR20 <b>Length:</b> 4.491mm <b>Width:</b> 1.808mm <b>Weight:</b> 1.395kg <b>0-62mph:</b> 4.5sec <b>Top speed:</b> 188.9mph</p> <p><b>RATING:</b> ★★★★★</p>
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<p><b>991 GT3</b> 2013-</p>  <p>Electric power steering and wide body shell from 991 Carrera 4 was used for the first time here. PDK transmission only, no manual option. Mezger engine from previous GT3s replaced with revamped version of direct injection 991 Carrera S engine. First models now in the hands of customers.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 12.9:1 <b>Maximum power:</b> 475hp @ 8,250rpm <b>Maximum torque:</b> 440Nm @ 6,250rpm <b>Wheels &amp; tyres:</b> Front: 9Jx20, 245/35ZR20; Rear: 12Jx20, 305/30ZR20 <b>Length:</b> 4.545mm <b>Width:</b> 1.852mm <b>Weight:</b> 1.430kg <b>0-62mph:</b> 3.5sec <b>Top speed:</b> 196mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>991 Turbo</b> 2013-</p>  <p>The new Turbo marks the introduction of electric and rear axle steering, plus PDK-only transmission to forced induction 991 models. With a 100mm longer wheelbase than the 997 Turbo and rear fenders being 28mm wider than even the 991 Carrera 4, this is the longest and widest Turbo model yet.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 9.8:1 <b>Maximum power:</b> 520hp @ 6,000 - 6,500rpm <b>Maximum torque:</b> 660Nm @ 1,950 - 5,000rpm <b>Wheels &amp; tyres:</b> Front: 8.5x20-inch, 245/35/ZR20; Rear: 11x20-inch, 305/30/ZR20 <b>Length:</b> 4.506mm <b>Width:</b> 1.880mm <b>Weight:</b> 1.595kg <b>0-62mph:</b> 3.4sec <b>Top speed:</b> 195mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>991 Turbo S</b> 2013-</p>  <p>Same dimensions as 991 Turbo, but with a tweaked map to provide an extra 40hp. Turbo S also benefits from usual Turbo options as standard including centre lock wheels and PCCB, with Porsche Dynamic chassis Control (PDCC) offered standard for the first time. PTM is all new on both Turbo and Turbo S.</p> <p><b>Capacity:</b> 3.800cc <b>Compression ratio:</b> 9.8:1 <b>Maximum power:</b> 560hp @ 6,500 - 6,750rpm <b>Maximum torque:</b> 700Nm @ 2,100 - 4,250 <b>Wheels &amp; tyres:</b> Front: 9x20-inch, 245/35/ZR20; Rear: 11x20-inch, 305/30/ZR20 <b>Length:</b> 4.506mm <b>Width:</b> 1.880mm <b>Weight:</b> 1.605kg <b>0-62mph:</b> 3.1sec <b>Top speed:</b> 197mph</p> <p><b>RATING:</b> ★★★★★</p>	<p><b>991 50 Jahre</b> 2013-</p>  <p><b>RATING:</b> UNKNOWN</p>
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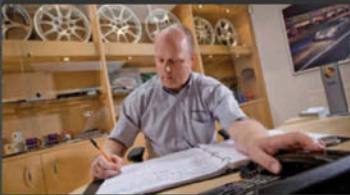


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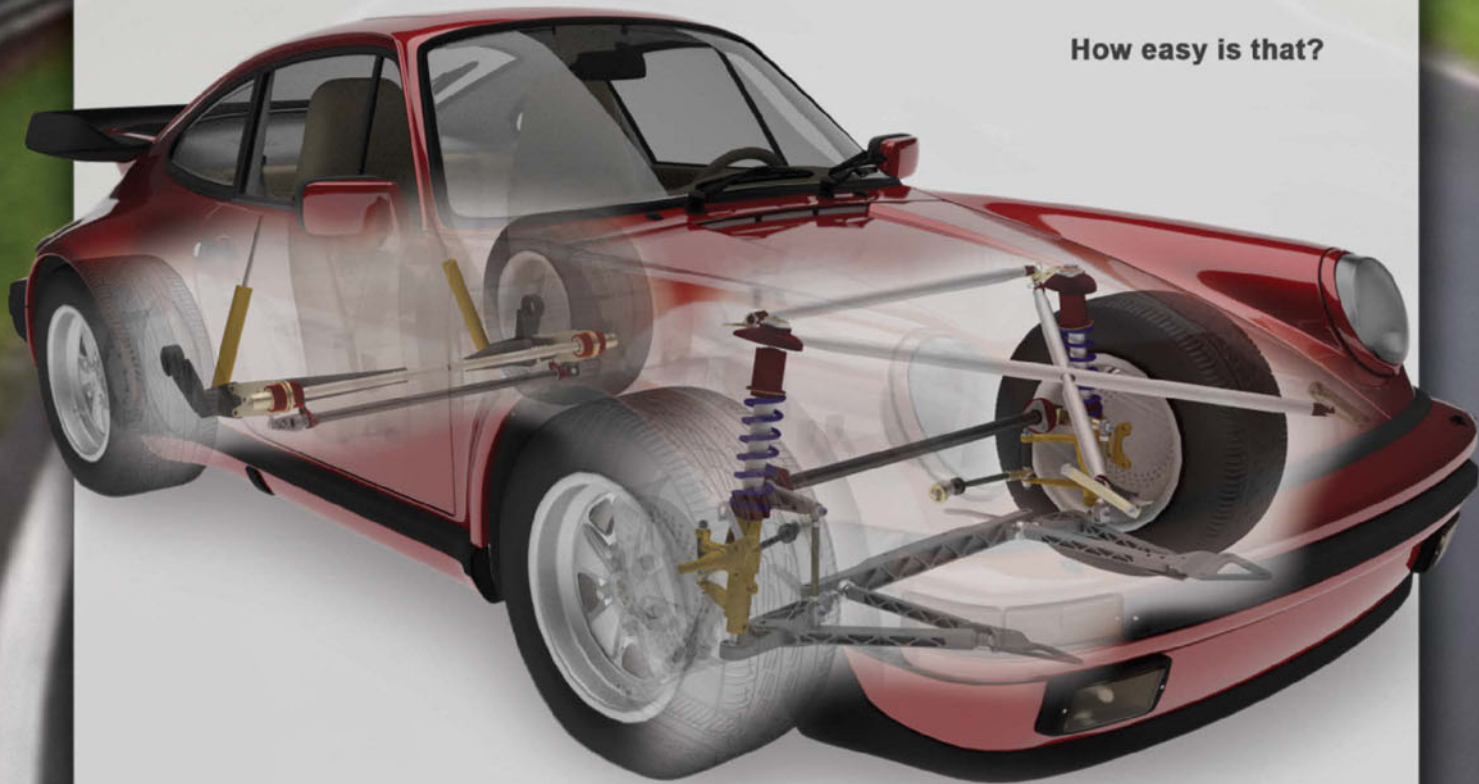
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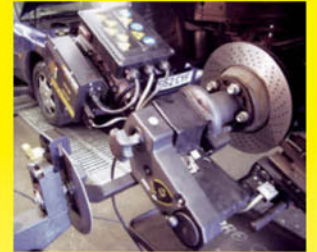
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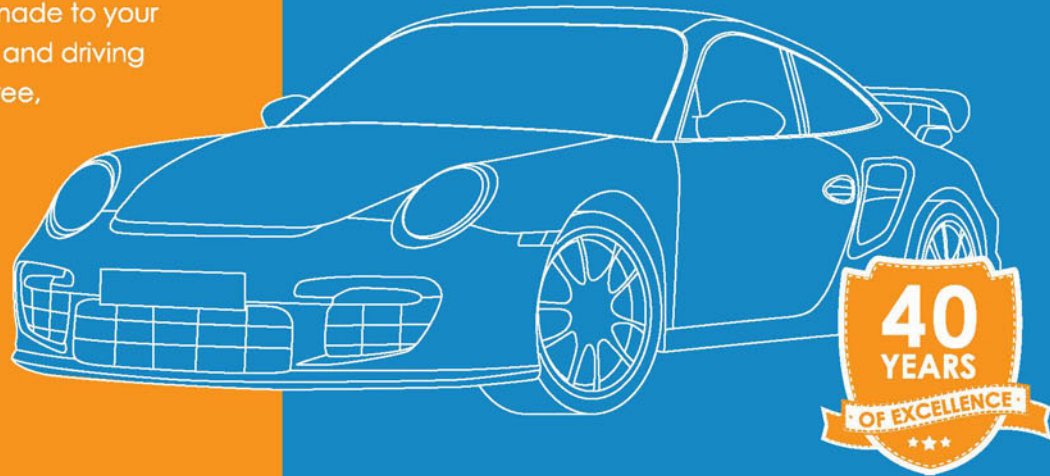
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In **Total 911** the world's only magazine dedicated to the iconic Porsche 911

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One of just 17 homologation special RSs to leave Zuffenhausen is put to the test



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Total 911's 'Urban Outlaw' showcases his collection of air-cooled Turbos



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Total 911 charts the evolution of the 911's four-wheel-drive system from 964-991



### 'CHARGED SHOWDOWN

We assess the merits and pitfalls of supercharging vs turbocharging in the 996



### HARM LAGAAY

The man who oversaw the 911's switch to water-cooling talks to **Total 911**

Issue 111 in shops and online from 4 March 2014

# Pines to Palms scenic byway, CA, USA

Written and photographed by **Tony McGuinness**

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## Essential info

**LOCATION:** Temecula - Palm Desert, CA  
**LATITUDE:** 33.5033 N, 33.7256 N



**LENGTH OF DRIVE:**  
 60 miles approx

**POINTS OF INTEREST:**

Santa Rosa and San Jacinto Mountains;  
 National Monument Visitors Center  
 51500 Highway 74, Palm Desert, 92260  
 Tel: 760-862-9984

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## Experience the best that California has to offer in this varied and action-packed route through the Golden State

**P**alm Desert has always been a playground for the rich and famous. People from all over the USA flock to this jewel in the desert for the winter months, bringing their high-performance cars with them.

The most scenic and by far the most enjoyable way to Palm Desert is via the Pines to Palms scenic byway. Taking CA Highway 79 South from the city of Temecula, you slowly begin the climb up into the mountains. Continue past Vail Lake Resort, where you come upon a larger-than-life 'Old West' stage coach. The rusty steel sculpture is impossible to miss, and is testament to the role this area played in the history

of the Wild West. Enjoy 13 miles of Highway 79 until you come to CA-371 E/Cahuilla Road in Aguanga. Take an immediate left at the stop, and follow the signs to the Palm Desert.

Continue on 371 for 20-plus miles through the town of Anza until you come upon Highway 74, and turn right towards Palm Desert. Initially, the road is deceptively mellow; take your eyes off it at your own peril. Hold your breath, loosen the grip on your steering wheel, and enjoy what is surely one of the best drives you will ever have!

Accelerating up in to the San Bernardino National Forest provides you with a plethora of scenic views. As you continue your ascent through the Santa Rosa mountains, the

road significantly narrows, and the switchbacks come at you fast and furiously.

The descent is nothing short of spectacular. Below you will see the highway as it winds down the mountain. Further off, you may be able to glimpse the Salton Sea. On a very clear day it is said that mountain tops in Mexico are visible!

The ultra-smooth road into Palm Desert leads you to the 111 Highway. Within moments you pass the Santa Rosa & San Jacinto Mountains National Monument before arriving at the 'Rodeo Drive' of the El Paseo Drive. Turn right, and you will possibly see every make of supercar. You and your 911 will be at home in this diamond in the desert. **911**

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