



**993 C4S** YOUR GUIDE TO BUYING THE LAST AIR-COOLED WIDEBODY

# Total 911

THE **PORSCHE** MAGAZINE

## 930 V 991 TURBO

Magnus Walker tests the first and latest generation of 911 Turbo



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**TUNE  
YOUR 997  
GT3 & TURBO  
UPGRADE  
GUIDE**



**DRIVEN: SHARKWERKS GT3 RS 4.1**

# SUPREME 997

Is this tuned RS in its final, hair-raising spec better than a factory RS 4.0?



### PLUS

- ♥ History of Carrera Cup
- ♥ OCD Porsche company profile
- ♥ 911 headlight technology explained

## BATTLE OF THE 'BOX

Huge Sportomatic v Tiptronic v PDK test. How has the 911's auto transmission evolved?



**DigitalEdition**

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ISSUE 122

## 964 CUP DRIVEN

Flat out on track in Roland Kussmaul's brainchild, the last turnkey Porsche racer



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# Welcome



**S**o you've found yourself gazing at the striking 997 GT3 RS gracing this month's cover of **Total 911**. You first notice the unmistakable Gulf-inspired livery, the RS 4.0-esque dive planes attached ahead of the front fenders, and the rear wing sitting atop taller uprights. Then the penny drops. Recognise the car? You may well do.

The SharkWerks 997 GT3 RS 4.1 project isn't new. Those who frequent forums might have seen pictures of it before, while regular devourers of this very magazine will have read our update on the car's development in issue 112, or even seen the feature where we debuted an early rendition in issue 84.

Now though, things are different. After years of planning, hours of engineering and thousands of miles in testing, at last the SharkWerks 997 GT3 RS 4.1 is complete. The 2015 specification of this tuned Rennsport represents its final, most breathtaking iteration yet, and the driver's seat was reserved for **Total 911** to test it first. We wanted to know if the reworked

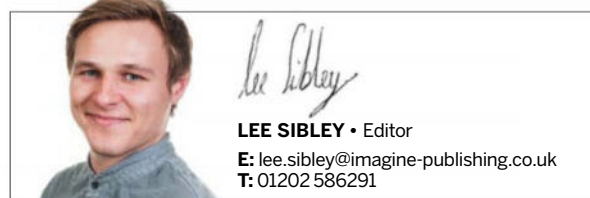
supercar offers a more rewarding drive than the GT3 RS 4.0 from the Porsche factory. Ian Kuah, who's driven both on numerous occasions, has delivered the verdict from page 18.

Zuffenhausen's forced-induction 911 also comes under the spotlight this issue. We investigated the technological evolution of the 911 Turbo with our huge group test in issue 116, but having other generations sandwiched between the 1974 930 3.0-litre and 2014 991 did justice to cloud the sensations between two Turbos some 40 years apart.

Pitting first directly against last would do the trick, then, and who better to carry out the test than our regular columnist Magnus Walker? As you'll have seen from *Living the Legend*, Magnus knows the early model better than most, having owned a plethora of early 930s. The big question is whether any of that early Turbo DNA is still evident today.

As the first issue of 2015, we begin a big year in the evolution of the 911. As you'll see above, there's much to look forward to...

**"The SharkWerks RS 4.1's 2015 specification is its most breathtaking yet"**



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# 911 Opening Shot

Though four decades of technological advancement have dictated a gradual tweaking of the 911 Turbo's appearance, there can be no denying that venerable turbocharged 911 silhouette is still so gloriously unblemished.

Photograph by **Mark Riccioni**







# Contents

## 16 SHARKWERKS GT3 RS 4.1

“The SharkWerks 4.1 has reached its full potential, so this tuned RS in 2015-specification represents the finished article”





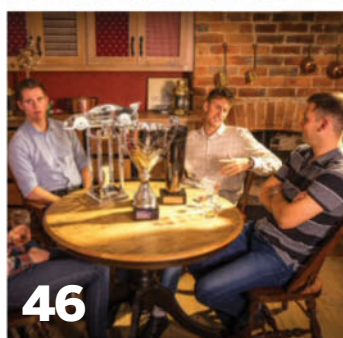
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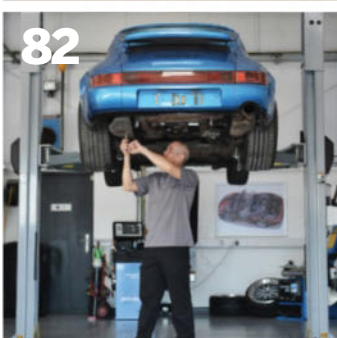
## Essentials

- 08 **Update**  
The latest 911 news, motorsport, and Porsche lifestyle products
- 12 **Views**  
Our new section celebrates the best of your comments about everything 911
- 36 **2015 Subscriptions**  
Get 2015 off to a flying start with these special new year subscription offers
- 73 **New Year Subscriptions**  
Start the new year with this great offer
- 74 **Living the Legend**  
The owners who truly live the dream
- 81 **Premier Porsche**  
Your hub of specialist traders' details
- 86 **Data file**  
Specifications for every 911 since '64
- 113 **Coming soon**  
What to expect in the next issue
- 114 **Great Roads**  
We head to Porsche's second home for an evocative driving route



## Features

- 16 **SharkWerks GT3 RS 4.1**  
We're first to test the 4.1-litre 997 GT3 RS in its finalised specification
- 24 **Tuning your 997**  
How to get more from a Turbo or GT3
- 28 **930 3.0-litre v 991 Turbo**  
We pit the first and latest 911 Turbos against one another in LA
- 38 **Automatic gearboxes**  
Sportomatic v Tiptronic v PDK tested
- 46 **2015 driver interview**  
Nick Tandy, Ben Barker and Josh Webster talk 2014 and beyond
- 52 **Ultimate guide: 993 C4S**  
Our in-depth Turbo-look 993 guide
- 60 **911 headlight tech**  
How the 911's headlight has evolved
- 64 **Carrera Cup History**  
A rundown of the most prestigious one-make race series in the world
- 68 **964 Cup driven**  
What's a 964 Cup car like to drive? We find out in our on-track test
- 82 **OCD Porsche**  
The newest UK specialists profiled





# Update

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



Our exclusive pictures show the 2015 991 GT3 RS in the greatest detail yet



## 991 GT3 RS spied without camouflage

We get our best look yet at the upcoming Rennsport 911

**T**he new Porsche 991 GT3 RS has been spotted for the first time since its Nordschleife outing in August as **Total 911**'s spies photographed the car cold-weather testing in Northern Sweden.

Four Porsche 991 GT3 RSs were caught plowing through the snow as Zuffenhausen readies itself for the new Rennsport's release in 2015, which will be around the time of the Geneva Motor Show in March.

This is the first time the 991 GT3 RS has been seen in the metal without any form of prototype camouflage tape, making the double-bubble roof – the indent of which is matched on the bonnet – clearly visible. Among a number of prominent aerodynamic devices on the latest 911 GT3 RS, the exit vents above the front arches are particularly aggressive, while the Cup-style rear wing will no doubt provide ample downforce.

However, the precise specification of the new RS's flat six is still up for debate, with some unsubstantiated rumours of a return to the Mezger circulating. Recent video footage does suggest that the 991 RSR will be PDK-only, though.

Sources close to Porsche have suggested that the new Porsche 991 GT3 RS will mark the Rennsport's return to truly limited numbers, with the UK likely to see just 38 cars in 2015.



## First 991 Turbo S Exclusive GB Editions delivered

Reports suggest healthy demand for UK-only model celebrating 40 years of Turbo

Porsche's celebration of the decorated 911 Turbo's 40th birthday last year was marked with a special edition for UK customers, and early indications have shown healthy demand for the limited-run Turbo S.

As we revealed in issue 117, only 40 examples of the 991 Turbo S GB Edition will be built. **Total 911** visited Porsche Centre Bournemouth for the official unveiling of the car at the end of 2014, which featured a stunning Guards red example. Just 12 versions of the car will be made in Guards red, and the hue has already proved popular: OPC Bournemouth quickly announced they had already sold two examples and, after an example in GT silver was sold the evening after the

official launch, they are the only Centre to sell more than one example as we went to press. We expect all examples to sell by early 2015.

In other news, the European leg of Porsche's 'pop-up store' platform was hosted in Westfield shopping centre at London's Shepherd's Bush. Named 'The Sound Of Porsche', the unique exhibition gave mainly younger visitors the chance to take a closer look at the Porsche brand. The three-week-long event also provided a platform for Porsche Cars GB to debut the new 991 Carrera GTS in the UK. The London event followed a successful debut in New York in September, and the 'pop-up' tour moves on to Shanghai next.



## What's on in 2015

March	June	August	October
<b>Geneva Motor Show 5-15 March</b> Will there be some exciting Porsche 911 news at the 85th Salon Auto in Geneva?	<b>Amelia Island Concours 13-15 March</b> The Florida-based classic celebration also sees an RM Auction sale on 14 March	<b>Wilton Classic Supercar 6-7 June</b> 2015 is going to see the UK classic and supercar show grow to new heights	<b>Goodwood Festival of Speed 25-28 June</b> Lord March's annual driveway blast is sure to attract Porsche stars past and present
		<b>Monterey Car Week 10-16 August</b> This celebration of all things automotive highlights the best of Californian 911 culture	<b>Rennsport Reunion V 9-11 October</b> More than just a historic race meeting, the Laguna Seca extravaganza is a must see



## Porsche announce new Stuttgart hire scheme

### Porsche Drive initiative allows you to hire a 911 from the Museum

Have you ever wanted to drive a brand new Porsche 911? As part of the new Porsche Drive initiative, you now can. A pilot project from Porsche AG, Drive will allow potential customers and fans of the Zuffenhausen brand to test drive cars from the current crop as part of a hire scheme.

"The fascination of our sports cars can be directly experienced with Porsche Drive," explains Bernhard Maier, member of Porsche AG's Executive Board Sales and Marketing department. The cars can be hired for between one hour and

one week, with the most accessible entry into the scheme costing €69 (£55) for 60 minutes in a Boxster or Cayman. Porsche 911 prices start from €99 (£78) for an hour's driving (with an ample 100km distance limit within that timeframe).

Booking, handover and return takes place at the Porsche Museum, with a Porsche Drive representative to be found in the Museum's lobby. Reservations and bookings are available 9am to 6pm Tuesday-Sunday, with Monday returns between 7am and 12:30pm. For more information, email [info@porsche-drive.de](mailto:info@porsche-drive.de).



## RPM launch Special Projects Department

UK independent specialist joins the popular bespoke Porsche 911 market

One of the foremost Porsche specialists, RPM Technik has announced it is opening a Special Projects Department to cater for customers who wish to create bespoke 911s.

Built in limited numbers, the output from the new Special Projects Department will see RPM construct unique Porsches, with options like bespoke interior and dash work, custom body fabrication and bare metal paintwork, as well as suspension and brake upgrades.

"There is a growing number of discerning customers who want something really special," explains RPM Commercial Director, Darren Anderson. "The most popular request is for a retro-look car using a 964 or a 3.2 as a base vehicle. From there, it really is up to the customer on how imaginative they can be. If they can imagine it, we will build it."

With a limited number of build slots, head to [www.rpmtechnik.co.uk](http://www.rpmtechnik.co.uk) for more information.

## In brief



### EB RSR oil pump housing

Previously unavailable for decades, EB Motorsport has launched its new gearbox oil cooler housings for 911 Carrera RSR models. Re-created in cast aluminium form, the EB pump housing was modelled on an original modified 915 transmission end case in order to achieve an accurate reproduction.

The oil pump housing is supplied with bushes for the pump gears and the correct metric/fine adaptors and crush washers, and is priced at £296, in addition to carriage and VAT. For more information, head to [www.eb-motorsport.com](http://www.eb-motorsport.com).



### Forge 997.2 dump valve

Catering for the ever-growing number of tuners wishing to work on 997 Gen2 Turbos, Forge Motorsport has unveiled a vent-to-atmosphere dump valve for the second-generation 997 Turbo.

Developed for both standard cars and those with already tuned Turbos, Forge claim their twin-piston valve has performed better than Porsche's stock item, while still remaining fully compatible with the standard ECU.

The black anodised valve, complete with fitting kit, is available now for £259.68 plus VAT. For more information about this product, head to [www.forgemotorsport.co.uk](http://www.forgemotorsport.co.uk).



# 911 in Motorsport

The latest news and results from racing series around the globe



## 2015 United SportsCar Championship

### The US racing season kicks off with the 24 Hours of Daytona

**J**ust two months after securing the Tudor United SportsCar manufacturers' championship, Porsche's title defence gets underway with two bouts of track action at the Daytona Motor Speedway.

Between 9-11 January, the 2015 Tudor United SportsCar Championship kicks off with the 'Roar before the Rolex 24' tests – a first chance to gauge the competitors in the GTLM class. Porsche has already prepared for the new season with a two-day test at Daytona in November after the conclusion of last season.

As Nick Tandy explained in his column last issue, the tyre and performance test proved fruitful for Porsche North America Racing as it returned to Daytona for the first time since a raft of Balance of Performance changes improved the 991 RSR's competitiveness in mid-2014.

Two weeks later, the Tudor circus returns to the Florida roval (part-road, part-oval circuit) for the main event: the

Rolex 24 Hours of Daytona. The twice-round-the-clock event marks the first points-scoring opportunity for all the USCC classes. With the GTLM class always proving close, a good start to the season is imperative.

Last year, the number 911 machine piloted by Tandy, Richard Lietz and Patrick Pilet, ran strongly, having qualified second. The two Porsches headed the field for long periods of the night before the number 912 RSR of Michael Christensen, Patrick Long and Jörg Bergmeister was forced out. Despite a late-race caution period leaving a short sprint to the chequered flag, the remaining Porsche 911 RSR fended off the BMW challenge, kick-starting Porsche's run to the 2014 manufacturers' crown.

With three 991 RSRs entered this season, Weissach will be hopeful that the strong endurance form that saw its cars take victory at Daytona, Sebring and Petit Le Mans in 2014 will return.

### Unmissable 2015 events

The eight motorsporting events not to miss this season

#### Rallye Monte Carlo

30 December – 11 January

The new FIA R-GT Cup will see Tuthill well represented with their 997 rally car.

#### 24 Hours of Daytona

22-25 January

One of the crown jewels in the US racing scene and the opening round of the 2015 TUSCC.

#### FIA WEC Silverstone

10-12 April

The first chance to watch the Le Mans challengers in competitive action.

#### 24 Hours of Le Mans

13-14 June

Can Porsche take their 17th victory at La Sarthe? 2015 will see three 919 Hybrids compete.

#### Porsche Supercup Silverstone

3-5 July

The world's premier 911 race series heads to UK shores to support the British Grand Prix.

#### Goodwood Revival

11-13 September

Lord March's incredible celebration of all things historic returns for its 18th running.

#### Petit Le Mans

30 September – 3 October

Ending the US endurance season, the atmosphere at Road Atlanta is always festival-like.

#### East African Safari Classic Rally

19-27 November

Held biannually, this rally evokes the testing nature of the original, gruelling Safari event.



## Porsche signs Nico Hülkenberg

### F1 star to race third 919 Hybrid at 24 Hours of Le Mans

Nico Hülkenberg, the Force India F1 driver, will race for Porsche at this year's 24 Hours of Le Mans. The 27-year-old racer will drive the recently announced third 919 Hybrid LMP1 entry at this June's famous French endurance race.

The German racer re-signed for Formula One team Sahara Force India last October, ensuring a 6th F1 campaign for the ex-European Formula 3 and GP2 champion. However, team boss Vijay Mallya has given Hülkenberg special dispensation to take part in this year's 24 Hours of Le Mans on 13-14 June, as well as one warm-up event, likely to be May's Six Hours of Spa-Francorchamps.

Porsche's latest signing undoubtedly strengthens the 919 Hybrid LMP1 project as Weissach aims to take its 17th overall Le Mans triumph. Hülkenberg has at various points in his stellar F1 career been linked with a move to Ferrari, and the German's quality behind the wheel is not lost on LMP1 Team Principal, Andreas Seidl: "Having caught the interest of another world-class driver like Nico is validation for the job the entire Porsche LMP1 crew had done in our first WEC season. Now, we will prepare Nico for his new challenges, such as dealing with the traffic of the slower GT cars and racing into the Le Mans night."





# Porsche lifestyle

**Total 911** brings you the best selection of exhaust systems to improve the acoustics of your water-cooled flat six

## RPM Technik CSR sports exhaust boxes £1,680

First launched on the Porsche 997, RPM Technik's CSR concept has now transferred across to the 996 generation. Part of the package includes this in-house exhaust design for the 3.4-litre Carrera engine. The TIG-welded system, made from 304 stainless steel, features a helmholz resonator to reduce the boom that is present in some performance exhausts, while the mandrel-bent tubes create optimum gas flow.

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



## Quicksilver 996 sports system £1,416

Working with both 3.4 and 3.6-litre versions of the Porsche 996's M96 engine, Quicksilver's sports exhaust is a ten-kilogram bolt-on system that, like the other units here, is beautifully manufactured in 304 stainless steel. Providing an amplified sound from the often muted 996 flat six, this Quicksilver unit is a work of art that looks as good off the car as it will sound on it, while also providing a slight increase in torque and throttle response.

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



## Milltek Sport 996 Carrera cat-back system £870.58

Milltek are very often one of the first names to crop up in discussions about performance exhausts, and with good reason. Their exhausts are expertly crafted, with this 996 system being no exception. The 304 stainless steel system is a direct replacement for the OE unit fitted to 996 C2, C4 and C4S models and weighs in at 14 kilograms. Retaining the original trim assemblies, Milltek claims an improved throttle response too.

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



## SharkWerks muffler bypass & enlarged tips £1,705

As you will see in the coming pages, SharkWerks is no stranger to 911 tuning, with their exhaust systems proving popular for their added performance and exuberant noise. This muffler bypass system for all 997 GT3 and GT3 RS variants

reduces the overall exhaust system weight by 7.25kg while also unleashing a savage note from the GT3's Mezger flat six. The 88mm diameter-enlarged tips can be bought separately for £420.

[www.regal-auto.co.uk](http://www.regal-auto.co.uk)





# Views

The very best of your Porsche opinions via emails, letters and social media

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editorial@total911.com



## Letter of the month



## 959 achievements

Dear sir,

Having had the incredible opportunity to drive Helmuth Bott's 959 (prototype chassis number six) now in Brumos Porsche's collection when we were working on a film about it, I can tell you that the 959 is nothing like a 911 save for the similarity in the seats and the dashboard clocks. They are but small similarities compared to the main aesthetics.

Everything from the active suspension that you feel working to soak up the road, to the twin turbos that have one seemingly spooled at all times – reducing

if not ridding turbo lag – show this car to be on such a top shelf above all others. It took Porsche nearly an additional decade (and then some) to bring that far-reaching technology into their other cars.

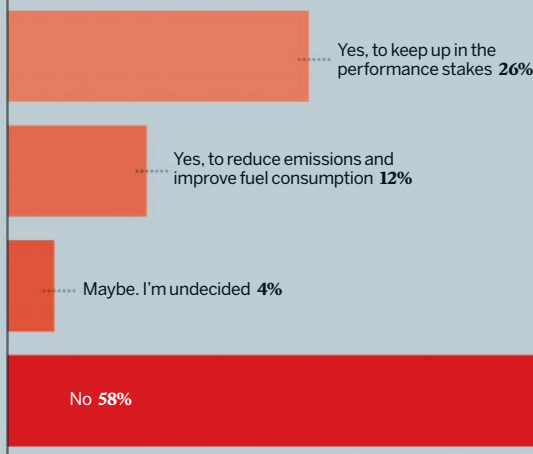
We owe former CEO Peter Schutz a massive debt of gratitude for green-lighting that project (never mind keeping the 911 alive in his 1980 decision) and taking Porsche into the future, long before the company would catch up with it in their 911s a decade or so later!

Jim Goodlett

### Total911.com Poll

Do you think the next 911 generation has to be turbocharged?

The rumours keep persisting, but here's your outlook on the possibility of a forced induction-only future for the Porsche 911...



### @Total911

The best views across our social media streams:

**@itsleesibley:** Interesting that a v. worried @Porsche salesman came & found me this eve to say he's heard only 38 991 GT3 RSs are coming to UK. Surely not?

**@Josh\_No90:** Tough work whittling down the longlist for the @Total911 photo of 2014. Watch out for first round of voting later:

**@singervehicles:** @Total911 You guys tweet our favourite photos. Keep it up! Everyone should have a riviera blue RS

**@kurtbradley:** My picture of the 991 at #LoneStarLeMans wasn't bad either.





Write to or email us with your Porsche opinions and the author of the letter of the month will receive a complimentary copy of the **Porsche 911 Turbo 40th Anniversary bookazine** worth £9.99!



## IMS anxiety

Dear Sir,

Can someone tell me what the failure of the intermediate shaft bearing sounds like please? I was driving last night and, going to pass someone, the engine revved up.

However, I felt a sudden decrease in power. I thought it was the rev limiter, but about an hour down the freeway I pulled over for gas and heard a tapping sound out of the engine. Any thoughts on this?

Tom Balestreri



This month saw a big online debate over the merit of stock v modified/backdated classics

## Value of modifying

Dear Sir,

Reading the sales debate in issue 120 ("Can you modify a 911 and still add value?") got me thinking about the subject of personalising Porsches and their financial worth.

Looking through the features of the last year, many of the great modified cars often contain the concept of improvement while at the same time preserving the appearance of the original car. In America during the Fifties and Sixties, these were known as sleeper cars. They looked a lot like the Coupes of the day, but they cornered like the devil and went like a bat out of hell.

Today, starting with a more common chassis appears to make a lot of sense. You don't want start with a rare colour

long hood 911S to create an RS, especially if you can take a 911T, for example, and retain the entire 911T appearance both inside and out. If you put a 2.7 RS or a 2.8 RSR engine under the decklid of that basic 911T (while using period-correct options for the same year) it is very doubtful that a well-executed example would go for lower money than a pure stock version would fetch (notwithstanding museum pieces and Concours cars).

If the idea is to maintain the admiration of those looking at the car, the closer the car remains to originality, the broader the slice of the buyers market will be when it becomes time to sell or auction the car. However, 'personalisation' can be pretty much anything (as Singer has so amply shown us), yet the market for bespoke 911s

is not exceptionally broad in terms of the values it achieves.

A 911 T or E, however, that looks exactly like it came directly from Stuttgart, but can duplicate the performance of a 1973 RS will surely retain all of the value of even a numbers-matching car as detailed.

Alex Ford

## Evoking a classic

Dear Sir,

I can understand those that think that what leaves the factory should stay as built. However the 911, more than perhaps any other car, is designed for modifying. Even Porsche modify the 911; they do it on every model and encourage such modifications by releasing modified versions by the bucket load of every 911 incarnation.

Having owned numerous original 911s over a 30-year period, I now have a 911 2.7 RS evocation. My car was originally a 3.2 Carrera, and I appreciate that the 3.2 is indeed a classic in its own right. But, my car looks like a 1973 2.7 RS but has a galvanised body, uprated suspension and brakes and 30bhp extra power. It is also lighter than the 2.7 RS Touring and so it handles and drives like a dream. It is better than an original, but worth ten per cent of the price of an original.

However, I can drive my car daily without worrying about the weather or stone chips. I can take it shopping and thrash it around the back lanes. If it was an original it would be in storage in an electronically controlled environment. Really, what is best?  
Ian

### Join the debate

Facebook /total911magazine Twitter @Total911 Web www.total911.com

@NeillWatson: Race tracks are always cold in December. @BlytonParkDC freezing in the wind today. Still, some interesting Porsches to drive for @Total911



@Autofarm: Upgraded #porsche 996 now has 3.7 engine - set to appear in @Total911 in not too distant future...

@BenBarkerMsport: At the local of @NickTandyR yesterday. Bumped into @joshjwebster and @Total911.. thought we'd make an interview of it!



@itsleesibley: Well, it is the everyday supercar, right? #991C4S

### Total911.com hot topic:

## Why the 991 is the best generation of Porsche 911 Carrera

After Lee's week with the latest 911 Carrera 4S with Powerkit, he felt the need to defend the 991's reputation. Here are the best of your responses...

If the latest generation isn't the best there must be something wrong...  
Remi Eriksen

991 is the best Audi Porsche has ever made.  
@MrGrunt101

No - it has to be the 993 or 964. The Porsche 991 is too much like a BMW  
@StuttgartLegend


Of the ones I've driven, yes it is.  
Craig Adams

They get better and better but are they more desirable?  
@andrewmckay99uk



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editorial@total911.com



## Matching numbers

Dear Sir,

I am a 996 owner, however, I'm looking to purchase an air-cooled 911. Matching numbers is important, so can you please do an article on how to check these?

Sam Du Verne

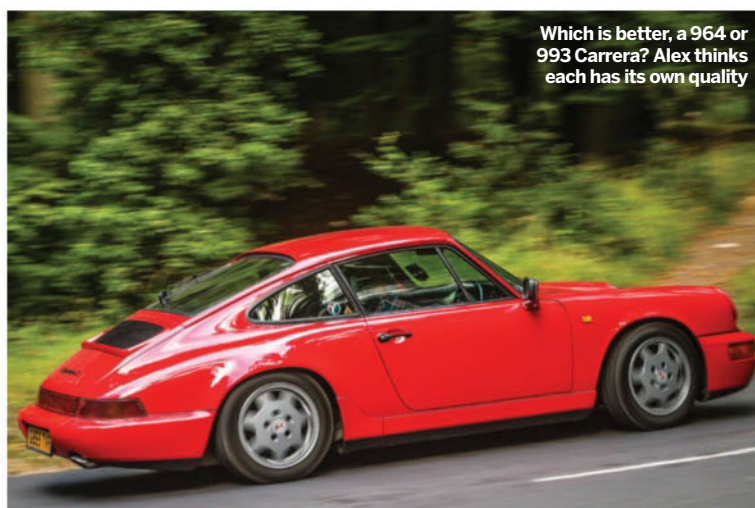
## Only three stars?

Dear Sir,

I see from issue 120 of **Total 911** that the 964 is described as a "fantastic 911" in response to Ken Senter's 'letter of the month'. In last month's issue, your Senior Staff Writer Josh Barnett (after driving a 964 C2 Coupe) said, "I think I've found my new favourite 911".

Yet, another month goes by where, in the 'Data File' section, you give the 964 C2 only three stars and the C4 an even worse two and a half stars.

Brian Thompson



Which is better, a 964 or 993 Carrera? Alex thinks each has its own quality

## 964 v 993

Dear Sir,

In response to the online 964 v 993 debate, I have had the opportunity to own both. The 993 is a more modern car to drive compared to the 964. I can drive the 993 faster without feeling like I'm losing control thanks to the enormous grip from the back wheels.

The 964 has a slightly different personality, perhaps because it is tuned towards race car driving behaviour. As I am not a racing driver, I cannot unleash the

wildness (or fun) of the 964. However, as I learn more about traditional sports cars, I start to appreciate its characteristics.

In my mind, you need to more intensively engage with the 964 to appreciate its character. Meanwhile, you can drive the 993 very fast and feel very safe: you don't need to be an extreme sports car enthusiast to get the fun out of it.

Depending on your state of mind, you will appreciate them differently. Ultimately, I wish I could own both.

Alex

## WIN! Win an Elliot Brown Canford watch



Last issue, you may have seen our timepiece showcase, starring an Elliot Brown Canford. Designed just a few miles away from the **Total 911** office, Elliot Brown is quickly becoming the first name in tough yet stylish wristwear and their pilot-style Canford model is no exception.

Now, in our latest competition, you can win an Elliot Brown Canford 202-003 – an awesome way to start the new year. With its combination of a white face, marine-grade brushed steel casing and brown soft leather strap,

the Canford 202-003 is a classically styled watch that suits all occasions, from day-to-day wear to an important business meeting or dinner date.

It has all the features that Elliot Brown fans have come to love, including the unique triple-seal system that prevents fluid ingress into the casing, even with the crown pulled fully out. Along with the neat steel carrier that houses the five-year movement, the Elliot Brown Canford is a truly tough watch that exudes Porsche levels of engineering and design genius. You'll never want to take it off.

To be in with a chance of winning this incredible timepiece, just answer the following question:

**How much pressure is applied to every Elliot Brown watch during their underwater pressure testing?**

You will be able to find the answer at [www.elliottbrownwatches.com](http://www.elliottbrownwatches.com). Simply send your answer to [competitions@total911.com](mailto:competitions@total911.com) with 'Elliot Brown' in the subject line. The Editor's decision is final, full terms and conditions can be found on the Total 911 website. The closing date is 4 February 2015. Good luck!

**Total 911**  
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# SHARKWERKS GT3 RS 4.1 SUPREME 997

SharkWerks' 4.1-litre Rennsport is touted as being capable of unlocking the full potential of the 997 GT3 RS. Total 911 drives the car in hair-raising 2015 specification and finds out why it's better than ever...

Written and photographed by **Ian Kuah**











Aside from its Gulf-inspired livery, the SharkWerks GT3 RS doesn't appear too dissimilar to a factory variant. Under the decklid is a different story, however...

**M**y first acquaintance with the blue-and-orange SharkWerks 997 GT3 RS was in November 2011, shortly after Alex Ross and his team took delivery of the car. Barely run in and in 3.8-litre specification at the time, it had just received the SharkWerks exhaust, ECU, suspension, plus wheel and tyre upgrades. I used it as the reference point for their 997 GT3 3.9, and one of their more lightly tuned 997 GT3s.

With even more power and torque than the factory 4.0-litre RS, which I had driven that summer, the GT3 3.9 was a most impressive motor, and I came away from my first visit to the Fremont-based Porsche tuner with more than a little reverence for their work and enthusiasm.

Fast-forward to late 2013, and Alex had emailed me to say that their 4.1-litre conversion on the GT3 RS was finally ready to be driven. Having been impressed with the 3.9-litre conversion in the GT3, I was expecting fireworks from its bigger Rennsport brother, and I was not disappointed.

The 4.1 proved deeply impressive from the word go, oozing power and torque everywhere. It quickly became obvious that you could drive everywhere one gear higher than the factory 3.8 GT3 RS for any given speed, with plenty of 'go' on tap if you needed to accelerate away quickly.

The big-displacement motor simply makes everything more effortless, and will pull strongly

from just 1,200rpm in fourth. In fact, if you could slip the clutch enough to pull away in fourth, you could drive everywhere in that gear within all normal road speed limits.

You only have to look at the torque curve to see why. The 4.1 makes between 85-105Nm more torque than the factory 3.8 GT3 RS between 2,900-5,300rpm. Crucially, this is also substantially more than the factory 4.0-litre RS, which peaks at only 30Nm more than the 3.8 with 460Nm at 5,750rpm.

Subjectively, the SharkWerks 4.1-litre RS feels quite different from any other tuned Porsche GT3-based road car I have driven before or since. Where the factory 997.2 GT3 RS with its single-mass flywheel revs quickly and smoothly to its redline, and the 4.0 is more of the same but with a bigger punch, the SharkWerks 4.1 feels like a 4.0 on steroids, coupled with similar aspects of the new 991 GT3's even higher-revving motor.

Revvng fast and hard is not the only characteristic to be worthy of note here. While the factory 3.8 and 4.0-litre Rennsports produce more and more power as they head for their respective redlines, there is a fundamental difference in the way the SharkWerks motor answers the throttle, which makes this big engine all the more enticing. Where both factory motors release their power in a fairly linear fashion with rising engine speed, from around 4,000rpm upwards the SharkWerks 4.1 feels like raw energy is trying

to force its way out of the motor. This is not felt as a surge akin to a traditional turbocharged motor, but rather as with a greater eagerness to rev at the top end, and one that suitably complements its significantly stronger low-end grunt. Alex later told me this is a direct result of the near-ideal bore and stroke ratio of the motor and the perfect balancing work carried out on all the engine's reciprocating components. Incidentally, this bore and stroke relationship is the main reason why other combinations such as the longer-stroke 4.3 variant simply did not make the cut. This was proven on a recent trip to Germany, where I found myself at the wheel of a tuned 4.3-litre GT3 RS: the engine simply failed to deliver the power, torque and free-revving character of the SharkWerks 4.1. Certainly then, the new components added to the GT3 RS by Alex and his SharkWerks team seem to have created a synergetic confluence of positives that stack up in the 4.1's favour.

The 4.1-litre motor is a joint development between John Bray at Evolution Motorsport (EVOMS) and SharkWerks' resident engine guru, James Hendry. With the bore staying at 104.5mm, the stroke is changed from the familiar 76.4mm to 80.44mm. The all-new crankshaft is machined from a solid billet of 4340 high-alloy-content steel, with 12 radically profiled counterweights knife-edged to reduce hydraulic drag in the oil pan. This is lightened and dynamically balanced. It has an





Tweaks to the intake and exhaust of the SharkWerks GT3 RS 4.1 this year have built on extensive previous work to unlock even more performance thrills at the top end of the engine's high rev limit





Model	<b>SharkWerks 997 GT3 RS 4.1</b>
Year	<b>2011</b>
Engine	
Capacity	4,150cc
Compression ratio	13.1:1
Maximum power	560hp @ 7,950rpm
Maximum torque	550Nm @ 5,300rpm
Transmission	Six-speed manual
Suspension	
Front	Bilstein Clubsport coilovers
Rear	Bilstein Clubsport coilovers
Wheels & tyres	
Front	9x19-inch forgeline ga1r; 245/35/19 tyres
Rear	12x19 forgeline ga1r; 325/30/19 pilot sport cup Michelin
Dimensions	
Length	4,427mm
Width	1,808mm
Weight	1,344kg
Performance	
0-62mph	3.6 secs
Top speed	Not tested

“The 4.1 is deeply  
impressive, oozing  
**power** and **torque**  
everywhere”







Omicron surface hardening finish to 2.0 microns, and also features a Multi-Rate rod journal oiling system. The basic crank without its gear weighs about 0.25 kilograms less than the stock item, but is even stronger in tensile strength terms and good for 9,500rpm. The main bearings are OE Porsche, while the bespoke con-rod bearings are smaller than stock, and made from a harder material to handle the higher loadings.

Meanwhile, the teflon-coated pistons come from a European manufacturer. Their skirts are almost the same length as the stock ones, but the domes are to EVOMS' own specification. The wrist pins are titanium, and the three oil control rings are also specific for these pistons. Despite being larger, each piston/wrist pin combination saves 20 grams over the stock 3.8 items. With a bore size of 104.5mm, EVOMS were right on the edge of what is possible with this crankcase. The new pistons sit in specially upgraded iron liners in the crankcase too.

The connecting rods are from Carrillo, who make a very strong steel alloy rod in their famous H-section design that is almost as light as the OE titanium rod. Titanium rods are classified as maintenance parts, as they can stretch over time and use, which isn't a problem in a race engine that's being rebuilt all the time, but is the last thing a client needs in a street-friendly engine.

And that was how things were when I first drove the car a year ago. With the 4.1-litre engine's internals completely sorted, extracting its full potential was now down to fine-tuning the intake, exhaust and ECU software. Alex told me that he was waiting on a new carbon-fibre airbox that could flow around 60 per cent more air than the factory 3.8 RS unit. While the factory 4.0-litre airbox would do the trick, the cost of this larger-volume hand-laid carbon airbox, housing a pair of high-flow conical air filters, was prohibitive. Fortunately though, one of SharkWerks' suppliers in Germany had begun to manufacture a similar unit for a lot less, and this was shipped to California and duly fitted.

At the other end of the 4.1-litre motor, it was clear that exhaust gas extraction would benefit from a header system with slightly larger-diameter pipes. Once this was in place, a final dyno session to map the ignition and fuel curves to make full use of the better breathing rounded things off.

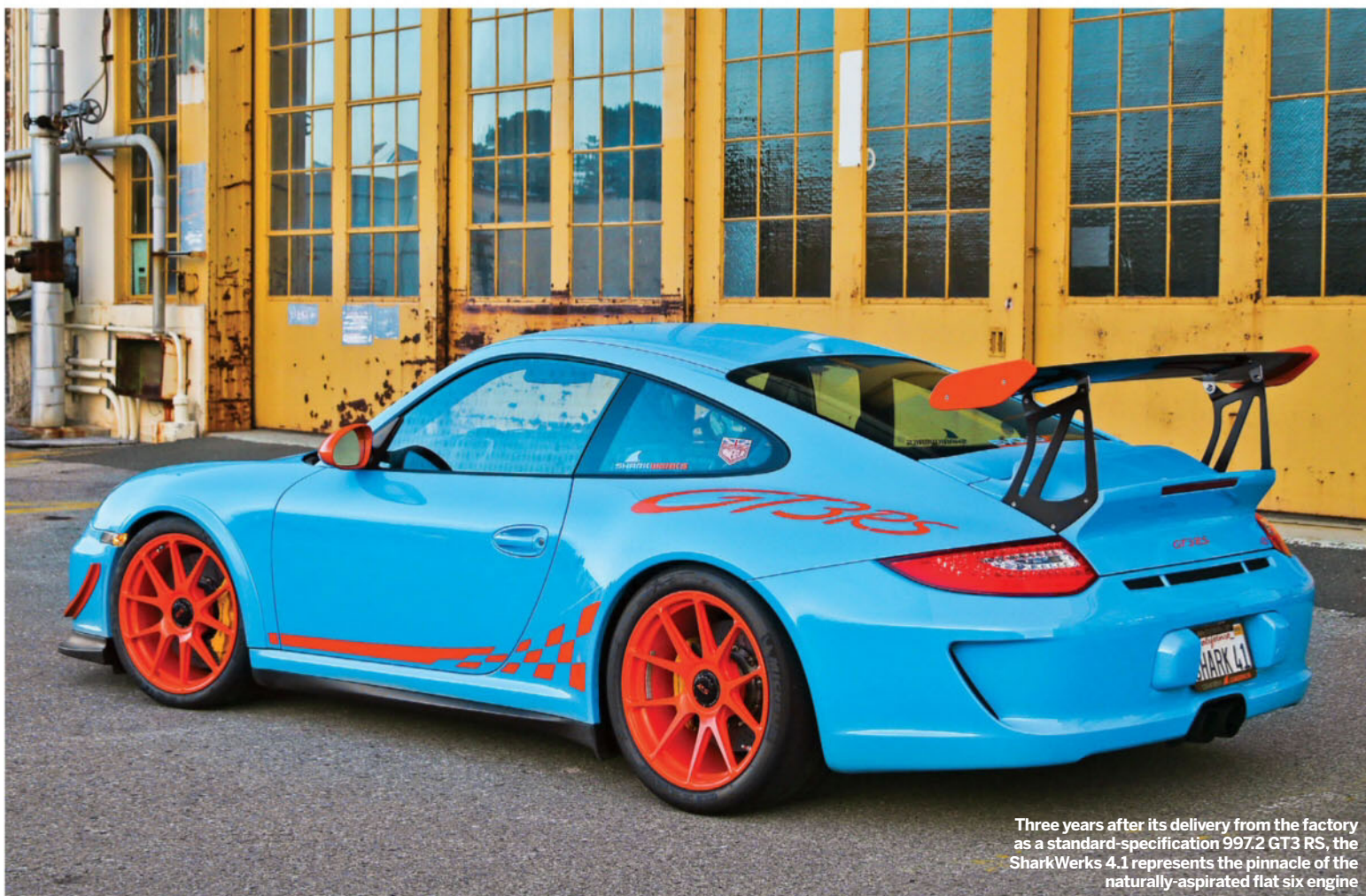
In the interim, Alex also fitted lighter and better-looking Forgeline alloy wheels, and uprated the suspension by replacing the PASM with the first Bilstein Clubsport suspension kit to reach the US. This makes the front end feel even more secure without damaging the ride quality.

My drive that day in 2013 left a deep impression that did not fade with time, so when Alex mentioned this autumn that the new intake and exhaust were in place and the dyno numbers were spectacular (560hp and 550Nm of torque), I simply couldn't wait to get back behind the wheel of the SharkWerks RS 4.1 again.

Getting straight out of the international terminal at San Francisco airport and into the hot seat of this







Three years after its delivery from the factory as a standard-specification 997.2 GT3 RS, the SharkWerks 4.1 represents the pinnacle of the naturally-aspirated flat six engine

Riviera blue GT3 RS is as good as it gets. Thanks to my previous experiences with the car, I felt at home within seconds. Heading for our familiar test roads, I noticed that with the new larger-volume airbox and headers in place, the engine breathes noticeably better at higher crank revolutions.

While it picked up revs rapidly before, it did feel as if the 4.1's lung capacity was running out past 7,000rpm on the way to 7,950rpm, where peak power is produced. This is no longer the case, and the last 950rpm is now covered more rapidly and with more gusto, as all the mechanical elements now line up to deliver optimum performance.

The 4.1's 560hp and 550Nm compare very favourably to even the forced-induction power of the 997.2 Turbo's figures of 500bhp and 650Nm of torque. This is especially so in terms of power-to-weight ratio, since the stock GT3 RS 3.8 starts life some 200 kilograms lighter than the Turbo. However, the more telling comparison is against the standard GT3 RS 3.8, the starting point of this car, and its 4.0-litre brother, whose value has rocketed skywards in the past year.

The SharkWerks RS 4.1's output is 110bhp up from the standard 450bhp 3.8-litre RS motor, with torque increased by an astonishing 122Nm. In parenthesis, that also means a favourable 60bhp and 92Nm over the RS 4.0.

Alex informs me that the SharkWerks 4.1 has now reached its full potential, and so this tuned RS in 2015-specification also represents the finished article. This final stage of the 4.1-litre flat six clearly highlights the inherent potential that is on show in Hans Metzger's redoubtable GT1 engine, and just how far you can take this motor if you are willing to spend the kind of money that would make the heads of accountants at Porsche spin at high speed.

Despite the much greater power and torque of the larger displacement flat-six, the chassis of the SharkWerks 4.1 has also been developed in lock-step with its motor. Unbelievably, despite the abundance of torque available throughout the rev range, the RS 4.1 almost never has traction problems – even when being caned on twisty mountain roads. This superb overall balance speaks volumes for the best and most exciting tuned 997 GT3 RS I have ever driven. **911**

## 997 GT3 RS 4.0 vs SharkWerks 4.1

On paper and in the real world, the GT3 RS 4.0 represents the pinnacle of the factory 997 range. However, unlike the standard GT3, which always felt like a work in progress, the RS 3.8 is so accomplished that if you never drove the 4.0 you simply would not miss it.

You need a fast road or a race track to separate the 3.8 from the 4.0, but the significant extra outlay Porsche asked for their ultimate 4.0 underlines the law of diminishing returns. If you already own an RS 4.0, its rocketing value justifies your purchase, but if its value reaches silly money, dare you then drive it? However, cars are about driving, and the SharkWerks 4.1 utterly

annihilates the RS 4.0 in terms of power, torque, response and its willingness to rev. Importantly, the SharkWerks engine build also removes the inherent weak spots built into the Porsche motor by penny-pinching accountants, so the uprated motor should also be more robust to even the most spirited driver over the long haul.

If you have a 997 GT3 or GT3 RS 3.8 and want the ultimate driving machine, the answer therefore is not the rapidly-appreciating RS 4.0. The driver's option should be the SharkWerks 4.1-litre conversion, which is literally all things to all men. It is simply the best naturally aspirated 997 engine conversion you can buy, bar none.







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**PORSCHE**





# TUNING YOUR 997

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

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

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

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

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

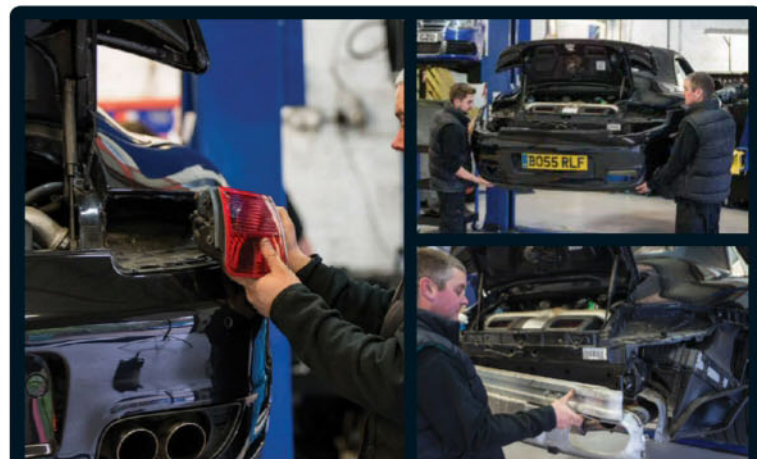


# Turbo tuning

**Parts:** EVT650 performance package  
**Cost:** £8,895

## Step 1: Baseline Dyno

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



## Step 2: Gaining Access & exhaust removal

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



## Step 3: EVOMS Lightweight Under drive Pulley

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



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

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

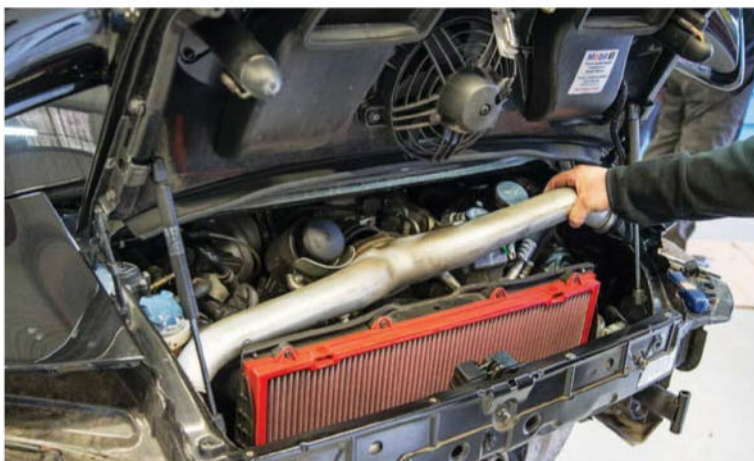
Meanwhile with the exhaust manifolds, the primary lengths and billet collectors are chosen to increase power, throttle response and more importantly reduce turbo spool time.



## Step 5: EVOMS Clubsport Intercoolers

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





## Step 6: AWE Exhaust System

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



## Step 7: Reassembly & Software Calibration

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

## The verdict

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

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

## GT3 tuning

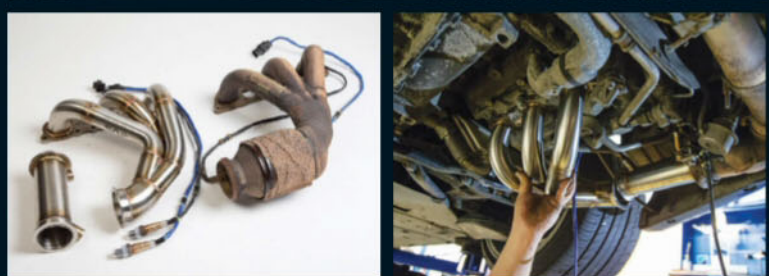
**Parts:** EVOMS Clubsport headers

**Cost:** £3,495 (including cats)

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

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

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

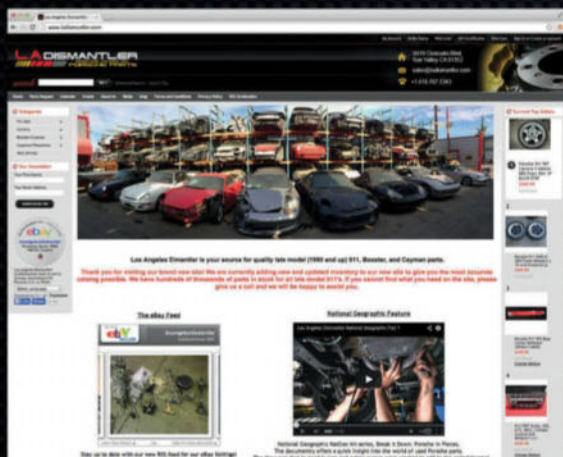




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# 930 3.0 v 991 TURBO

Separated by 40 years of engineering evolution, does the modern-day Turbo still inherit that crucial DNA from its whale-tailed ancestor? Total 911 tests both to find out...

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











The engine may still be placed past the rear axle, but the technology of each Turbo flat six is vastly different

Many memorable events happened in 1975. The Vietnam War officially ended, a young Muhammad Ali defeated Joe Frazier in Manila, and the 911 Turbo was introduced to the buying public. Showcased one year earlier in 1974 at the Paris Motor Show, the Turbo was born out of motorsport necessity, and much like the contemporary race cars of the time, 930s were famed for their punchy force-induced motor and hair-raising power delivery. When the 930 launched, fuel prices had rocketed by nearly 70 per cent in the UK, and Porsche went against the global consensus by introducing their pioneering high-performance model. Needless to say, the world fell in love with the turbocharged 911: sales of the 930 in whale-tailed and then teatray-winged form reached 20,000 units in 14 years of production, with posters of the supercar adorning countless bedroom walls around the globe well beyond its production span.

One such fanatic of the 930, a man who is perhaps more familiar with the first Turbo than most, is Magnus Walker. **Total 911**'s regular Living the Legend columnist and self-styled Urban Outlaw is one of the most knowledgeable Porsche fans you'll come across, with a Porsche collection including five early Turbos. This gives Magnus a unique perspective on the latest-generation Turbo in 991 form: as a Porsche obsessive from a young age and a die-hard air-cooled advocate, Magnus could well be the 991 Turbo's toughest critic.

Before our road test in downtown Los Angeles, Magnus tells us: "My love affair with the 911 began in 1977 when I was ten years old. I saw a Turbo model in Martini Racing livery at London's Earls Court Motor Show, and fell for the blown arches and aggressive look." Years later, and with a string of 930s to his name, how would Magnus feel about the driving experience of the latest 911 Turbo compared to the original 930? Well, nearly 40 years after his first encounter with arguably Stuttgart's most iconic creation, we're set to find out.

First though, we need to explore the original 930 Turbo – one that Magnus is proud to have in his collection – in greater detail. "Despite the Turbo being launched in 1975, the US didn't receive cars until 1976," Magnus tells us, and here's where the story of the silver 930 you see here starts to get interesting. "When I went to the factory in Stuttgart, it was confirmed that the car's chassis identification shows it to be number 15, bearing in mind the VIN for Porsche production models start with the number 11. In the case of the 930 for the global market in 1975, cars 11, 12, 13 and 14 were built for demonstration and press purposes. So the car you see here is the very first production 911 Turbo sold via a dealer in the United States." Furthermore, the chassis number – 930 680 0015 – adorned on this body shows it's a lifelong California car, which has had just four owners spanning five decades.

"For the past 20 years or so, my buddy Marty has worked on this car and looked after it. Cars 11 and 14 are still around, but from what I understand they have been restored. For me, the charm of this 930 is its authenticity. It's got that history of being driven with years of sweat, oil and patina ingrained into the leather and the paintwork," says Magnus, who's clearly enamoured by the history of his earliest 930.

So what's it like to drive an original 930 on the streets of LA? "People talk about turbo lag, but that's not the surprising thing at all. It's actually the gear ratios. First is good for 50mph, and when you redline the car in second you can hit 90mph!" Magnus says as he walks around the first of our two Turbos for the **Total 911** photoshoot. It might seem strange, but the 911 Turbo only had four gears all the way up to the '89 cars, which were then lavished with five-speed G50 transmission. Magnus continues: "When driving the 930, you have to plan. Your mind needs to be a few hundred yards up the road at all times. These first Turbo models are just incredible when you drop down to third gear at 80mph and open the throttle right where the motor is receiving full boost. This sees the car pull ➡"









hard to 120mph when it's time to shift up into the fourth and final gear. It's why the 930 just had to be designed for the autobahn."

So the 930 demands planning in terms of careful gear selection, but surely it also commands respect? "Yeah, for sure, the earlier 3.0-litre cars are exhilarating. Push on the throttle, and you watch the tachometer spin round, slowly at first, then more rapidly as the engine note changes from a gruff rumble to a turbocharged howl. The boost comes late to the party and propels you forward with gusto," Magnus confirms. "The sound, smell and rawness all add to the sensation of speed and thrill of driving an early 911. When launched back in '75, the Turbo was a very fast car, and a skilled driver could get to 60mph in just a shade over five seconds. Nowadays, some hot hatchbacks can achieve the same. But as a car, the 930 is more complex than just a 0-60 time. For me, the 930 Turbo is a visceral experience – it requires taking by the scruff of the neck and man-handling; something I believe all 911 Turbos should enjoy."

Magnus's views make the 930 foreboding but we're assured the first Turbo isn't particularly hard to drive. "At legal speeds a 930 can be a pussycat. Clink through the gears at a leisurely pace and the exhaust burble won't fail to make you smile. For me, that is the pleasure of a Turbo 911. It will complement your mood," Magnus says. "Power and speed are behind a pretty yet muscular body, waiting for you to turn on the taps when you feel like some fun. With the original Turbo you have to work it to go fast, but that's all part of the act. It's a challenge. A polar opposite to its docile, off-boost nature, which kind of gives the early Turbo two personalities in a way."

Looking at the Turbo models side-by-side in front of the LA skyline, they are in some ways a world apart. But there is still a noticeable bloodline. The engine's in the same place and visually the silhouette is shared, albeit with a little evolution. But can the new model compete with the sheer character that the original Turbo offers? Magnus was keen, as always, to go for a drive. "Downtown LA is the perfect playground for this pairing. I regularly take my cars out for midnight blasts around this area. I already knew how taking 6th Street Bridge flat-out felt in the 930 – perhaps too well," he says as we fire up both Porsches.

Taking his seat in the unfamiliar 991 Turbo, Magnus finds himself at the wheel of what looks like a different machine to the 930 he's used to. He talks us through his actions and subsequent emotions: "When I turn the key, the dash panel sparks into life. I'm an old-school guy, so I have to wince a little at first, but as the six-cylinder engine barks into life, I feel at ease and can quickly get my bearings," Magnus reports. "At idle the engine sounds much smoother and refined than the 930, which sort of goes without saying. However, the evolution of the model is more than you would ever expect; it is so very different. Nevertheless, the new car still carries that distinctive off-kilter 911 ➡



"The 930 is a  
**visceral** experience,  
it requires taking  
by the scruff of the  
neck and manhandling"









As an owner of multiple early Turbos, Magnus naturally gravitates towards the charm of the 930 but is happy to marvel in the technology of the 991

sound, but with more of a luxury feel to it. You have to remember that this car costs over \$150,000, so it should sound refined!"

He's right; a modern-day supercar at this level has to be well rounded. But at the same time, this is where Porsche has a dilemma. The modern supercar buyer wants raw performance and exhilarating speed, yet they want this teamed up with quality and a premium feel. Magnus is philosophical about this apparent juxtaposition as we pull away and head for the city: "Almost stuck between a rock and a hard place, the 991 Turbo has to deliver joy to both die-hard 911 fans like me, but also to first-time Turbo buyers. I don't envy the designers one bit; it's a tricky balance to strike!"

So have the designers managed to create a new 911 Turbo that still has the same values and excitement that the 930 delivered 40 years ago? "Porsche has a great way of making you feel at ease with their new designs. Jumping from my 1975 example right into this 2015 model, the contrast is stark. But then you begin to think back through the models: 997, 996, 993 and even 964. There is a clear heritage here. For sure, the 991 has the same values as the original. It's a Porsche through and through, and distinctively a 911 Turbo," Magnus says confidently.

Of course, both the 930 and 991 have that famous flat-six engine past the rear axle, but that's where the similarities end in terms of their technical specifications. There is little else in a 930 to help you along the way. The 991 Turbo with its array

of technological advancements, on the other hand, represents a different kettle of fish entirely. Porsche Traction Management (PTM) for example is now standard on all 991 Turbos. It's an active all-wheel-drive system with an electronically variable multiplate clutch, Automatic Brake Differential (ABD) and Anti-Slip Regulation (ASR). As Magnus says: "Couple this clever PTM system with active rear wheel steer, active antiroll bars, active aerodynamics and Porsche's fantastic PDK transmission, and you've got a car that offers incredible corner speed."

Surprisingly, Magnus is an advocate of PDK in the newer Turbos: "Cruising through downtown Los Angeles at lower rpms, the PDK transmission is fantastic. I've driven a couple of PDK-equipped cars before, but with the Turbo model's additional torque exploiting the flexibility of the gearbox it all gels perfectly. Manual gears and sports cars were once the only combination to have, but times are changing with the new breed of double-clutch transmissions. It's been covered many times before, but the PDK really is something special, and we're not even in 'Sport Plus' race mode yet! The 991 offers explosive power, and PDK allows you to capitalise on this. You're just never in the wrong gear when you're accelerating, which can be vastly different to the untrained driver in a 930."

When it comes to stopping, both cars are vastly different again. Magnus says: "The brakes are like night and day. There's not much bite on the 930, but huge levels of confidence are offered by

the 991 brakes and the stopping distance is very predictable. On the 930, you can't be sure if you will hit your mark, which makes things interesting."

Magnus is clearly impressed with the 991, citing the improvement in gearing and extra grip as the main difference between the first and latest Turbo. "You're carrying 20-30mph more on average through the corners. It really is incredibly fast," he says of the 991. While a driver in the 930 will have to play to the strengths of the narrower, progressive torque band, in the 991, from just under 2,000rpm to the redline a glorious plateau of big torque allows for rapid progress. The power delivery may have changed, but the rush it provides is reminiscent of the original 911 Turbo.

Despite their age and technical specifications, the 930 and 991 aren't too dissimilar after all. Beneath the gadgetry of the 991, you'll find that Turbo soul of the 930 and the rush it gives the driver. In later variants, culminating in the 991, the performance is more refined, yet the driving sensations remain just as staggering. This boils down to Porsche's unique approach to evolving the Turbo moniker, which allows these two supercars to bask in the same Turbo traits. The 930 charms you with awkward character; the 991 with technology and speed.

Magnus sums up the experience aptly: "Both cars offer extreme excitement, just in a very different way. Rather than compete for my heart, the 991 Turbo makes me even fonder of the 930 and the 911 moniker itself. The new Turbo makes me think, 'Just look how far Porsche has come.'" **911**



# HOW THE TURBO HAS EVOLVED



## 930 3.0

1976

### Engine

#### Capacity

2,994cc

#### Compression ratio

6.5:1

#### Maximum power

260bhp @ 5,500rpm

#### Maximum torque

343Nm @ 4,000rpm

#### Transmission

Four-speed manual

### Suspension

#### Front

Independent; MacPherson struts; wishbones; longitudinal torsion bars; hydraulic dampers

#### Rear

Independent; semi-trailing arms; transverse torsion bars; gas-filled dampers

### Wheels & tyres

#### Front

8x15-inch Fuchs alloys; 225/50/15 Hoosiers

#### Rear

9x15-inch Fuchs alloys; 275/50/15 Hoosiers



### Dimensions

#### Length

4,291mm

#### Width

1,775mm

#### Weight

1,195kg

## 0-62mph

5.5 secs

## Top speed

155mph

### CAPACITY DIFFERENCE

806cc

12 EXTRA CYLINDER VALVES

INCREASE IN BHP 260

3 MORE GEARS

2 ADDITIONALLY DRIVEN WHEELS



105MM WIDER

215MM LONGER

455KG HEAVIER

40MPH FASTER

2.1 LESS SECS TO 62MPH



## 991 Turbo

2014

### Engine

#### Capacity

3,800cc

#### Compression ratio

9.8:1

#### Maximum power

520bhp @ 6,000-6,500rpm

#### Maximum torque

660Nm @ 1,950-5,000rpm

#### Transmission

Seven-speed PDK

### Suspension

#### Front

Independent; MacPherson strut; coil springs; antiroll bars; PASM

#### Rear

Independent; multi-link; coil springs; PASM

### Wheels & tyres

#### Front

8.5x20-inch Turbo alloys; 245/35/ZR20

#### Rear

11x20-inch Turbo alloys; 305/30/ZR20



### Dimensions

#### Length

4,506mm

#### Width

1,880mm

#### Weight

1,595kg

## 0-62mph

3.4 secs

## Top speed

195mph



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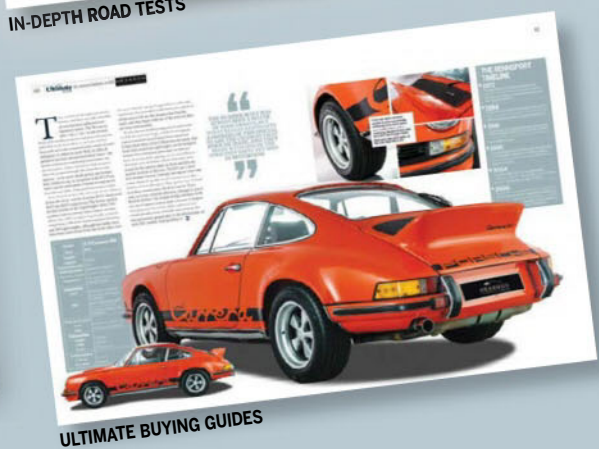
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# SPORTOMATIC V TIPTRONIC V PDK

The 911's long list of two-pedal variants often gets overlooked, but can you find driver involvement with your left leg lying around? Total 911 finds out...

Written by **Josh Barnett** Photography by **Alisdair Cusick**



**911 E**  
1972

Sportomatic





### 993 Carrera 1996

Tiptronic



### 991 Carrera 2014

PDK



From the 2.4-litre 911E to the latest 991 Carrera via a 993 variant, our latest group test covers over 40 years of the 911's legacy. However, I am not charting the traditional history of Zuffenhausen's legendary sports car today, something that has been done with regular occurrence in the past 12 months. No, I'll leave such a celebration for the 911's Diamond Anniversary in 2023. Instead, my attention is turned to each car's gearbox, hidden away under the trio of enduring silhouettes before me.

At **Total 911**, we're usually seen stirring a manual variation, my preferred shifting method of choice. Yet the ascendancy of PDK now leaves me in a minority when it comes to new 911s. This gear-shifting is undoubtedly the 'air-cooled versus water-cooled' debate for the 21st Century, with the issue coming to a head last year as the 991 GT3 was released with a compulsory PDK unit. Nearly 12 months (and one scintillating test drive) since that revelatory announcement, I am still not enamoured with PDK, even if it is a technological marvel.

The issue of non-manual 911s is not a new one though. Since the late Sixties, you could choose to make your left leg redundant at the helm of a 911, with all three Stuttgart stunners before you leaving the factory bereft of a clutch pedal.

In our manual-versus-PDK test last year, I conceded that Porsche's Doppelkupplungsgetriebe "outperformed the manual in every area". Even then though, I still reached for the keys to the manual at the end of the day in a display of deep-rooted traditionalism that, if extrapolated to its logical extremes, would have me hunting for my dinner 🍴





PDK proves slick, smart and sporty, perfectly capturing the 911's do-it-all character – but it is too clinical?

rather than heading to my local supermarket. The very concept of these 911s is anathema to me, but ever the intrepid investigator, I am determined to find one to my liking. Having not driven a PDK 'box for a while, I'll start with the 991. Maybe absence has made my heart grow fonder.

The mechanics behind PDK never fail to astound me. Effectively, the seven-speed transmission is split into two gearboxes, all housed within the same casing. Incredible. Two concentrically mounted wet clutches are connected to two separate input shafts. The larger, outer clutch – measuring 202mm – drives the solid, inner shaft, to which all the odd-numbered ratios are mounted. Second, fourth and sixth gears are connected to the hollow outer shaft, driven by the smaller, 153mm inner clutch.

While in a traditional manual it is the movement of the gear lever that activates the gear-selector forks, PDK uses electro-hydraulic actuators controlled by the ECU. When accelerating in second gear, third is already pre-engaged on the other shaft. The upshift itself comes when an electronic signal to the clutch actuators sees a transition from inner to outer clutch in less than 100 milliseconds. The same process is in effect (albeit reversed) during decelerations, while the ECU controls the myriad shift patterns depending on a number of metrics. Readings are taken from all over the car to determine the perfect shift style for the situation, with Normal, Sport and Sport Plus adjusting the length that the computer holds onto each gear.

It really is a seamless system. Pootling around town or cruising on the motorway is an effortless experience in fully automatic mode. Under gentle

driving I can barely perceive the gear changes, while the 'box's brain always proves smarter than mine when it comes to stretching my fuel mileage.

PDK continues to excel as I push on. Still fully automated, its gear changes remain predominantly natural, downshifting on the way into corners before changing up on the way out. Coupled with barely a hint of power loss during each shift and the ability to focus on my left foot braking, PDK is undoubtedly the fastest way to make progress in a 911; something that shouldn't be a surprise given its initial development for the 956/962 prototypes during the Eighties.

Despite a two-decade convalescence before its production deployment in 2008, PDK has its foibles. For all its lighting-quick shifts and rev-matching prowess, the kick-down function is still too easy to activate, even if the transmission's transition from seventh to second is effortless. This is especially annoying in Sport Plus mode, when heavy throttle applications should be expected, and I can't help but feel detached from the full 911 experience, even when using the paddles or sequential shifter. Call the cliché police, but it's all a bit 'PlayStation'.

It's also incredibly evident how far PDK has already progressed since its inception in the Gen2 997. The 991 is noticeably more fluid, with the ECU's ability to learn and adapt to your driving style more pronounced. The automotive industry's rapid progress means that the heavily computer-reliant PDK has already aged once. In 20 years time, will it simply feel outdated?

My fears about ageing aren't unsubstantiated. While the PDK is very much an automated manual in both design and operation, the Tiptronic

system – a stop-gap solution during PDK's 25-year development – is very much an old-school automatic transmission, even if it did break a few boundaries upon its release in 1990.

The engineers at Porscheplatz realised that for a car with such sporting credentials, a regular automatic transmission would not suit the 911's character, nor the wishes of potential owners. Collaborating with gearbox gurus ZF, and electronics specialist Bosch, Porsche set about creating the world's first semi-automatic gearbox, with the resultant transmission debuting on the 964 in four-speed form.

Although the ability to switch into a 'manual' mode was a new one 24 years ago, Tiptronic's mechanical underpinnings were, in reality, anything but. A torque converter was employed to transfer the engine's rotation to the gearbox, with the transmission's internals using the sun, planet and ring gears traditionally utilised in fully automatic gearboxes. While operation of such an automatic is simple, the mechanical reality is a lot more complex, my English rather than Engineering degree not leaving me well placed to do so.

In (very) basic terms, a torque converter is a fluid coupling between the flywheel and transmission input shaft. The internally finned housing is bolted to the flywheel, with transmission drawn in through its centre as the crankshaft rotates. Centrifugal force causes the fluid to spin the edges, powering a turbine blade that is connected to the gearbox input shaft.

Inside an automatic gearbox, rather than the two clusters of ratios normally seen in a manual 'box, three distinct, concentrically mounted gears are





## Ready for launch



Traditionally, due to the power losses and time taken for the torque converter to lock up fully, automatic cars have accelerated more slowly than their manual counterparts. For example, the 993 Carrera Tiptronic is a mighty 0.8 seconds slower from 0-62mph than the stick shifter.

However, thanks to borrowing much of its design from a manual transmission, PDK actually helps your 911 accelerate faster. Like-for-like, the dual-clutch 'box is 0.2 seconds faster than a manual 991 Carrera. Yet, PDK has an extra weapon in its drag strip arsenal if you spec the Sport Chrono package: launch control.

In Sport Plus mode, hold your left foot on the brake and slam the throttle pedal down through its kick-down zone. The ECU will lower the rev limit to around 6,500rpm and a 'Launch Control activated' message will be displayed on the digital fourth pod. From here, you have a few seconds to release the brake and perform the ideal standing start. The PDK will even automatically shift up at peak power, while PSM will quickly monitor the available traction and adjust the power delivery accordingly.

The end result is a lightning-fast launch with minimal fuss, shaving a further 0.2 seconds off the standard PDK 0-62mph time. It's even more impressive in the latest Turbo S, where the combination of 560hp and PTV can see 0-62mph sprints in under 3.0 seconds!



Going, going, gone: launch control is effortless yet electrifying in a 911









Driving a Tiptronic 911 is relatively easy, yet the clunky downshifts spoil an otherwise involving 993 experience



used: an outer ring gear, an inner 'sun' gear and a set of 'planet' gears mounted on a carrier between the former two. With one gear remaining stationary at all times, three different input/output pairings can be made (one of which is a reverse speed). Therefore, something like Porsche's four-speed Tiptronic required two sets of ring, sun and planet gears.

Myriad clutches and bands enable each gear change, with the shift point dictated (in the most basic systems) by a circuit formed out of hydraulic shift and throttle valves, as well as a governor. The harder you accelerate, the more pressure the throttle valve exerts on the shift valve, requiring a greater engine speed to open the latter and cause the governor to shift gear. This is why normal automatics change up early during gentle driving, yet are able to adjust for spirited blasts. In addition, Tiptronic featured various embryonic computer controls that purportedly learned your driving style and adjusted accordingly.

As well as the sequential shift gate, our Porsche 993 also features steering wheel-mounted shift buttons as part of the Tiptronic S system introduced in 1995. With both buttons capable of shifting up and down, they feel ergonomically awkward. It's incredible that basic PDK 911s use a similar setup a quarter of a century later.

The sequential lever is therefore the more enjoyable 'manual' option, with a much longer throw than the equivalent PDK unit but greater spring loading. It provides a welcome tactility to

the experience of changing gear (though the lever's attempts to ape a mechanical system eventually feel contrived). Pushing the lever to change up, I'm surprised at how quick the response time is too, with a relatively swift shift rattled off without undue delay or jerkiness.

Unfortunately, the same can't be said for coming down through the gears. Expecting an instantaneous response was naïve, but the system's propensity for shifting when it, not I, is ready quickly grates, as does the transmission's inability to automatically rev match. Downshifts during spirited excursions are coupled with an unsympathetic lurch forward as the engine speed jumps up to match the wheel speed, making me long for JR Motor Company's manual 993 Carrera instead.

In auto mode, Tiptronic behaves sensibly enough for the most part (although it does have a tendency to pull away in second rather than first). However, despite all the Porsche development and engineering nous, at its heart is very evidently still an old-school automatic that likes to change down readily on the exit of corners. Ultimately, Tiptronic is merely a pretender to manual's crown, even if it does have the added novelty that standing starts feel like you're launching a flat six underground train, such is their smoothness and soundtrack.

From the 996 generation onward, Tiptronic did benefit from an extra ratio, while the mechanicals from ZF and electronics from Bosch also improved efficiency, speed and shift patterns. PDK

understandably blows it into the water though. If only Zuffenhausen could have implemented it at the time, rather than making us persist through 964, 993, 996 and 997 Gen1 variations.

With PDK too clinical for my Luddite tastes, and Tiptronic's performance blunted by its technological era, I'm holding little faith in enjoying the oldest car on test: a Sportomatic-equipped Porsche 911 2.4E. The pre-impact era is, in my eyes, the epitome of what a 911 should be, with each car in my previous 911s group test proving incredibly involving, thanks in no small part to the manual gearboxes. Removing this key ingredient from the mix will undoubtedly blunt the experience, no?

Sportomatic was introduced in 1967 – just three years after the 911 went on sale to the public. Unlike both the PDK and Tiptronic 'boxed cars I have just stepped out of, this 1972 911E cannot change gear on its own. However, just like its two more modern brothers, Sportomatic 911s are still devoid of a clutch pedal, although the manual's traditional H-pattern gear lever remains.

To change gear, a micro-switch is activated whenever the gear lever is depressed slightly. As soon as you touch the gear knob a solenoid is set in motion, opening a pneumatic valve and causing a vacuum cylinder to disengage the single-plate dry clutch. This then allows you to move through the gears in the time-honoured fashion, making my role an integral part of the driving process, even if the torque converter also fitted by Porsche will allow me to stop in gear. ➡





The least 'automatic' car here, the Sportomatic 911E doesn't suffer its lack of a clutch pedal, proving enthralling



Until now, I have never hesitated to jump straight into a 911. However, the thought of controlling the gear change purely with my left hand has me pondering for a few minutes before setting foot inside the 1972 'E'. "Don't overthink it," says owner John Aucott, who I've asked along for my initial test drive.

Like the 915 gearbox that would have adorned a similar manual 2.4-litre 911, the transmission is initially reticent to go into first gear (or 'L' for Low, as it is confusingly labelled in Sportomatic cars). We're soon underway with minimal fuss though, aided by the lack of no tricky period clutch.

'L' is definitely imbued with short legs, as I'm soon required to change into second – also as 'D', the gear Porsche recommend pulling away in under normal conditions.

I reach for the lever early, only to realise that I can no longer pre-empt my shifts. Touching the lever while still hard on the throttle would cause a costly over-rev, as the clutch would inadvertently become disengaged. Pausing until the exact moment I want to change, I then lift off the throttle before effortlessly moving the lever downward. That's it. Gears have been shifted and we're back to chasing the horizon again. For a system that's

over 40 years old, it feels magical. There's a smile of childlike wonderment creeping across my face every time I shift.

Hard accelerations in the 911E are initially met with the slipping feeling that only a torque converter can provide. For the first 300-500rpm of each hard throttle burst, that idiosyncratic electric-like whirr punctuates the air before my ears are once again attuned to the sound of an air-cooled flat six punching beyond 3,000rpm. Other than this idiosyncrasy, the Sportomatic functions in much the same way as a manual. With some practice, you can even blip on your downchanges, all while left-foot braking. No wonder Vic Elford liked the system, supposedly towing his caravan to race meetings during his tenure as a works driver with a Sportomatic 911.

Elford was convinced of the system during the 1967 Marathon de la Route, an epic 84-hour race around the Nordschleife where the Brit triumphed alongside Jochen Neerpasch and Hans Hermann in a Sportomatic-equipped 911R. 48 years later, I find myself agreeing with 'Quick' Vic.

Given my predilection for manual 911s, it is possibly a cop-out to declare the Sportomatic transmission my favourite. But it combines the clutch-less ease of an automatic with the involvement of a standard H-pattern. Some called it the answer to a question that wasn't asked when it was realised, but Sportomatic stayed around until 1980, proving that it wasn't a fad. PDK may be most people's automatic king, but back in the heyday of analogue sports cars, Porsche proved that you can lose the clutch pedal without losing your grin. **911**







Model Year	<b>911E 1972</b>	<b>993 Carrera 1996</b>	<b>991 Carrera 2014</b>
<b>Engine Capacity</b>	2,341cc	3,600ccc	3,436cc
<b>Compression ratio</b>	8.0:1	11.3:1	12.5:1
<b>Maximum power</b>	165bhp @ 6,200rpm	285bhp @ 6,100rpm	350hp @ 7,400rpm
<b>Maximum torque</b>	206Nm @ 4,500rpm	340Nm @ 5,250rpm	390Nm @ 5,600rpm
<b>Transmission</b>	Four-speed with automated clutch and torque converter	Four-speed Tiptronic semi-automatic	Seven-speed PDK automated manual
<b>Suspension</b>			
<b>Front</b>	MacPherson strut; telescopic damper; torsion bar; antiroll bar	MacPherson strut; coil springs; antiroll bar	MacPherson strut; coil springs; antiroll bar
<b>Rear</b>	Semi-trailing arm; telescopic damper; torsion bar; antiroll bar	Multi-link; telescopic dampers; coil springs; antiroll bar	Multi-link; telescopic damper; coil springs; antiroll bar
<b>Wheels &amp; tyres</b>			
<b>Front</b>	6x15-inch Fuchs; 185/70/HR15 tyres	7x17-inch alloys; 205/50/ZR17 tyres	8.5x20-inch alloys; 245/35/ZR20 tyres
<b>Rear</b>	6x15-inch Fuchs; 185/70/HR15 tyres	9x17-inch alloys; 255/40/ZR17 tyres	11x20-inch alloys; 295/30/ZR20 tyres
<b>Brakes</b>			
<b>Front</b>	282mm discs	304mm drilled and vented discs	350mm carbon ceramic discs
<b>Rear</b>	290mm discs	299mm drilled and vented discs	350mm carbon ceramic discs
<b>Dimensions</b>			
<b>Length</b>	4,163mm	4,245mm	4,491mm
<b>Width</b>	1,610mm	1,735mm	1,808mm
<b>Weight</b>	1,077kg	1,370kg	1,400kg
<b>Performance</b>			
<b>0-62mph</b>	7.5 secs	6.4 secs	4.6 secs (4.4 secs in Sport Plus)
<b>Top speed</b>	134mph	168mph	178mph



## Thanks

The 993 Carrera in our pictures was provided by Ian Robertson at JR Motor Company. More information on a variety of 911s available through JR Motor Company can be found at [www.jrmotorcompany.co.uk](http://www.jrmotorcompany.co.uk).

The 911E was provided by Jonathan Aucott at Avantgarde. More details on the sports cars for sale at Avantgarde can be found at [www.avantgardecars.co.uk](http://www.avantgardecars.co.uk).







# —THE END OF SEASON INTERVIEW— ONLY HERE FOR THE BEER

Racing drivers and Total 911 columnists Nick Tandy, Ben Barker and Josh Webster sit down over a few pints to discuss their 2014 campaigns

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



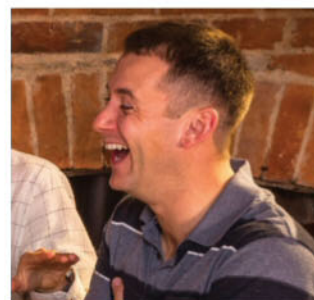
**JOSH WEBSTER**  
**CARRERA CUP DRIVER**

- 2014/2015 Porsche Carrera Cup GB scholarship – **Winner**
- 2014 Porsche Carrera GB – **Champion**
- First driver to win championship during scholarship tenure



**BEN BARKER**  
**SUPERCUP DRIVER**

- 2014 12 Hours of Bathurst Class B – **Winner**
- 2014 Porsche Supercup Spain – **3rd**
- Porsche Carrera Cup Le Mans – **Winner**



**NICK TANDY**  
**PORSCHE WORKS DRIVER**

- 2014 24 Hours of Daytona GTLM – **Winner**
- 2014 FIA WEC Silverstone Six Hours GTE Pro – **2nd**
- 2014 British GT Brands Hatch – **Winner**

**T**he faces before you should be quite familiar by now. Nick Tandy, Ben Barker and Josh Webster have all penned regular columns for **Total 911** over the course of the 2014 racing season. They are also a 24 Hours of Daytona winner, Porsche Supercup front runner and Carrera Cup GB champion respectively.

With a successful season for the trio rounded off and a new year of racing to look forward to, everyone was in exceedingly good spirits for our informal end-of-season chat at Nick's local haunt – apparently just 52 steps from his front door. After a few unprintable jokes, we all sat down to chew the fat from last year and take a well-earned pint in the process...

**Total 911: You've all had brilliant years, but what was your best race of the season?**

**Nick Tandy:** It's quite easy for me. Daytona was one of those things where I've gone there with a chance of being competitive, but 2014 was the first time I

really thought about winning. It went pretty steady in testing, as did the first 16 hours of the race, before a bit of a battle at the end that got us all on our feet.

**Ben Barker:** I didn't see it...

**NT:** There was a caution that came out about ten minutes before the end of the race, and it put the BMW right on us. We were two laps up on them and we lost them by thinking we had enough in hand. They ended up getting the laps back, and after the last caution they were right behind us. But when there's some drama involved it makes coming across the line that much better, doesn't it?

**BB:** Yeah, totally. A bit of emotion... for me it was Le Mans. The end result was a win, and it was my first time at the event; it's an amazing place with an amazing atmosphere. It was my best weekend from a performance point of view, and you really have to work on setup there, especially cambers on a Cup car, because everyone was having blowouts and you needed to make sure you were bang on.

It really worked for us because [Kévin] Estre got a blowout at the end. I was gifted it a little bit but we put some hard work in into making sure the car didn't DNF. That was a big win.

**NT:** The whole factory garage was watching that race...

**BB:** Were they?

**NT:** Oh yeah.

**BB:** That's cool!

**NT:** All of them, all 50-odd people. It was a good race.

**BB:** You [talking to Josh] probably had the most exciting race.

**Josh Webster:** Le Mans has to be up there, definitely. Having to race from P18 through to P7 overall makes it a good race, and one that I wish I had the on-board camera video of because there were some pretty good moves.

**NT:** Somebody had a bad qualifying, eh?

**JW:** Yeah, I did.

**BB:** I wouldn't know about that, much!

**JW:** It is one of those places that, because it's such a





Josh, Ben and Nick all have reason to celebrate in the off-season after a successful year that's seen them racking up as much air miles as silverware. Our three columnists will be hoping for more of the same next season



long track, does take a long time to get the maximum out of it – and I don't think I ever did. The best race, for me, was my first win this year at Donington.

**NT:** Was that the one where you changed tyres?

**JW:** Yeah. It was my first win of the year, and I wasn't up to speed with Michael Meadows at that point. Coming in from the lead isn't something you see too often. People said afterwards, 'Why don't you just say you did it out of fear?' I did it because one, I thought the track was too wet, and two, I couldn't see anyone in my mirrors. I thought, 'In two laps I'm going to get done by everyone coming out on wets'. So I was the first one into the pits.

I saw James Sutton, the driver coach for Redline, sat on the pit wall with his head in his hands because he thought I'd completely thrown it away. So to then come out last and win by 15 seconds was a real... you can imagine the emotions.

#### Are there any particular highlights from the year, whether on the track or off it?

**BB:** I got smashed at the Petit Le Mans after party! No it wasn't, it was COTA. No, Petit I got ill from the helmet blower. I came in, and I suddenly became really ill and started puking.

**NT:** I'm glad I didn't share a car with you! So that was your highlight?

**BB:** No, but going to Austin was brilliant. Austin is wicked! Oh, and in terms of motorsport, driving the 991 RSR for Gulf Racing. Experiencing that was great. Not many people get the opportunity, unless you're a

factory driver or very, very wealthy.

**NT:** And even if you're very wealthy you can't just buy one.

**BB:** What about you, Nick?

**NT:** I was trying to think before you made me laugh... We had a real purple patch in the last third of the season. Even though we had really bad results, and we didn't finish for four races, we were consistently the best team out there.

**BB:** That's a testament that even when you don't get the result, it doesn't crush you. You don't lose performance after that.

**NT:** It was heartbreaking to lose those certain victories – COTA, Watkins Glen and Virginia we were leading and should have won the race – but that was the highlight of my season, because we performed the best as a team.

**JW:** It's difficult as a racing driver to think about things non-motorsport related, but going from a Vauxhall Corsa to a Porsche Cayman was nice.

**BB:** Yeah, that's a good trade...

**JW:** Porsche Retail Group sorted me out with a deal for two years, so every 6,000 miles I get a new Cayman, which is awesome.

#### You've all been to some great circuits this year, which was your favourite?

**JW:** Le Mans...

**NT:** Le Mans? Pffft. Boring.

**JW:** I'm not like you who has been all over the place. I've been to the likes of Snetterton and Knockhill!

**NT:** I like Snetterton.

**JW:** I remember the first out lap at Le Mans and, considering it's an out lap and shouldn't be quick, you're soon doing 180mph down the Mulsanne because you can't back off! Just seeing the road markings and the signs is insane. It's one of those massive tracks where you only get better and better.

**NT:** I agree with Josh actually. You typically think of it as straights, chicanes and that little bit at the end. But it's really not like that. There are so many bits about it. But my favourite track has to be Virginia: VIR. It feels like an old-school English track. You're in the trees and it's up and down dale. Road America is very good, but VIR has got a really nice surface, and there's a section where you go through the Esses up the hill. It's quite a technical section that then leads into a very fast left-hander with no room for error.

**BB:** Bathurst, for sure. That was a highlight too, winning there. To see the passion of our gentleman driver, Stephen Groves, was special.

**NT:** Is it like a street track up the top?

**BB:** It is, but it is all momentum based. Up the hill, you can't be too late on the throttle, otherwise you ruin your whole momentum. Then you come to this massive straight that goes on for ages and ages. You're on the limiter in sixth...

**NT:** In a Cup car!?

**BB:** Yep. You go flat into The Chase, and the front of the car is probably that much [gestures 30cm] off the ground. Then, as soon it lands you're on the brakes.





**What is the one thing you would change about 2014?**

**BB:** Win every Supercup race [everyone laughs]. Actually, qualify on pole for every Supercup race.

**NT:** I don't think I'd change anything. I've got to race where I love to race, in a car I love to race, in a series that I love to race in. Yes, we've had our disappointments, but it's through nobody's bad work. There's been no bad judgement calls. Things just haven't fallen our way.

If I could change one thing it would be to have better luck and, I think, had we done, we would have been in contention for the championship. But you can't have that every year. Barker?

**BB:** You touched on it: I've gone all over the world and experienced America for the first time. That's great.

I started off in Supercup with a podium, fifth at Monaco and then qualified fourth at Red Bull Ring. Whatever the round was after that, I can't remember. The reason I can't remember is because it wasn't very good. I think if I could change anything, I'd want to keep that momentum up; to keep that performance from the start of the year.

**JW:** I'm going to go with Nick and say I wouldn't change a thing. I've had the first rookie year that every rookie would dream of really. Winning the championship in my first year...

**NT:** Thanks to your scholarship judge...

**JW:** Yes, thanks to my scholarship judge [points to Nick]! I wouldn't change any of the results. I've got better as the year went on, and it's been a good year.

**There must have been some lowlights during 2014 though?**

**NT:** Richie [Richard Lietz] breaking his arm. That was probably the lowest point I've been in my racing career. Your teammate is like your wife when you go away. It's that sort of relationship. I couldn't go to the hospital because I had to be around in case the car was ready to qualify. After that, we'd lost him from the next three races.

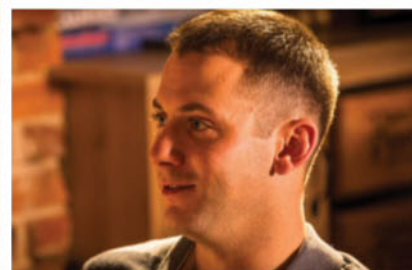
**BB:** Petit Le Mans was a bit shattering. America in general we just had a lot of bad luck, a bit like you [talking to Nick] and your streak.

**NT:** I expected you to win everything when you got to the US.

**BB:** So did we. We came in and were confident, but we had up and down results in general. We were leading at COTA and got taken out by a BMW. Then at Petit Le Mans I got into the lead, I had a really good stint, and our strategy looked good. We had a great driver line-up, but then we had an alternator fail. The whole season in America had things go wrong, but I'd like to think that I showed my performance to the team. They were very happy and they want me back. ➡







**JW:** I wouldn't say it's a lowlight, but the hardest part of the year for me was near the end.

**BB:** The pressure?

**JW:** Yeah. From Knockhill onwards, Michael had a bit of a fight-back. It's nice looking back now, but at the time it was all to play for. Michael is really good during the race at getting fastest laps – that's his strength. Even if he's in second place, he'll somehow get the fastest lap points. At Knockhill and Silverstone, his couple of fastest laps took a chunk out of my lead. I think it was down to about four points going into the last round at Brands Hatch.

I was a rookie, and having not won a championship since 2009, I wanted it that badly, and there was a bit of pressure. Luckily, it all came together, and I had a really good round.

**You've all been up against world-class rivals this year. Who was your biggest rival?**

**NT:** Hmm. My biggest rival?

**JW:** Your teammate?

**NT:** We're partners.

**BB:** That's the official line. I wouldn't say they were my rivals – that wasn't my attitude over the weekend – but it has to be my teammates, because I was a 'Silver', and you're trying to show that you can be a 'Gold', which I am now. You want their drives in the long run, essentially. I was always benchmarking Adam Carroll and Damian Faulkner's performance and looking at their attitudes and their fastest laps. I aspire to be where they are in the very near future. I suppose it's a bit different for you, because you're in a pro car [talking to Nick] on the same sort of level.

**JW:** I came across Ben at the first round – and I'm still not at Ben's level – I was very new to it all, so he wasn't even a rival; more of a benchmark. In practice it was pretty close, but in the race I was 11 seconds off Michael, and Ben was even further ahead in first. That race was when I knew I needed work.

**BB:** That must have been a big learning curve for you, though?

**JW:** Yeah, it was. Certainly Michael was my biggest rival, as he was my teammate. I'm still really good friends with him, and I certainly wouldn't say he's the 'baddie'. He's been really good since coming second, and we're still really good mates. He's been the benchmark for me all year.

People would argue that I've only had one person to race against all year, but there were some quick people like Victor Jimenez. People like Ben dropped in and out. I wouldn't say the grid was particularly strong, but I still feel like I fought for it. You could put Michael in Supercup, and he's quick enough. He's not on Ben or Nick's pace, but he's still a handy driver, isn't he?

**NT:** Well, he is a two-time champion. For me, there's not one rival driver, because it's such a team sport. It's more a rival team.

**BB:** Nick's a team player. We're not.

**NT:** The biggest rival for me was with the #55 BMW. Andy Priaulx and Bill Auberlen. There were two or three races against those guys. We had an altercation at Laguna Seca when the decision-making went completely against what I was thinking would happen. But that's when you learn about how American racing works.

Then, in the very next race at Watkins Glen, I had a very good race for an hour-and-a-half with Andy where we were back-and-forth, back-and-forth. They were our car's biggest rival.

**With 2014 done and dusted, what are your aims for the season ahead?**

**NT:** I don't know what I'm racing! Does anyone know what they're racing?

**BB:** No.

**JW:** I'm 90 per cent sure.

**BB:** Mini Cooper Challenge?

**NT:** Carrera Cup?

**JW:** Yes, but it's all up in the air still.

**NT:** What was the question?

**What are your aims for this year?**

**JW:** Oh, 'aims'. I thought it was 'plans'.

**NT:** Well I can say for certain the aim would be to win Daytona, Sebring, Le Mans and then anything after that would be a bonus. Those are the three keys really. Daytona is my favourite race, I've won Petit Le Mans, so next up is Sebring and Le Mans. Beat that!

**JW:** I want to win the Scottish Mini Championship!

**BB:** For me, going back-to-back at Bathurst after hopefully getting a drive at Daytona. The latter is close to happening, but we'll see.

**JW:** Well, to answer it properly, it would be to dip into international racing and get my name about.

**Josh, I suppose you're at the stage Ben was at last year, looking to make the jump into proper professional racing...**

**NT:** Are you calling him a proper professional? **911**



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## EVOLUTION OF C4S

The 993 C4S had clearly struck a chord with both buyers and Porsche's management, so it was perhaps no surprise to see the widebody recipe applied to the next generation. Arriving in 2001, the 996 C4S once again got the Turbo-look bodyshell, albeit without the blown car's air intakes, while power and torque had risen by 20bhp and 20Nm respectively over standard Carreras. Performance was broadly similar to the C4, a weight increase of 125kg meaning the 0-62mph sprint was completed a scant 0.1 seconds faster, while the visual appeal would be joined by Turbo suspension and brakes. It was clearly popular too, with almost three times as many built compared to the 993 version, and while the 997 would continue the theme, it lacked the true Turbo styling that marked out the earlier, more collectable C4S incarnations.





# 993 C4S

The widebody C4S added something special to the already-coveted 993 generation. Total 911 looks in depth at Zuffenhausen's penultimate air-cooled build...

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





**W**idebody 911s have historically enjoyed a popular following among enthusiasts, so after successful early renditions in 3.2 Carrera and 964 form, it was only a matter of time before the 993 enjoyed the same treatment from the factory. The result was the car you see here, the C4S being the first naturally aspirated 993 to receive the widebody treatment when it arrived for the 1996 model year.

Before we explore the detail, it's worth a reminder of where the 993 fits into the 911 story. Launched in 1993, the Tony Hatter-styled model did much to reinvigorate the automotive world's interest in the 911. Sporting a classic outline and smooth new styling, it brought a number of benefits over the outgoing 964, not least of which was a bodysell claimed to be 80 per cent new and 20 per cent stiffer, and featuring some clever aerodynamic enhancements. That new shell was hot-dip galvanised so it would last longer, with further changes including a new headlamp design that claimed a 50 per cent improvement in light output, and quirky central pivots for wipers.

For the C4S, the most obvious change was the addition of the Turbo-look rear wings that added

60mm to the width, which was now a broad-shouldered 1,795mm. The electrically activated rear spoiler was retained, the lack of an intercooler negating the need for the Turbo's fixed item, but those after more significant road presence could always delve into the Porsche Exclusiv catalogue. A number of buyers did just that, resulting in cars that sported a more aggressive front air dam and an impressively large fixed rear wing, and while such modifications aren't to all tastes, there is no arguing with the visual drama they bring. The rear end was finished off with red reflector panel and oval exhaust tailpipes from the regular C4.

Powering the C4S was the 3.6-litre flat-six M64 engine, a unit that was significantly altered over that found in the 964. The changes included a stronger crankshaft, thinner and lighter pistons with lightened connecting rods, and revised chain-driven camshafts that operated the two valves per cylinder via hydraulic adjusters. More lightweight materials also featured, with magnesium alloy employed for components like the cooling fan and timing chain housings, with plastic used for the inlet manifold and various bits of ducting.

The lubrication and exhaust systems had come in for attention, both being fettled and improved over ➔

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THE C4S HAD THE  
ADDITION OF THE TURBO-  
LOOK REAR WINGS THAT  
ADDED 60MM TO THE  
WIDTH, WHICH WAS  
NOW A RATHER BROAD-  
SHOULDERED 1,795MM  
”

Model	993 C4S
Year	1996-98
Engine	3,600cc
Capacity	11.3:1
Compression ratio	285bhp @ 6,100rpm
Maximum power	340Nm @ 5,250rpm
Maximum torque	Six-speed manual; four-wheel drive
Transmission	
Suspension	
Front	MacPherson strut; coil springs; antiroll bar
Rear	Multi-link with telescopic dampers; coil springs; antiroll bar
Wheels & tyres	
Front	8x18 inches; 225/40/18
Rear	10x18 inches; 285/30/18
Dimensions	
Length	4,245mm
Width	1,795mm
Weight	1,520kg
Performance	
0-62mph	5.3 secs
Top speed	168mph







(Clockwise from top left): Widebody layout meant the C4S gained an extra 60mm of width; this example sports the optional fixed spoiler; Turbo brake discs and 'Big Reds' fronted by solid rather than hollow spoke wheels



## WIDEBODY TIMELINE

- **1984-89**  
 Carrera 3.2 SSE: The first official 911 to feature the Turbo-look, along with suspension and brake upgrades. UK sales were modest, but the SSE is a sought-after classic now.
- **1989**  
 Carrera 3.2 Speedster: Unusual looks characterised them, and not admired by all. Most were Turbo-look, ending up in collections.
- **1992-93**  
 964 C2 Turbo-look Cabriolet: Terrible name but great looks. Not cheap though, and performance was blunted by the Tiptronic gearbox – though the majority were manuals.
- **1993-94**  
 964 Speedster: Porsche stuck with the Speedster theme, although less than 1,000 were made. The few widebody models are extremely rare today.
- **1993-94**  
 964 Anniversary: What a way to celebrate 30 years of the 911. Luxurious specification and special trimmings marked this one out.
- **1995-96**  
 993 C4S: The only thing missing was the blower, and it's sought after today. Handling and stopping ability were first rate thanks to Turbo bits. 993 C2S followed in '97.
- **2001-05**  
 996 C4S: The Turbo look was back for the water-cooled 911, with power and torque increased, plus upgraded brakes and suspension.





The layout might have been familiar from standard 993s, but the C4S got a huge spec, with air conditioning, leather trim and upgraded multi-speaker hi-fi. The leather-clad gear lever controlled a six-speed manual gearbox, and the sports seats were standard, as well as electrically adjustable

the previous generation, while the Bosch Motronic 2.1 system took care of engine management duties. The new model also benefitted with the addition of the 'VarioRam' induction system that used variable-length intakes to boost power and mid-range torque, and worked by effectively altering the length of the inlet pipes depending on 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.

The result was a power output of 285bhp and 340Nm of torque, up by 10Nm over the C4 and at 5,250 rather than 5,000rpm. They were modest increases, perhaps, but welcome all the same, and they resulted in a 0.3-second improvement for the 0-62mph sprint, even if the bluffer widebody pegged back the top speed a little.

Incidentally, the VarioRam system was distinguished by aluminium inlet pipework atop the

engine, the lower-powered unit making do with a smaller set of black pipes. Driving via a dual-mass flywheel, a six-speed manual gearbox was the only transmission choice for C4S buyers, although that too was improved compared to the 964's five-speeder. Not only was it lighter, but the use of double-cone synchromesh lessened the shift effort. Of more interest here, though, is the four-wheel drive system, Porsche boasting a setup that weighed little more than half that of the 964's arrangement.

The centre differential was replaced by a viscous coupling, and the system also featured Porsche's 'Automatic Brake Differential' (ABD). Using signals from the anti-lock brake sensors, ABD could detect a loss of traction and apply the brakes to a spinning wheel, diverting torque to the wheel with the most grip. The rear differential could also vary its locking effect depending on whether the car was accelerating or on the overrun. It was a feature that did much to minimise the onset of lift-off oversteer,

which was more than a little desirable given the rear-biased weight distribution.

Underpinning the wide-body model was the redesigned suspension setup introduced for all 993s, with the most fundamental change to be found at the rear. The 964's semi-trailing arms were gone, replaced by the vastly superior LSA (lightweight-stable-agile) multi-link arrangement that was mounted on a cast-alloy subframe, attached to the body by tuned rubber mounts. In effect a double wishbone system, the design was influenced by the 'Weissach' axle on the 928.

The benefits were threefold, as it reduced squat and dive under acceleration and braking, and minimised camber changes for greater stability, while toe-in combined with the four-wheel drive system's rear differential to vastly improve the resistance to unnerving tail-out antics on lift-off.

At the front, there were minor revisions to the geometry that boosted steering feel and





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UNDERPINNING THE WIDE-BODY MODEL WAS THE REDESIGNED SUSPENSION SETUP INTRODUCED FOR ALL 993S, WITH THE MOST FUNDAMENTAL CHANGE TO BE FOUND AT THE REAR

”





## BUYING TIPS

The 993's desirability means most have been looked after, but that's not to say that neglected cars don't exist. It's less likely perhaps with the rare C4S, but a specialist inspection would be advisable.

- **Bodywork:** Look for poorly repaired stone-chip damage, milky, delaminating windscreens and damaged jacking points. Other issues include rotten bumper mountings; failed door check straps and leaking bonded windscreens that can result in rust.
- **Engines/gearbox:** Find a smoky exhaust – usually worn valve guides – or low oil pressure, and it's probably best to walk away. Oil leaks from areas like timing chain and cam covers aren't uncommon, so check for drips underneath.
- **Suspension:** Setting the geometry requires specialist tools, so check for uneven tyre wear. A refurb can be well into four figures, so get an inspection if you're not sure, and watch for worn front suspension arm bushes and tired antiroll bar mountings.
- **Brakes:** Replacing the Turbo items isn't cheap, so check the condition carefully. Budget for replacement if discs are excessively corroded or you find cracks around the ventilation holes.
- **Interior:** Check that everything works, especially the electrics for seats, sunroof and windows. Make sure the air-con blows cold – getting it going again could be more involved and costly than just a re-gas.

directional stability, but otherwise it was business as usual, with MacPherson struts and antiroll bars and gas dampers at both ends. What the C4S did get was the 'M033' sports suspension setup as standard, meaning buyers benefitted not only from firmer springs and dampers and suspension lowered by 10mm at the front and 20mm at the rear, but from a more purposeful stance that left onlookers in no doubt of this particular 911's abilities.

Hydraulically assisted steering remained, but the new car was beefed up in the stopping department, borrowing the larger 322mm cross-drilled discs from the Turbo along with 'Big Red' four-piston calipers. Bosch ABS5 was standard, and those bigger brakes meant the C4S acquired 18-inch wheels – a Turbo-look design, though with solid rather than hollow spokes that were neatly finished off with unique '4S' centre caps. It can perhaps be argued that the C4S was over-engineered in the suspension and brake departments, but the potential ability and depth of engineering were impressive all the same.

Head inside, and buyers would find a cabin that had taken a significant step up in quality and material richness compared to previous offerings. The 964 wasn't exactly shoddy in this department, but the 993 represented a notable improvement, and went some way to explaining the more robust

pricing that Porsche had adopted for their new model. Although the basic architecture differed little from regular models, the C4S did benefit from a lavish standard equipment list that included leather trim, air conditioning, a sunroof and a ten-speaker hi-fi, as well as the rest of the labour-saving accoutrements that Porsche owners expected. The supple hide covered more heavily bolstered sports seats that were electrically adjustable and came with a hard-shelled backing inscribed with a Porsche logo, and provided support if you planned on taking advantage of the all-wheel-drive grip on offer. Needless to say, many visitors to the Porsche showroom couldn't resist the temptation to raid the options list before signing on the dotted line, equipping their cars with niceties such as upgraded sound systems and unique interior trim combinations. Spartan the C4S was not.

It was to remain one of the high points of the 993 range, the majority of which would disappear towards the latter end of 1997 as EU noise and emissions legislation started to bite. While a few models, including the Turbo, would survive a little longer, the writing was on the wall for a generation of 911 that would mark the end of the much-loved air-cooling. Still, it was onwards and upwards for the legendary sports car, and the 996 would bring plenty for Porschephiles to talk about. **911**

“  
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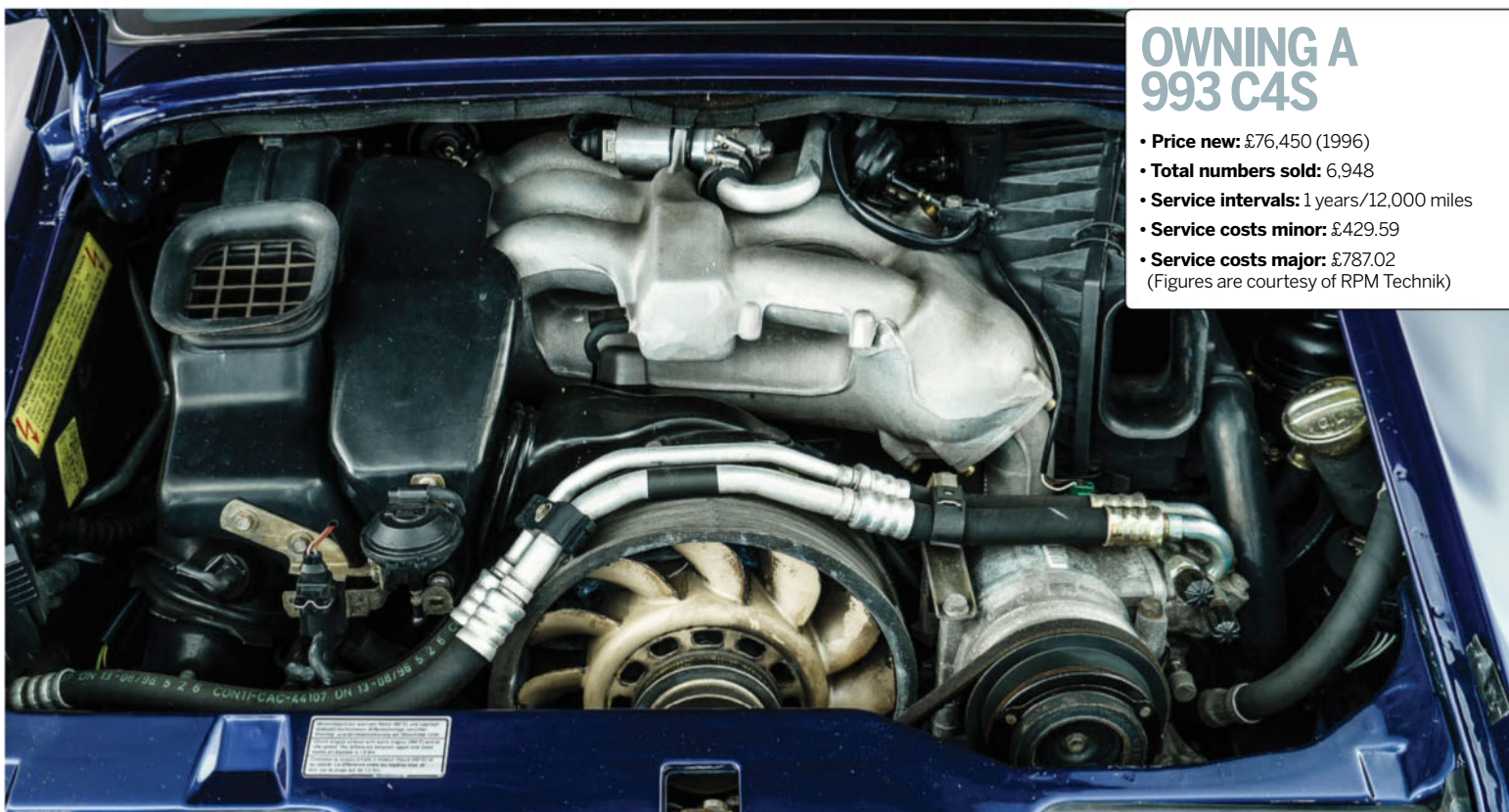
### SPECIALIST VIEW

“There's no doubt that the C4S is a very popular and desirable version of the 993, and with only 181 sold in the UK it's something of a rarity too. We're finding that buyers are snapping them up and then hanging on to them – quite a few people seem to prefer them to the Turbo, as the driving experience is a bit less frantic – and that's keeping values buoyant. For example, we've got one with around 60,000 miles on the clock that's priced at £60,000, and values have risen by about 25 per cent in the last three years, and that steady climb is likely to continue. With that in mind, a C4S is likely to make for a good investment in my view.”

Jonathan Franklin, Hexagon







## OWNING A 993 C4S

- **Price new:** £76,450 (1996)
- **Total numbers sold:** 6,948
- **Service intervals:** 1 years/12,000 miles
- **Service costs minor:** £429.59
- **Service costs major:** £787.02  
(Figures are courtesy of RPM Technik)



## "I'VE GOT ONE"



"I've driven a lot of widebody 911s including a 996 C4S and 997 Turbo, but what I've found most appealing about the 993 C4S is that I can have it in my garage and actually make money on the car, which is nice! The air-cooled C4S is holding its value nicely at the moment, whereas having a 996 C4S or 997 Turbo in the garage would mean I'd lose money as they depreciate.

In terms of 'car for the money', the 993 C4S represents superb value. It's from the coveted Turbo-look line of 911, yet servicing costs aren't as expensive as a blown 911. I find the C4S very rewarding to drive, giving me a perfect blend of classic 911 character with modern comfort."

**Seb Tangi**

## Thanks

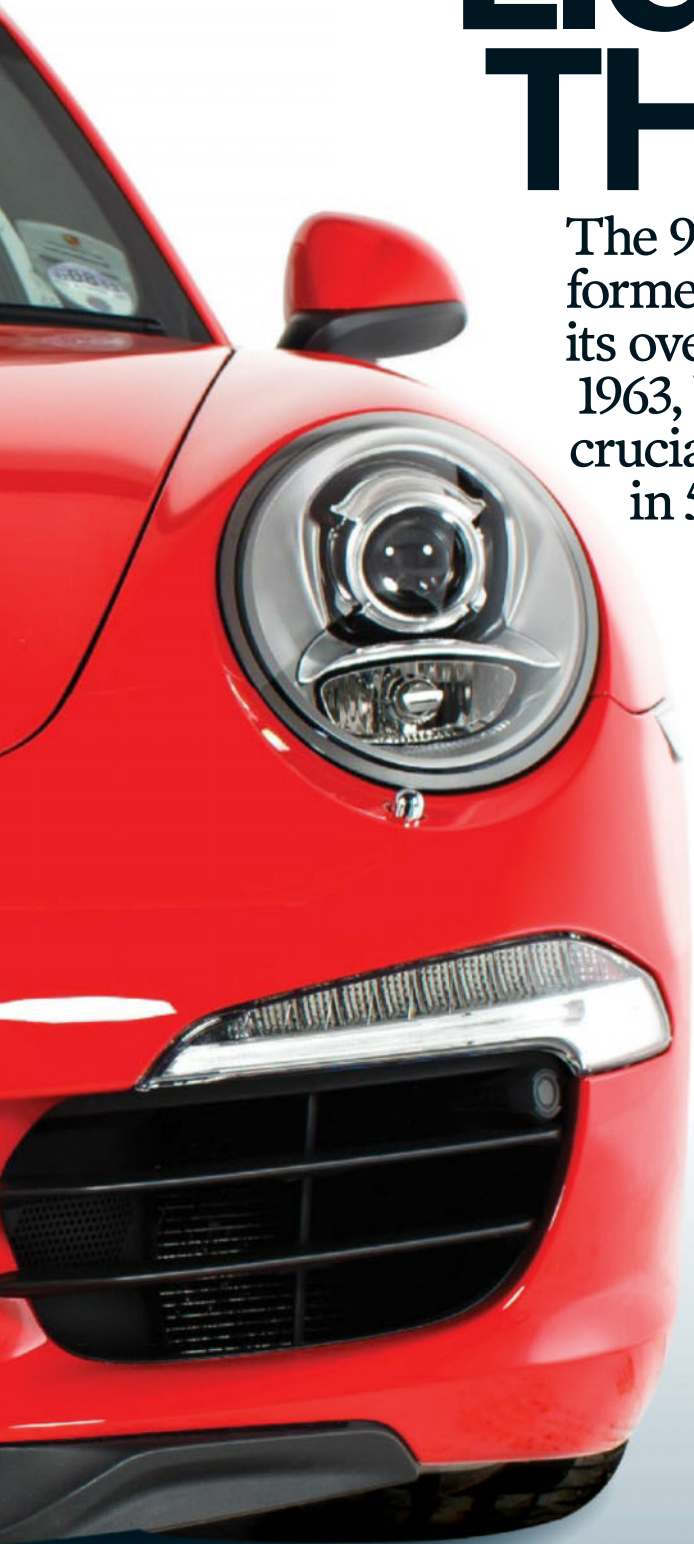
This model is an example of the stellar 911s available for inspection at Hexagon Modern Classics' London showroom. For more information, call +44(0)2072253388 or visit [hexagonmodernclassics.com](http://hexagonmodernclassics.com).



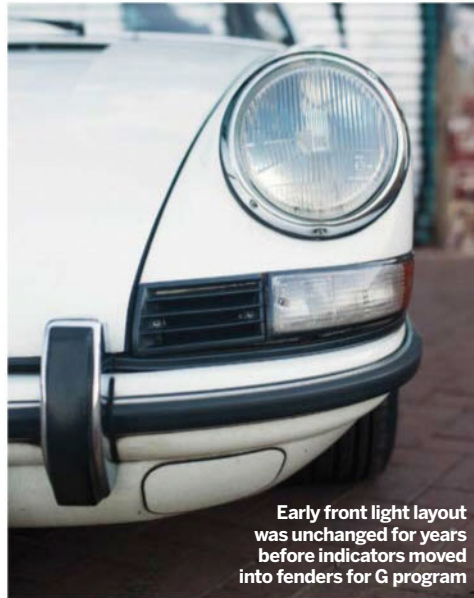
# LIGHTING THE WAY

The 911's headlamps have formed an integral part of its overall silhouette since 1963, but how have these crucial elements changed in 51 years? Total 911 investigates...

Written by  
**Ray Chandler**  
Photography by  
**Total 911 archive**







Early front light layout was unchanged for years before indicators moved into fenders for G program



**T**oday's headlight shape is as much about styling as it is about function, but for several decades there was very little change to the ubiquitous circular headlights used on the Porsche 911. From the 1963 2.0-litre '0' series cars right up to 1993, the 911 came with round, sit-up headlamps, albeit with some quite complex focusing geometry moulded into the glass. Bulbs were merely H4s, having two filaments, with full beam and the dipped beam achieved by use of a dipping cap (a semi-spherical polished molybdenum cup which partly shielded the beam). This all changed with the 1993's swept-back headlights, which use twin Halogen H1 bulbs, and high-intensity discharge (HID) lights were on the options list, too. Change came yet again when the 996 was launched in 1997, where all of the 911's front lighting now came into just one unit.

The radical new style proved controversial among traditionalists, though the thought processes behind the all-in-one headlight design were explained by Harm Lagaay, director of Style Porsche from 1989-2004 to Wilfried Halier, the Managing Director of North-West Hamburg's Porsche Centre: "In the development specifications, the headlights were to have five functions: main beam, running lights, parking lights, fog lights and indicators, and there were also to be no visible mounting screws." The conjecture is that this design would reduce drag coefficient yet further,

make one less hole in the wing on the 996's already reduced metal gauge thickness and, last but not least, save money by sharing components with the front end of the 986 Boxster, Porsche's financial lifeline of the time. The 'fried egg' lighting design was initially so unpopular that, just before the car's launch at the Hamburg Stock Exchange in September 1997, dealerships were presented by Porsche with special headlight covers designed to make the lights look more like those on the 993!

However, the infamous change in one of the most crucial aesthetical embodiments of the 911 was not to last, as the 2001 face-lifted 996 moved towards a more circular shaped design without integral indicators, identical to the Turbo model. The opportunity to develop further was taken with the 2004's new model, when circular lights came back into fashion again with the 997 generation, which has continued into the present-day 991.

However, the evolution in lighting technology in the 911 began some time before the controversial 996 single light units, initially accelerating in 1993 with the option of HID headlights (as mentioned). A HID headlight, often referred to as 'Xenon', is essentially a refined arc light. Unlike the previous filament technologies used in the earlier models (for example, halogen-filled filament bulbs), there is no glowing white-hot wire filament. Instead, HIDs have two non-touching electrodes housed in a tube filled with Xenon gas and metallic salts. Analogous to a spark plug, a high voltage is forced across the

electrode's air-gap, producing an arc and thus useable light. Creating the arc requires electrical energy greater than 12 volts (DC). A pulse of around 400 volts (AC) from an ignitor, controlled by a power unit, is applied to create the arc, causing the metallic salts to vaporise in the heat generated.

At this point, the Xenon gas molecules become negatively or positively charged, losing or gaining electrons. It is these free electrons, colliding with the vaporised metallic salt atoms and causing rapid changes to their energy levels, that are the phenomena that create lots of visible and ultraviolet light. Two major disadvantages of HID lighting are where, unlike an LED, the lamp is not instantly on; worse, much unwanted heat energy is created, too. Around 25 seconds after ignition, the arc is fully established and the ballast units scales back the voltage needed to maintain the arc to around 80 to 90 volts (AC) at 400hz. This lighting technology has in principle remained part of the 911's technical liturgy since.

For the 991 generation of 911, Porsche offers Porsche Dynamical Lighting System (PDLS) and PDLS Plus as an option for the entire range, with just the Turbo S being lavished with the superior Plus system as standard. The difference between the two PDLS offerings is that one uses the ubiquitous HID, while PDLS Plus uses LEDs as the light source for the headlights. Both PDLS systems, by monitoring steering angle and road speed data, will angle the headlight beam towards the



Upright headlamp design with coloured surrounds was still prevalent on the 964...



...before the 993 headlamps were raked back with washer close by...



... before the 996's radical change to one unit for everything, to cut back costs





Lighting technology has advanced rapidly under the more traditional-looking 997 and 991 headlights, with LED surrounds now on PDLs Plus units (Targa, main pic)



## “The evolution in lighting technology began beneath the surface some time before the controversial 996 single light units were utilised”

inside of a bend, as well as automatically adjusting the headlight range relative to road speed and anti-dazzle levelling. Bi-xenons use the same HID unit, albeit with a mechanical shade inside the reflector to switch the headlights, on driver input, from high to low beam. On the road at night, the basic PDLs system with HID works well, the ultraviolet light they produce making road signs glow more brilliantly, offering increased range of vision in a sports car that ultimately covers ground quicker than ever before. An automatic headlight levelling system and the ubiquitous headlamp lens wash system prevent dazzle and road dirt creating spurious reflections.

The working principle of the LEDs, as used on the Plus system, relies on the movement of electrons, holding differing levels of electrical charge as they orbit across the layers within a semiconductor device. As voltage is applied, free electrons ‘recombine’, passing from one energy layer to the next. In doing so, they must shed some of their electrical charge energy, and as energy cannot be created or destroyed, the electron will rapidly release its energy in the form of light (photon), albeit a very small amount of light. Scale

this effect up many, many thousands of times a second, and the LED as a useable light source is born. LEDs have long been considered as short to medium-range lights, their output considered insufficient for longer distances and thus their relegation to sidelight and brake lights. However, recent developments have produced LEDs capable of a sustainable 60 watts of ultra-controllable power. The PDLs Plus system is based upon these energy-efficient LEDs, as they can switch states instantly, thus blanking or shaping a portion of the beam.

Moreover, their light colour is close to daylight, which helps reduce driver fatigue, too. PDLs Plus has four LED lights for daytime running use, with the headlight unit having an array of LEDs arranged in a ring, giving variable output as needed. The Plus system automatically avoids dazzling other road users by means of a forward-looking camera, which keeps the LED headlights on full main beam brightness wherever it can, until it detects the lights of vehicles directly ahead, or those of oncoming traffic. Then, it electronically reduces and shapes the light beam to the minimum level needed, restoring the LEDs to full power as

soon as it can. Thus, the 991 driver has the best vision possible with this lighting technology.

At night, the intelligent and dynamic lighting offered on PDLs Plus is excellent – once you adjust to it – as it automatically alters the light output in an instant, similar to moving from dipped to main beam as a vehicle is approached from behind or one comes towards you. Furthermore, the beam is visibly lifted further up the road as your vehicle speed is increased. It is a continuous, instantly reacting control system. On bends and junctions too, the system shows more of the road as the headlights turn in accordance with the car’s direction, allowing you to see potential hazards earlier – all without hindering other road users.

And there are even more improvements in lighting technology on the way, even better than LEDs. Multiple lasers will illuminate the road ahead using a laser module, consisting of four high-output lasers, to provide a 300-micron-wide cone of daylight-coloured light right out to 600 metres, easily doubling the range of the current LED headlight, providing drivers with a bigger safety margin in doing so. If these laser lights provide drivers with just 1/10th of a second reaction time advantage when driving at the legal road speed limit, you’ll stop your car over three metres sooner.

With the next 911 generation on its way, there’s surely an opportunity for Porsche to continue to offer its customers the very best by moving all new 911 models away from the old technology in energy-inefficient HID lights to active LED headlights, meanwhile offering the new laser-headlight technology as an option. **911**



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# 25 YEARS OF CARRERA CUP

One of the best known and most successful one-make race series celebrated its first quarter century in 2014. Total 911 looks back at the first 25 years of Porsche's stellar competition

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

One-make race series are not a new phenomenon. Formula Ford championships were often the highlight of club race meetings in the Seventies, and Ford was not the only manufacturer to exploit the publicity value of the track: Porsche too from its very beginnings used motorsport as its shop window and early Porsches were all built for competition use. For decades, the company competed at the highest level in sports car racing either through works or private teams. The idea of a one-make championship was attractive though, because it offered the chance to promote production cars: win on Sunday, sell on Monday.

In the mid Eighties, Porsche had three distinct model ranges: the 911, the 928 and the 944. With its predilection for turbocharging, Weissach developed a boosted version of the 944 which was

launched in 1985. Despite very similar performance to the 3.2 Carrera, it lacked the image of its older sibling, and so the motorsport department devised a championship race series, the Turbo Cup. Porsche built a largely standard 944T with a sealed engine and fitted with a racing seat and roll cage and adjustable suspension. The races were a success featuring fields of 40 cars (which Porsche sold at DM 78,900 each, roughly £30,000). A French series was inaugurated in 1987, meanwhile the German series spawned rounds in Italy, Belgium, Austria and Spain. But the 944 was fast approaching the end of its career, the general slump in sales distracted the company, and in the confusion, there was uncertainty about how to follow up this popular series. The contemporary view was that there were no longer enough "car guys" at the head of Porsche, now led by its former accountant and which would shortly appoint a new CEO, Arno

Bohm from Nixdorf Computers. However, one new appointment at least was an acknowledged 'car guy': Ulrich Bez, formerly of R&D at Weissach and more recently at BMW, returned to Porsche as Technical Director. Bez's tenure in the senior engineering post is remembered for a series of controversial decisions: pursuing the ultimately futile four-door 989 project; abandoning Porsche's participation in the US CART series just as its efforts were showing fruit, and returning to F1 in an expensive but vain attempt to repeat the glory of the TAG McLaren era. But one decision has in retrospect been entirely vindicated. Bez saw – as had Peter Schutz – that the future of the company lay in the 911. He persuaded the board to let him revamp the racing series as the Porsche Carrera Cup so that it would feature the new 964.

Building on the foundations of the Turbo Cup, the new trophy would prove to be even more





successful, one round even preceding the German Grand Prix. The presence of one-off celebrity drivers, who would include Mika Häkkinen, Walter Röhrl and motorcycle champion Kevin Schwantz, added piquancy to what was already very close racing. Olaf Manthey became the first German champion in the 1990 season.

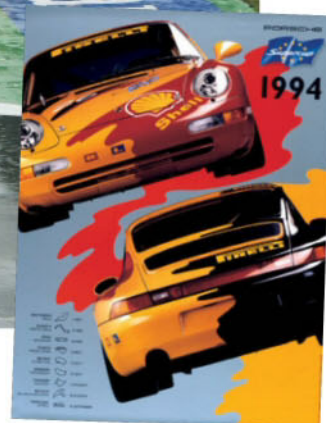
A great deal of the success of the series lay in the cars: the Cup 911s were strikingly reliable, a historic characteristic of racing Porsches. Almost 20 years earlier, Mark Donohue had recommended the 3.0-litre RSR to Roger Penske, then devising the IROC series in the US, with the words: "There's no question about it: the only way is to go is with factory-built Carreras. The car can't be broken as long as it isn't over revved and as long as it's shifted correctly."

Porsche was equally careful to make its new production racer affordable: priced at a reasonable DM 123,000 (£55,000) Weissach had no difficulty in amassing 150 orders for the first batch of 964 Cup Cars, a figure which it reduced to a more manageable 40 by asking for a bond of DM 75,000, repayable only when the client had competed in six races. This condition also kept speculators away. Donohue had observed that no production race car was as identically equal as the 911 RSR, which put the onus entirely on driver skills. Porsche would make the 964 Cup car to the same exacting standard. Research Director Helmut Flegl, who worked on that original RSR, planned the Cup car's specification, and test driver and engineer Roland Kussmaul supervised the build. Jürgen Barth, customer motorsport manager, was responsible for the commercial side, and veteran works racer Herbert Linge oversaw the running of the first season. With such experienced management, the series would get off to a flying start.

The build specification of the 964 Porsche Cup car has made Kussmaul something of a legendary figure in Porsche competition history. The deftly lightened and lowered 964, its cabin stripped for competition, has become a 911 icon, and Kussmaul would repeat his magic on the next three generations of the 911 Cup car. It was significant that for the 964, he could select engines from the production line simply on the basis of a dynamometer reading. It meant buyers of the stock 964 could rightly identify closely with the racer, quite the antithesis of 'silhouette' racing cars, and although the series was limited (until 2001) to Germany and France in terms of exposure, it quickly had the desired impact, and the Carrera Cup acquired an almost unstoppable momentum.

Introduced for the 1995 season, the 993 Cup car weighed 1,100 kilograms and cost DM 173,000, a significant increase over the 964 price and indicative of Porsche's growing confidence in the event. Bernd Maylander was the first winner in a 993; for the following season the 993 Cup sprouted a larger fixed rear wing, and was fitted with a lower sixth gear. Veteran Harald Grohs won that year by the narrowest margin yet, and Christophe Bouchut took the French championship.

The marketing potential of this championship inspired Porsche Motorsport in 1993 to set up an umbrella event, an international series known as the Michelin Supercup until 2007 when the main sponsor became Mobil. In a deft move, Porsche secured this event as the main supporting race







to Formula One, and with a direct influence it did not have in the national championships, it was able to use the Supercup as a way of nurturing talented young drivers. Creating and controlling a flagship event, effectively an international shop window in the vital new Chinese, Far Eastern, Gulf and other markets was typical of the company's highly focused marketing as it sought to establish brand awareness. The Supercup also 'tidied up' the national championships by turning them into a logical 'second division' at the same time as providing a source of new drivers. On top of this, each year Porsche now select one Carrera Cup driver to receive a €200,000 bursary to race in the next Supercup season. Such competition helps to stop any one driver becoming dominant: since 1994 there have been 14 different Supercup winners, the most recent being Kiwi and Porsche scholarship driver Earl Bamber.

The national Carrera Cups, which in the UK in 2014 had 16 drivers representing six teams, uses the standard production GT3R which has become the most-produced factory racer ever; the real sea change was the arrival of the 996 GT3R in 1999. The water-cooled 911 was of course all-new, and Weissach's dedicated production line could build four times more than previously. Greater production means more customers, and so the series proliferated steadily, championships starting in Australia and Japan and elsewhere in the Far East, with Italy and the UK joining in 2003.

In the realm of the Porsche Cup in the days of the 996 GT3R, Lukas Luhr won the first German championship in 1999, and Dominique Dupuy took the inaugural French Cup; Barry Horne was the

first British GT3R Cup winner, followed a year later by Richard Westbrook. 1992 winner Uwe Alzen won again in Germany in 2007, and Jean-Pierre Beltoise's son Anthony has been a consistent winner of the French championship.

The 2007 997 GT3R brought the first capacity increase from the inaugural 3.6-litre of 1990 (then air-cooled) but the 997 GT3 went on to 3.8 then 4.0-litres, a remarkable engine which conservatively produced 500bhp. 2013 saw the replacement 991 GT3R which continued to use the 4.0 rather than the production 3.8-litre engine.

More than two decades on, the Carrera Cup and Porsche Supercup show no sign of flagging. After Formula One, the latter is regularly the most televised form of motor racing, and as Porsche Motorsport put it in 2014: "The secret is in the mix: talented youngsters and ambitious teams use the Porsche Mobil 1 Supercup to draw attention to themselves. Many of them are now enjoying success, especially in endurance racing. Porsche Junior Klaus Bachler competes in the Porsche Mobil 1 Supercup in 2014, alongside Earl Bamber as winner of the International Cup Scholarship and funding candidate of Porsche AG. The championship title is regarded as a top recommendation for a career in touring car or GT racing."

If for tomorrow's potential champions the Porsche Carrera Cup and Supercup are viewed as the motor racing equivalent of Oxbridge or Harvard, for 911 enthusiasts these series also help to perpetuate the last significant rear engined car in history that also happens to be the greatest sports car ever made. **911**

## Porsche Supercup champions 1993-2014

**1993** Altfrid Heger

Porsche Zentrum Koblenz

**1994** Uwe Alzen

Porsche Zentrum Koblenz

**1995** Jean-Pierre Malcher

JMB Competition

**1996** Emmanuel Collard

JMB Competition

**1997** Patrick Huisman

Olaf Manthey Racing

**1998** Patrick Huisman

Olaf Manthey Racing

**1999** Patrick Huisman

Olaf Manthey Racing

**2000** Patrick Huisman

Olaf Manthey Racing

**2001** Jörg Bergmeister

Farnbacher Racing

**2002** Stéphane Ortelli

Kadach Tuning

**2003** Frank Stippler

Farnbacher Racing

**2004** Wolf Henzler

Farnbacher Racing

**2005** Alessandro Zampedri

Walter Lechner Racing

**2006** Richard Westbrook

Tolimit Motorsport

**2007** Richard Westbrook

HISAQ Competition

**2008** Jeroen Bleekemolen

Jetstream Motorsport

**2009** Jeroen Bleekemolen

Konrad Motorsport

**2010** René Rast

Al Faisal Lechner Racing

**2011** René Rast

Veltins Lechner Racing

**2012** René Rast

Hermes Attempto Racing

**2013** Nicki Thiim

Attempto Racing

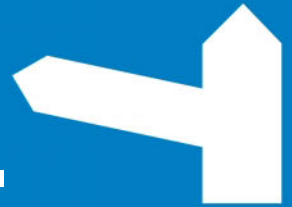
**2014** Earl Bamber

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# 964 CUP THE FIRST CUP 911





Engineered by Roland Kussmaul, the 964 Cup was Porsche's turnkey race car that would spawn the most enduring one-make series in history. Total 911 buckles up and heads for the nearest apex in a late 1993 example...

Written by **Kieron Fennelly** Photography by **Daniel Pullen**



### Running a 964 Cup

The 964 Cup is a very practical track car, inexpensive to run and requiring relatively little preparation beyond checking oil, brakes and hubs. Its low (virtually standard) state of tune means it does not readily go off song, and in their championship days the engines usually needed little more than routine servicing at the season's end. Maintenance is easier than on a GT3 Cup car, for example, which is more complex both mechanically and electronically, with additional coolant radiators and an adjustable suspension that gets hot and requires regular resetting. The GT3 suspension also has components that wear and need monitoring. Overall costs will be higher than with the simpler 964 racer.

On the track, the 964 Cup needs to be warmed up like anything else would, and a stop made to rebalance tyre pressures, which will have increased as the rubber heats up. As long as the oil pressure is good, the 964 will run almost metronomically – it's the original plug-and-play racer!





# “Kussmaul’s methodical preparation of the 964 Cup is now the stuff of legend”



From its very beginnings, Porsche built production cars with the primary purpose of competition. Most of those early Gmünd Coupes were sold to enthusiastic Swiss hillclimbers, and for years racing and publicity manager Huschke von Hanstein would trumpet Porsche’s racing successes. However, in the Seventies, the advent of turbocharging meant that racing versions were becoming ever further removed from their production counterparts. The Carrera 2.7 RS was the last standard Porsche to be raced in significant numbers straight off the production line.

When the 964 Carrera 4 was launched in 1988, Porsche’s CEO Heinz Brannitzki announced it as “the 911 for the next 25 years.” The logic was obvious, although it took new technical director Ulrich Bez to point out to Porsche’s board that their one-make series should be for the 911, especially as the 944 was at the end of its life. Fresh from the

tribulations of Porsche’s abandoned campaign in the CART championship, research director Helmut Flegl took charge of the Carrera Cup project.

Together with Roland Kussmaul, he drew up the blueprint for the Cup car, based on the C2 964 that had made its debut in September 1989. Kussmaul was a particularly versatile engineer: not only did he bring years of practical experience from Porsche’s Africa and Sahara rallying, he had also driven thousands of miles developing client race cars, most recently the 956/962. In fact, several years after his retirement from Porsche, he remains closely involved with Porsche Supercup teams.

Kussmaul’s methodical preparation of the 964 Cup is almost the stuff of legend. His remit was to lighten the 911, but to leave it as close to standard as possible so homologation would be straightforward and relatively inexpensive. Shells were taken from the line and sent to Matter, where the famous roll cage was fitted. The shells were then returned to Weissach, where Kussmaul’s group seam-welded the chassis around the suspension and engine mounts, and removed superfluous metal-like tabs in the cabin for mounting trim and added strategically placed gussets. The sunroof aperture was sealed, with a body that was 50 per cent stiffer than the stock item. The shells, nearly all painted in grand prix white, were not undercoated.

The stock 964 coil spring strut and rear semi-trailing arm suspension was fitted, but solid unibal joints with the chassis replaced the normal flexible bushing of the production 964. Similarly, the engine and gearbox mounts were solid. Dampers were

Bilstein, encased in three-times harder springs, which were also shorter, lowering the ride height by almost two inches.

The close-ratio gearbox was specific, having higher first and second ratios, and first to fourth had steel synchromesh rings. A sintered metal Sachs clutchplate allied to a lightened, single-mass flywheel and competition LSD with 20 per cent lock-up under load and 100 per cent under braking completed the transmission specification. Wheels were 17-inch affairs made by Speedline. These were five-spoke, and resembled a more convex 959 wheel. For lightness, they were made in magnesium, and the design became known as the ‘Cup wheel.’ Rim widths of 8 (front) and 9.5 inches (rear) were equipped with 245 and 265 section Pirellis.

The braking system was essentially that of the newly launched 964 Turbo, drilled and ventilated discs restrained by four-piston Brembo calipers. The Turbo also contributed the servo, ABS and aluminium front hubs and steel carriers. The interior was stripped, and featured a Recaro racing seat with six-point harness and a regulation fire extinguisher in the passenger footwell. There was no blower fan, and ventilation to the driver was by means of tubes under the dash, itself the only recognisable standard 911 item remaining. With so few electrical assists, a lighter loom was fitted. A traditional 911 wooden floor was fitted to the driver’s side, the rear bumper was lightened, and at the front, non-telescopic reinforcement tubes also saved kilograms. Foglight apertures were blanked or opened as air passages, and thinner glazing was

## 964 Cup in numbers

Building of the Cup 964s began in November 1989 and the final batch was assembled in spring 1993, making a total of 297. The Grohs car (pictured) was one of the last constructed, and had the built-in air jacks and the slightly more powerful 275 bhp engine (in reality probably nearer 290) of the 1992-on cars. These also had small detail differences to the bodywork, reflecting the 964 RS on which they were now based; the earlier Cup cars were derived from the 964 Carrera. The Cups were phenomenally equal in performance and of all the celebrity drivers, only Mika Häkkinen really got the better of the regular competitors with two wins in 1992-3.





M64 engines were units from the production line, while the chassis was 50% stiffer and the body lightened extensively

Model Year	964 Cup 1993
Engine Capacity	3,600cc
Compression ratio	11.3:1
Maximum power	275bhp@ 6,100rpm
Maximum torque	195Nm @ 5,250rpm
Engine modifications	M64/O3 engine; air cleaner, silencers and power steering pump deleted; ignition remap requiring 98 RON
Transmission	Specific five-speed close ratio gearbox; single-mass lightened flywheel; LSD 20 per cent/100 per cent locking factors
Suspension Front	MacPherson struts; Bilstein dampers with specific short springs
Rear	MacPherson struts; Bilstein dampers with specific short springs; semi-trailing arms
Wheels & tyres Front	8x17-inch Speedline Cup five spoke; 225/50/17
Rear	9.5x17-inch Speedline Cup five spoke; 265/40/18
Dimensions Length	4,250mm
Width	1,652mm
Weight	1,120kg
Performance 0-62mph	5 secs (est)
Top speed	Dependent on gearing







On track, the 964 Cup delivers a more intense drive than a road-going RS, but is considered relatively forgiving for a competition car



installed. The doors and front cover – complete with retro-fit pins – were in aluminium, but the engine cover retained its electrically deployed spoiler, as that was how the 964 was homologated.

Often said to have been 'blueprinted,' the engines in the Cup cars were in fact production line units. After its trials and tribulations trying to persuade a reliable 240 bhp out of a 3.5-litre flat six, Porsche bored it out to 3.6. This yielded at least 250 horsepower, the output deemed necessary for the new 964. The 3.6-litre M64 would be the basis of the 911 to the end of air cooling. In practice, though rated at 250bhp, this engine produced 255-258bhp. Kussmaul simply selected the engines that gave the best dynamometer reading.

As he later told Michael Cooper, "We just removed the air filters and the power steering pumps and tuned them carefully. Each one was checked on the dyno and gave 268-272bhp." That careful tuning included mild ignition remapping so the engines needed 98 RON instead of regular fuel, and though the exhausts were virtually unsilenced, the three-way Johnson Matthey catalyst was retained. In the days when catalytic converters were new in Europe, Johnson Matthey evidently saw the value in sponsoring this high profile race series. For his part, Kussmaul might have added that cost also played an important role in the relative simplicity of the Cup specification.

The selling price was DM 123,000 – only ten per cent more than a stock C2, and a manageable DM 30,000 more than the previous Cup 944T. Weissach purchased the car by asking for a DM

75,000 deposit, refundable only when the car had participated in six races. The races themselves were close affairs: often only two seconds would separate the practice times of the first 25 cars on the grid. Weissach ensured fairness by making the engines tamper-proof: a wire wrap and lead sealed the timing chain studs and the DME was closed. Porsche would take the first three cars in any race to Weissach for inspection. Any team that had not fully understood the Cup's fair play ethos soon did.

Once again, we are grateful to Belgian 911 enthusiast Frank Hendrickx for lending his 964 Cup car to us. Frank started his remarkable collection of historic 911s over 20 years ago, but this 964 is a fairly recent acquisition. "I bought it a year ago," he recounts. "It is a 1993 car, one of the last batch of 15 964 Cups built that year. It was purchased by the Obermeier team for driver Harald Grohs."

Already a veteran competitor, the 50-year-old Grohs would take second place in the German Cup championship with this car in 1994. He went on to win the following year and finish third the next, driving the 964's successor, the 993.

"Sometime after the championship switched to the 993, my car was sold to a US enthusiast in Colorado, who was able to race it fairly extensively in Porsche Club of North America (PCNA) events," said Hendrickx. "He then sold it on to my vendor, a guy called Pat DiGiovanni, who also raced it, gaining a second place and a win in regional championships. Then he decided to restore it in the colours you see today. He won a couple of concours d'élégance and sold the car to me in 2013."

So good were the reports that Frank acquired it on the strength of a third-party inspection, and he hasn't been disappointed: "It was in excellent condition and we haven't touched it except for a routine service. I've had it on a few circuits already, and at Abbeville on slicks we managed a 1:17.7s lap." To put this in perspective, Flat 6, which uses Abbeville for all its tests, recorded 1:19.4s with the 997 GT3 RS, albeit on road tyres.

When idle, the gearlever chatters noisily, and as you strap yourself in, the bare interior is quite a shock, but this is quickly forgotten as you concentrate on the heavy clutch pedal and its rather sudden engagement. Bumping along Abbeville's pitlane, the hard suspension transmits every pothole, and the steering feels reluctant to turn. On the circuit, everything changes: the ride smooths out, the steering lightens and the Cup is happy to proceed for a couple of laps at half throttle. Once warmed up, this super-light 964 accelerates instantly: like the 964 RS, it does its best work above 4,500rpm and flies over the next 2,000rpm to its limit. Through the corners it is very secure, with no hint of roll. The Cup is relatively forgiving for a competition car: there is no sudden turbo boost, and the Turbo brakes instil confidence.

It's a fine machine for learning circuit driving, and for a driver used to a 964 RS, this is similar, but intensified. Frank takes over and demonstrates that the fastest laps are the smoothest, understeer on entry turning into mild oversteer on exit. That the most successful competitors have the least drama is no coincidence. **911**



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# Living the Legend

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



Ben got accustomed to the Virginia International Raceway over an enjoyable weekend with the Carolinas Region of PCA

**2007  
997.1 GT3**



**Ben Przekop**  
Georgia, USA

**Date acquired:**  
July 2012

**A**ccelerating out of the 'Oak Tree' corner onto the back straight at Virginia International Raceway, I kept my GT3 floored until I saw an indicated 8,000rpm, then shifted to fourth and floored it again until the braking zone for Turn 14, where a quick glance told me I had hit 150mph just as I braked hard and downshifted to third for the sweeping left-hander that led to the twisting downhill 'roller coaster' section of the track.

Where the back straight is all about speed and 'how long can I keep it flat' bravado, this final section is about driving the perfect line and using just the right amount of braking. If you keep it flat all the way through the mid-straight 'kink', you can see 130mph+ before braking heavily for turn one.

That is what VIR is all about: a 3.27-mile road course with two personalities, three fast straights where you can see top speeds between 130 and 150mph, linked by several tight and twisty sections that demand precision and balance. It is without doubt my favourite place to go fast in a 911.

The Carolinas Region of PCA hosts an annual three-day Drivers Ed event at VIR in November, and although the track is 398 miles from home, I decided to finally cross it off my bucket list. Friday is for solo drivers only, with a full schedule of sessions at the track and intended to serve as an instructor on the weekend, I used Friday to learn so I would know what I was talking about!

For the first session I rode with an experienced VIR driver named Vince

Braswell, who showed me the line and gave helpful advice to get me familiar with this circuit. During my next three solo sessions I started to get more comfortable, and by the day's end I felt I was driving a consistently good line with fairly good lap times.

When I met my student Matt Baird on Saturday morning, I was pleased to hear that he had four prior DEs at VIR under his belt, and his first session on track confirmed that he was not only experienced, but a naturally gifted driver who I would soon recommend for solo status. After our second session, I got the blessing of chief driving instructor Shane Tisdale to do just that, and proudly presented him with his 'solo' sticker. I was also impressed with his ride, a new 50th Anniversary 991, which was not only beautiful, but wickedly quick!





Along with a fantastic track, VIR also offers awesome creature comforts. The Lodge, one of three housing alternatives located at the track, ensured I would have a short three-minute commute, as well as a well-rested body thanks to my room's deep whirlpool hot tub. The trackside grill provided superb Southern-style food, and the charming Oak Tavern served up sumptuous food and drink after sunset.

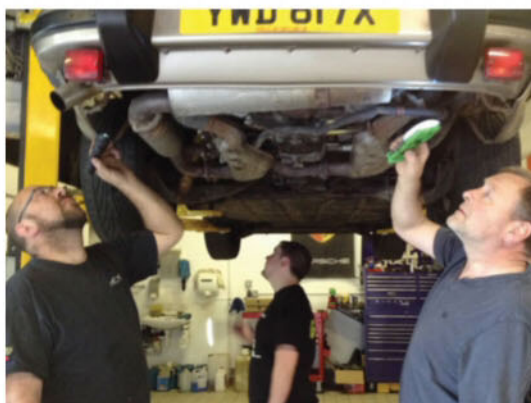
Brian Powell, the event chair, ran a punctual and safe event, and everyone I met from was incredibly friendly and helpful, especially Kathy Boehm, who runs the region's 'Goodie Store', from who I purchased a new Porsche windbreaker, and who graciously offered to serve as my photographer for the event. Can you tell that I had a *really* good time?

## 1982 SC Sport Carrera; 1989 964 Carrera 4



**Gina Purcell**  
Oxford, UK

**Date acquired:**  
September 2004 &  
April 2014



**Gina plans on taking her SC on tour in 2015**

**Is it wise to commit your 32-year-old sports car to a 2,000-mile tour of Scandinavia? It depends on the vehicle in question. While 'classic' Porsches are far from infallible, I didn't have a second's hesitation in booking Steffi on a long-haul driving holiday planned for summer 2015.**

Faith in Doctor Porsche's engineering is one thing, but common sense dictated that my long-term schedule of pre-emptive maintenance should be brought forward, so she's spending a lot of time at BS Motorsport. The list was quite lengthy, but the guys are working through it. Included are head-bolt and rocker-shaft checks, plus engine service, replacement short oil pipes and the fuel filler neck, gearbox mounts and

both front wheel bearings. All the fuel lines will be replaced, along with the screeching noises from the heater system.

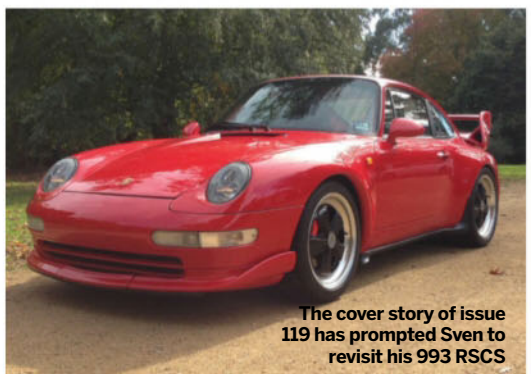
It's always been a given that I would remove the whale tail spoiler. Steffi's sleek fastback styling is visually corrupted by the overblown, factory-fitted Turbo spoiler. While it sits well on the muscular rump of the wide-arched pugilist, when perched on the SC's narrow body it writes performance cheques that 204bhp can't cash. Hopefully, its removal will also help stop the Angry White Van Man racing me. I shall be keeping the tail and its original engine cover and storing them, but perhaps I could be another to transform theirs into a novelty coffee table and fulfil its 'tea tray' destiny!

## 1961 356 T5B; 1973 911E; 1975 Carrera MFI race car; 1981 930 3.3; 1988 3.2; 1995 993 RS Clubsport



**Sven Burchartz**  
Victoria, Australia

**Dates acquired:**  
Various



**The cover story of issue 119 has prompted Sven to revisit his 993 RS**



**Reading the article in a recent issue about 993 RS reminded me that even in the darkest times, there were still people at Porsche that saw the need for cars at the extreme end of the sports car spectrum. Racing was still an integral part of the showroom floor DNA of Porsche sports cars in that with a little modification, you could go and race it.**

The 993 RS is the epitome of naturally aspirated Porsche technology, and the final iteration of the air-cooled era. My RS is one of the few right-hand-drive cars produced in the Clubsport spec. It's low, and has big spoilers. 300hp was the quoted power number, but I'm not so sure that the inner pessimist wasn't getting a run when the marketing collateral was being drafted.

As for the driving, it's not as edgy as you might expect. I owned a 964 RS that was built to N/GT spec, and that one was hairy and raw even when all the wild camber and toe settings were brought back to road spec.

As I write this, I'm just about to race the IROC car over the weekend, and am seriously considering grabbing the RSCS. That's the other thing: it's a tourer, albeit a bit noisy. I'm not proud. I've even driven with ear defenders on!

I like my cars a little on the harder side (the Panamera being the exception when I'm playing Plutocrat Monday to Friday). In fact, I've decided to take the RS away for the weekend. I hope you enjoy your car or the passion you have for Porsche as much as I do. I'll grow up one day I'm sure.



## 1989 964 Carrera 4; 1967 912



**Sean Parr**  
Harpenden, UK

**Date acquired:**  
May 2014 &  
November 2014

**H**aving got the 964 pretty much mint, I decided it was time to buy another 911. However, I remembered my ride with Ian Gunney in his 912 and decided that was the Porsche for me.

So my quest to find a good 912 started, and like the other pre-'73s wasn't that easy. There are a lot of sheds out there, and a huge number of 912s came over from the States where they were often cheap cars and therefore many were botched up and butchered. I saw a couple of those properly nasty cars that if they didn't have a Porsche badge would have been scrapped. Instead they were for sale in the high teens and just not worth it. For probably the first time in my life I was able to walk away from cars that I felt were less than perfect.

I had a huge amount of help from Ian and his family business Red Castle Classics in Cardiff, answering all sorts of questions via email and text. And then I found an ad for a car (bizarrely also in south Wales) that looked really good, but was more than I felt it was probably worth. We had a conversation over the phone, after which Ian was kind enough to go and take a close look at it. He felt that it was a good one, with a few issues, but nothing major.

I drove down with my son Charlie to Cardiff, and it was exactly as expected. Within an hour, I was a two-Porsche guy! The drive home was fantastic – I'm in love with this thing! My wife was besotted when it arrived home – this was the Porsche she'd been waiting for.

But it's not perfect, which is exactly what I was looking for: a really good base car that I could work on and add to, really enjoying the



drive and getting my hands mucky. The list of jobs isn't long, but included a really thorough clean, cut and polish, cleaning the interior which to be honest was filthy and let the side down badly, but after giving it a bath, the first job was getting the horrendous bitumen-based gunk which the Americans so love off the under bonnet area. It was everywhere – all over the wires, cables and pipes.

Fortunately, I can't sleep at the moment, so every morning for the past two weeks I have been in my garage sitting in the bonnet scraping this junk off at 4.30am! Not pleasant, but incredibly satisfying,

and despite the aesthetics of this muck, it has done its job; there is virtually no rust anywhere in the front. Granted, there's been some rather agricultural welding, but the steel is solid, and those welds are going nowhere in a hurry!

The best thing about the 912 is that it's not perfect (yet), and that's why I really like it. My daughter describes it perfectly. Upon being asked why she likes it, she said it reminded her of me: "a bit rough around the edges!" It's a car you can enjoy without worrying about a scratch, ding or whatever. I think this is the start of a beautiful friendship.

## 2003 996 Turbo



**Joel Newman**  
London, UK

**Date acquired:**  
April 2014

**I**t's only logical to assume that as a car gets older, you're going to run into issues with wear-and-tear items, but with regard to my car it's the electrics that seem to keep giving me jip! I've had a fault with the rear spoiler, which the car thought was permanently up. I've had a fault with the alarm system not recognising the blipper, and just last week my driver-side window decided enough was enough. The window refused to drop when exiting the car, which meant I had to clamber out of the passenger door to shut and alarm it properly.

A Porsche mechanic who has worked on my cars for years has recently branched out on his own, opening a business called PorscheCare. He explained that it was the door lock, a common problem on 996s that was likely causing all my alarm issues and stopping the window from recognising that the door was open or shut, hence the lack of drop.



Joel has been busy with a new door lock and refreshed centre console



The car was sent in for the work to be carried out, and while it was in I decided to attend to something that's been niggling away at me: the centre console! For some reason, Porsche decided to finish these with a strange sort of plastic coating that marks if you even look at it. Mine was

looking rather worse for wear so I decided to have it out. It's currently at the painters getting a new lease of life in an interesting hue! As I sit in my office, I'm also looking at Bilstein dampers, H&R springs and a set of 19-inch OZ Wheels. It's going to be an interesting few months, that's for sure!



**2010 997.2  
Turbo;  
2011 997.2  
GT3 RS**



**Tony McGuinness**  
San Diego, USA

**Dates acquired:**  
January 2010 &  
February 2011



The unveiling of the new GT3 had all the prestige of a movie premiere



**G**TS – three letters that gives Porsche 911 enthusiasts goosebumps. The GT3 has long had historical significance to Porsche, being the essence of 911 sportiness. The much-anticipated world premiere of the 991 GT3 took place on 19 November at the Los Angeles Auto Show.

Founded in 1907, it is the first major North American show of the season. Of course, with the United States being the largest market for Porsche, the company is aware that within that market, Southern California leads the way in sales. The launch of the GT3 in this part of the world was therefore fitting.

While other manufacturers' displays in Los Angeles are arranged nearly on top of each other, there is a large area within

the convention centre named Petree Hall dedicated to Porsche, indicating that it really does stand out from other car makers.

Of course, it wouldn't be a true premiere without the glamour and the glitz of a Hollywood star, in this instance none other than Patrick Dempsey. Welcoming visitors was the Dempsey Racing 911 GT America. Based on the 911 GT3 Cup, it was designed for the Tudor United SportsCar racing series GT Daytona Class for 2014.

On the stage was a 911 GT3 Coupe and Cabriolet, each cloaked in a satin cloth adorned in a Porsche Crest. Porsche executives Detlev Von Platen and Bernard Maier introduced Stuttgart's 19th iteration of the 991. Porsche, as always, didn't compromise on the premier of the GT3.



**1999 996  
Carrera 4**

**Rob Clarke**  
Bristol, UK

**Date acquired:**  
February 2014

**S**o another month, and to be honest this month there is not much to say about the 911. It has ticked all the boxes, and nothing has gone wrong (famous last words). Okay, I have put a new set of wiper blades on the car, and found out that there really is about ten litres in the reserve when I ended up coming home from work with the needle in the red!

On a plus note, the last month meant only one thing for me – the NEC Classic car show. I have attended this for the last few years, so this year was no exception, the only difference being that this time I actually arrived in something that potentially qualifies as a classic (okay, a 996 may not be quite full classic status, but at 15 years old it must be close), and on top of that there was a Porsche special event celebrating the Turbo! What a show, the highlight had to be the restored cars from the OPC network, the attention to detail on these was superb.

I wanted all of them, but if I did have to limit myself it would have to be the 1973 Targa from Hatfield, closely followed by the 1988 3.2 Targa Sport! Also, the Evolution of the Turbo from the Porsche Club GB was great. The downside of seeing those immaculately turned-out cars was the realisation that mine does need some TLC. When I purchased the car back in February, I deliberately did not look for a concours winner, as I knew I was going to use the car as a commuter, and with the expectation of stone chips and car park injuries, I was not concerned with a bit of bodywork stone chip rash. But seeing those 911s at the show, I think I may need to start a TLC plan for the car! I'm now starting to think about slowly bringing the car up to a presentable standard. Meanwhile, enjoy my favourite car from the show!

**1984 3.2  
Carrera**



**Maurice van den Tillaard**  
The Netherlands

**Date acquired:**  
October 2014



Out with the old, bottom right, and in with the new, below



**E**verybody knows that saying: "sometimes a man's gotta do what a man's gotta do." Well, I had to sell my beloved 1972 hot rod.

I advertised it in August and it was sold within a week. It went to Belgium, and every now and then I still talk to the new owner.

Then came the moment to start the search for a new 911. I looked at several cars and found a few nice ones, although none really clicked. The search went on.

At some point my friend Joost Hermes phoned me up, saying that he knew of a nice 3.2 for sale, not too far away from where I live. To cut a long story short, I found a very nice 1984 911 when I arrived at the shop. The

mileage was kind of high at 147,000 miles, but a large part of the maintenance history came with the car, and it ran like a champ too. A deal was made right after the test drive.

This winter, I'm going to do a bunch of modifications to the suspension and hopefully re-create the same feeling my old car had. The interior will stay mostly original except for the wooden shift knob and momo steering wheel. I might add a Scheel seat for myself on the driver's side. The outside will stay pretty much stock. The wheels will be swapped for seven and eight-inch Fuchs, and I might add yellow headlight lenses. I'll keep you posted!





### 2003 996 Turbo

**Ray Chandler**  
Surrey, UK

**Date acquired:**  
August 2011

**E**ventually, either your Porsche's hoses will fail or the pipe itself will develop a pin hole or fracture. Probably not for a while, but they will fail and immobilise the car.

The car has now been back in to have these hoses and their clips renewed, the corrosion removed and the pipework checked. There are 28 litres of coolant in a 996 Turbo, and it isn't cheap. Luckily, it is designed to last the life of the car, and on drain-off it is harvested, filtered and put back, with the odd litre of coolant added to bring it to the correct strength.

Finally, the hoses come off, the pipework is cleaned and the corrosive growth removed and stopped with inhibitor. On go the new hoses and clips.

Now we were on the home stretch, which entailed filtering the coolant to ensure nothing untoward was going back in the systems, then getting all 28 litres mixed to the correct ratio of water-to-coolant ready for transfer back into the system. This involves a piece of kit creating a vacuum in the car's cooling system sufficient to suck every drop of moisture and air out of the system. This leaves the whole cooling system empty, ready for filling – all of it under a vacuum.

When the vacuum collapses, the process stops at the right level in the tank. The whole system is pumped up with a pressure tester to 1.1 bar, and any leaks sought. It then goes out on a road test, which includes another idling session to see if the temperature suddenly climbs. Then it goes back on the ramp for another visual.

The final bill was a discounted £274, as the car is over seven years old, which qualifies it for Porsche discounting a percentage off their labour rate and the parts by 15 per cent. Additionally, there is a no-quibble two-year parts and labour guarantee included. Here's to the next few years!

### 1975 930 3.0



**Magnus Walker**  
Los Angeles, USA

**Date acquired:**  
2008



**I**f you had said to me a year ago that I would be shipping a car halfway around the world, I would have said you were crazy. Guess what? That is just what I recently did.

My early 3.0-litre Turbo collection already had the years 1976 and 1977, but was missing the all-important 1975 model year. Porsche made 284 cars in 1975 – the first year of the production Turbo – a car that has gone on to be an automotive icon and still in production 40 years later.

My search became a worldwide one when I stumbled across a RHD model. Unfortunately, the owner was not internet- or phone-friendly, as my many attempts at contact went unanswered for some time.

After a few failed attempts, I decided to contact the nice Porsche folks at Auto Haus Hamilton in Sydney, who had made contact through Facebook a year or so earlier, to ask if they knew about the car. I told them about my interest, and asked them to attempt to track the car down on my behalf.

A few days later, the stars aligned and the seller picked up a phone call from Nathan at Autohaus Hamilton – the Porsche gods must have been smiling down on me.

The Boys from Sydney made the 300 kilometre drive, and a deal was struck to acquire the car on my behalf.

Stay tuned for an upcoming video. This Porsche thing sure is addictive...

### 1979 930 3.3



**Richard Klevenhusen**  
Rio de Janeiro, Brazil

**Date acquired:**  
May 2012



**O**n 22 November, the city of Rio de Janeiro held its second annual Porsche Exhibition, organised by Rio de Janeiro Porsche Club.

We had 35 cars on the exhibition and 1,000 visitors. From the 356 of 1957 to the latest 911 Cabriolet for 2015, all different Porsche models were present. The location selected for the exhibition was the luxurious

Mall in Rio de Janeiro, the VillageMall. All the cars were identified by year and model, and the owners were invited for lunch at the Benedictine restaurant.

This was the last event organised by Rio de Janeiro Porsche Club in 2014. For 2015, many other events are in the pipeline. 2015's annual exhibition will be on 14 November. We hope to have you all with us here in Rio soon.



## 2005 997.1 Carrera S



**Chris Wallbank**  
Leeds, UK

**Date acquired:**  
November 2012

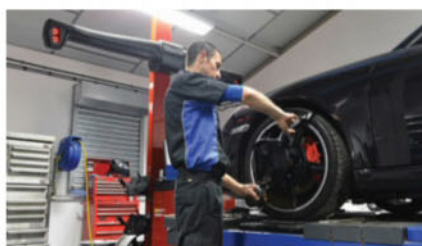
**T**his month, I finally got the chance to fit some Eibach spacers to the front and rear of the 997S.

The decision to fit spacers came about after deciding to stick with my original OEM 19-inch Carrera Classic wheels instead of switching to some wider BBS CH wheels. I like the design of my 19-inch Carrera Classic wheels; I just always felt they never filled out the arches enough from certain angles.

I turned to the forums, hoping to find some examples of 997 narrow-bodied cars with my wheels and spacers fitted. Sure enough, I found a few. It seemed that many agreed with my opinion that the OEM wheels could fill the arches that bit more to give the car a wider, more aggressive stance. Widening the 911's track also gives the car more grip, but it was more about the aesthetics for me.

The next step was to find out what spacers I should go for. Most people seemed to recommend 15mm at the back. At the front there seem to be a divide in opinion, some opting for 7mm and others 10mm. I chose 7mm, as it was the rear that I felt needed spacing out more visually.

When it came to the brand, I opted for Eibach. I've used their products on a few of



Before (left), and after (above)

my cars, and have always been happy with the German TUV-approved build quality. They were also very helpful when I contacted them for further advice.

I did consider fitting the spacers myself, but since the 997S was in need of alignment I decided to take it down to my good friends at Litchfield Imports in Gloucester while I was on a shoot down there. They had them fitted in no time, though the alignment

proved a little more troublesome, as both front and rear toes were way out of Porsche's recommended tolerances. Litchfield corrected this, and now the car feels a lot more responsive on corners.

I'm much happier with how the 997S looks and sits with spacers fitted, so many thanks to Eibach for their advice and help. Check out [www.eibach.co.uk](http://www.eibach.co.uk) and for any fitting and alignment queries visit [litchfieldmotors.com](http://litchfieldmotors.com).

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# OCD PORSCHE

Obsessive and compulsive: two words that drove Chris Douran to form UK-based tuning and servicing company OCD Porsche

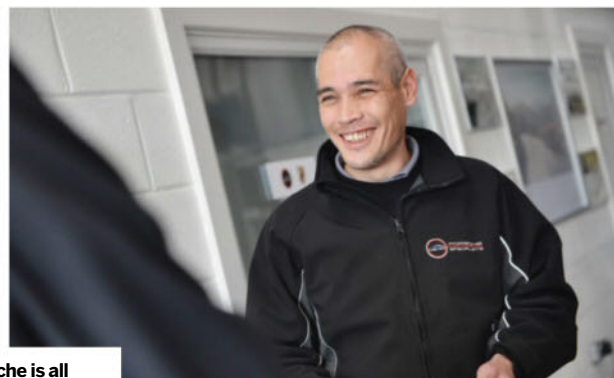
Written by Neill Watson Photography by Chris Wallbank







OCD Porsche is all about the small details and getting these little things correct – just what you want from someone looking after your pride and joy



Judging by the immaculate condition of the premises, it's fair to say that OCD Porsche lives up to its name



**Y**ou've got to trust them, haven't you? The people who service and repair your Porsche, that is. But that trust takes time to establish. As a matter of fact, most of the Porsche specialists I know have been around for decades and are household names in the online home of Porsche forums. They're well-known companies with expert technicians – buoyed by years of experience – who are on first-name terms with the owners of many Porsche 911s. With that in mind, you'd be forgiven for being dismissive of a Porsche specialist such as OCD (established just one year ago), so it's natural that we're cautious as we head along the M62 to the company's base in Liverpool to find out more.

OCD are easy to find, just a few minutes from the M53 motorway, but the premises are also easy to overshoot due to being on a busy dual carriageway. After we'd looped past the standout Gemballa signage decorating the perimeter the first time, photographer Chris and I picked our moment to lunge for the slip road on our second attempt – a little like landing on an aircraft carrier. Marketing manager Dean Currall laughs when we mention it on arrival. "I know, it's the only small drawback of our location. Everyone finds us easily enough, but then overshoots the entrance!"

Still, he's quick with the kettle, and within moments we have a strong cup of tea in hand. And it's not your average garage's chipped ratty mug, but a crisp, white china one. It's a small detail, but it's from here where the OCD element starts to become apparent. From the outside, the premises are fairly standard workshop: nice and clean, with the majestic Gemballa signage the main giveaway of the repertoire inside. Open the reception door and look beyond the very comfortable new leather sofa though, and the reception windows lead onto a spotlessly clean workshop with grey painted floors and crisp white walls. It's one of the cleanest work areas we've seen, beautifully justifying the very name of this new business.

Dean then rather aptly introduces us to the driving force behind OCD Porsche, Chris Douran. Now, it becomes apparent that this is the reason why OCD have a busy workshop for such a young business, as well as a phone that's steadily ringing.

You see, Douran is no stranger to the Porsche brand. Starting his Zuffenhausen career at Road Range, Liverpool's Porsche franchised main dealer, Chris then moved into the world of Porsche independent specialists after seven years. His first port of call was Tech 9, where he developed his skills and experience further to become one of the senior technicians at the firm.

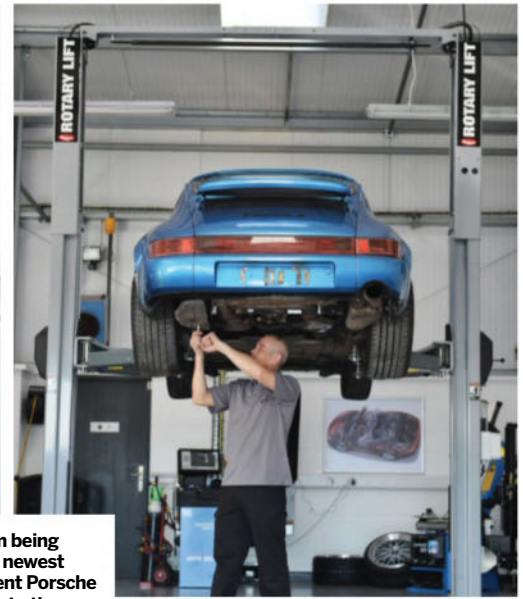
Chris stayed with Tech 9 for more than ten years before the urge to move on drove him to establish OCD Porsche. It's a trait I've observed before in talented vehicle technicians. The really good guys never stay still for long; they're never content with simple, routine servicing and repairs. They do plenty of it, of course, as it's the bread and butter of any business, but they love the challenge of a new technical issue or a customer arriving one day and saying, "I've had this idea for my Porsche, do you think we could..." This quest to constantly expand their expertise is what drives the Chris Dourans of the world forwards.

This experience and knowledge is also the trait that motivated customers to seek Chris out in his new venture. As a case in point, while we're setting up some pictures outside, a crisp, Guards red Porsche 991 Carrera S arrives. It's not here for service work; the owner was passing and simply called in for a chat with Chris and his team. The Guards red 991 is duly pressed into service for some photos, as Dean puts the kettle on and we get back to talking Porsches once more. Moments later, a pretty smart-looking 964 in Maritime blue arrives, complete with roll cage and race harnesses. We move the Gemballa-clad Porsches originally assembled for the 'hero' shot back into the workshop and make space for the 964 up front. ➡





Aside from being one of the newest independent Porsche specialists to the fold, OCD are also the exclusive, official UK partner for Gemballa



## “Customers used to send Gemballa cars to Germany. Now, most of the work can be done right here”

Chris and I chat with the owner, a local guy who has a small collection of 964s. “We didn’t build that car,” Chris points out, “he actually did a lot of the work himself, but we look after his other 964s and helped him with advice on that one.” Ten minutes later, another car draws up. This time it’s not a Porsche, but the driver owns a 997 Turbo among other 911s, and again he’s called in for a chat. It’s becoming congested, and we move the big Gemballa cars further back into the workshop. The overt Gemballa presence poses a good question that I’m dying to ask: given Chris’s customer base, how did the Gemballa connection come about?

“Gemballa have spent a lot of time over the last five years developing really high-quality carbon components,” Chris says. “I’ve seen many bodywork developments with poor shut lines, but take a look at the Gemballa demonstrators we’ve got here right now – you can see they’re first-rate.” Gemballa also liked Chris’ background and his knowledge of engine mapping and other electronic elements, so a relationship has developed, with OCD becoming the UK’s sole Gemballa dealer.

The proximity to four of the UK’s largest Premier League football clubs (with Liverpool and Everton among their number) is also useful, but as Dean points out, “We sell a complete factory Gemballa very rarely. In fact, nearly all of the Gemballa work in the UK, we now do in-house right here.” Right now, the OCD bodyshop is remote from the main workshop, but with plans to acquire the adjacent units, soon it will all be under one roof. With Chris more than capable of undertaking the mechanical and technical upgrades, they see a bright future for Gemballa in the UK. Chris gives us additional insight: “The Gemballa name used to signify outrageous £500,000 cars, but while they’re still very capable of that, more and more customers are asking us about adding individual Gemballa upgrades to their Porsches. Previously, this meant that customers had to send cars to Germany and be without them for long periods. Now though, most of the work can be done right here.”

As we chat more about OCD Porsche and the blatant Gemballa connection, it becomes fairly obvious why the two companies should forge

### Company profile

- **Owner:** Chris Douran
- **Opened:** April 2014
- **Location:** Wallasey, Merseyside, England
- **Most common 911 serviced:** 964, 996 and 997
- **Most tunable 911:** 997 Turbo
- **Interesting fact about the business:** As well as fixing, servicing and modifying Porsche, OCD also offer a wrapping service where all vehicle parts are removed so that no blade cuts are made on the car itself

### Contact

- **Website:** [www.ocdporsche.com/](http://www.ocdporsche.com/)
- **Telephone:** 0044 (0)151 6388 911

a relationship. Chris’s outright obsession with small details and getting even the minutia of tasks absolutely perfect is why he’s built his reputation with his friendly customer base – just the thing that a high-end German Porsche tuning company would rightfully be looking for.

Add in to the mix Chris’s broad spectrum of equally passionate customers, some of whom have followed him through his entire Porsche career, and you can see why the words ‘obsessive’ and ‘compulsive’ are things that mark him out. However, that’s not a disorder in our view; it’s perfectly normal behaviour. **911**



# KW competition

"The technology has convinced me."



**OLAF MANTHEY**

CEO Manthey Racing, 5-times overall winner  
24h race Nürburgring

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# Data file

## Definitive facts and figures for every 911 model from 1964 – present

911s in the data file are organised in rows according to release date, beginning with the very first model in 1964. 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. All data here has been compiled, where possible, from Porsche's own figures.

### General valuations: ▲▼

This reflects the general market trend for a model's used value compared to the previous financial quarter. The next review will be March 2015.

### Ratings: ★★★★★

Each model is rated in our half-star system according to their performance, handling, appearance and desirability.

### Sales debate: Which 911 will steal the limelight in 2015?



The Porsche 911 Carrera 2.7 RS was the car of 2013, while last year saw the Porsche 964 RS similarly shoot up in value. Total 911 asks renowned Porsche experts Mark Sumpter (Managing Director, Paragon Porsche) and Jonathan Franklin (General Manager, Hexagon Modern Classics) which 911 they think will star in 2015.

Sumpter feels the first water-cooled GT2 is well placed to rocket in value: "993 GT2s have already gone up," he begins, "so the 996 GT2 should appreciate rapidly as that's a sleeper at the moment. It's a super-rare car and they've gone from £40,000-£50,000 to £50,000-£70,000 in 2014. But even then, if an air-cooled GT2 is currently valued at £600,000, how can a 996 GT2 be only a tenth of the price?"

Hexagon's Franklin explains that the effect of the 993 GT2 is sure to be felt in the Porsche market next year, though he believes it will be another 993 that benefits. "We're seeing GT2s going north of £750,000. However, the 993 Carrera RS has got the same seam-welded chassis,

and a lot of people seem to appreciate the naturally aspirated engine more."

Therefore, Hexagon's General Manager feels the last air-cooled Rennsport is well placed to soar into the stratosphere in 2015. With the added cachet of their rarity, the 993 RS – which currently sits "somewhere between £200,000-£250,000, with Clubsports up at about £300,000" – could be touching £500,000 in the next few years, according to Franklin. "People are looking at Porsches in a big way because they can't afford a Ferrari anymore," he explains. "There's big interest in low-number cars."

So will it be air-cooled or water-cooled that thrives at the top end of the market this year? Either way, as 993 GT2 values force upward, something will be dragged along. As Sumpter remarks, "What tends to be happening is, as one 911 goes up in value it makes another next to it look cheaper." With that in mind, whichever 911 hits the headlines for its vastly-appreciating values this year, its successor in the money stakes won't be far behind.

### (O series) ▲ 911 2.0-litre 1964-67



The 911 that started it all off when the prototype appeared in 1963, this is the car that set the style for all 911s to follow. Developed to replace the 356, a four-pot 912 was also made.

**Production numbers:** 9,250  
**Issue featured:** 106  
**Engine capacity:** 1,991cc  
**Compression ratio:** 9.0:1  
**Maximum power:** 130bhp @ 6,100rpm  
**Maximum torque:** 149Nm @ 5,200rpm  
**0-62mph:** 8.3 sec

**Top speed:** 131mph  
**Brakes:** Front: 282mm discs; Rear: 285mm discs  
**Wheels & tyres:** Front: 4.5x15-inch; 165/80/R15  
Rear: 4.5x15-inch; 165/80/R15  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,075kg

★★★★★

### (O & A series) ▲ 911S 1967-68



Porsche soon started more powerful variants. The first of these was the 911S (for Super), which had a higher compression engine and twin Weber 40IDS carburettors.

**Production numbers:** 4,015  
**Issue featured:** 114  
**Engine capacity:** 1,991cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 160bhp @ 6,600rpm  
**Maximum torque:** 179Nm @ 5,200rpm  
**0-62mph:** 8.0 sec

**Top speed:** 137mph  
**Brakes:** Front: 282mm discs; Rear: 285mm discs  
**Wheels & tyres:** Front: 4.5x15-inch; 165/80/R15  
Rear: 4.5x15-inch; 165/80/R15  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,030kg

★★★★★

### (C & D series) ▲ 911E 1969-71



Engine improvements included revised cylinder heads, larger valves and stronger con rods. 1970 'D' series cars had hot-zinc coated undersides.

**Production numbers:** 4,927  
**Issue featured:** 107  
**Engine capacity:** 2,195cc  
**Compression ratio:** 9.1:1  
**Maximum power:** 155bhp @ 6,200rpm  
**Maximum torque:** 196Nm @ 4,500rpm  
**0-62mph:** 7.0 sec

**Top speed:** 137mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185HR  
Rear: 6x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,020kg

★★★★★

### (C & D series) ▲ 911S 1969-71



An upgrade in engine size gave the 911S 180bhp. Unlike the 911E, the S didn't gain improved low-down power and torque, so you had to keep the revs up for good power.

**Production numbers:** 4,691  
**Issue featured:** 112  
**Engine capacity:** 2,195cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 180bhp @ 6,500rpm  
**Maximum torque:** 199Nm @ 5,200rpm  
**0-62mph:** 6.6 sec

**Top speed:** 145mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185HR  
Rear: 6x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,020kg

★★★★★

### (F series) ▲ 911E 1973



After incidents of people filling E series 911s with petrol via the external oil-filler, the filler returned to under the engine decklid. Fitted with the front spoiler of the 911S.

**Production numbers:** 4,406 (including E series)  
**Issue featured:** 117  
**Engine capacity:** 2,341cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 165bhp @ 6,200rpm  
**Maximum torque:** 206Nm @ 4,500rpm  
**0-62mph:** 7.5 sec

**Top speed:** 137mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch ATS; 185HR  
Rear: 6x15-inch ATS; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,077kg

★★★★★

### (F series) ▲ 911S 1973



The 911S had same upgrades as the 911E, including deletion of the external oil-filler. Also adopted black trim around the front and rear lights and black front quarter grilles.

**Production numbers:** 5,054  
**Issue featured:** 56  
**Engine capacity:** 2,341cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 190bhp @ 6,500rpm  
**Maximum torque:** 211Nm @ 5,200rpm  
**0-62mph:** 6.6 sec

**Top speed:** 140mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185/70/R15  
Rear: 6x15-inch; 185/70/R15  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,075kg

★★★★★

### (G & H series) ▲ 911 Carrera 2.7 1974-76



From 1974, Carrera name was given to range-topping 911. Essentially the same engine as previous year's RS for all markets except USA. Whaletail available from '75.

**Production numbers:** 1,667  
**Issue featured:** 104  
**Engine capacity:** 2,687cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 210bhp @ 6,300rpm  
**Maximum torque:** 255Nm @ 5,100rpm  
**0-62mph:** 6.3 sec

**Top speed:** 148mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185VR  
Rear: 7x15-inch; 205VR  
**Length:** 4.291mm  
**Width:** 1.610mm  
**Weight:** 1,075kg

★★★★★

### (I & J series) ▲ 911 Carrera 3.0 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, essentially from the 911 Turbo.

**Production numbers:** 3,687  
**Issue featured:** 3  
**Engine capacity:** 2,994cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 197bhp @ 6,000rpm  
**Maximum torque:** 255Nm @ 4,200rpm  
**0-62mph:** 6.3 sec

**Top speed:** 145mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185/70/VR15  
Rear: 7x15-inch; 215/60/VR15  
**Length:** 4.291mm  
**Width:** 1.610mm  
**Weight:** 1,093kg

★★★★★



## (A series) ▲

**911L 1967-68**

In 1967, the 911 was updated and the range expanded: the 911L (Lux) was standard and sat alongside the high-performance 911S and entry-level 911T.

**Production numbers:** 1,603  
**Issue featured:** n/a  
**Engine capacity:** 1,991cc  
**Compression ratio:** 9.0:1  
**Maximum power:** 130bhp @ 6,100rpm  
**Maximum torque:** 173Nm @ 4,600rpm  
 0-62mph: 8.4 sec

**Top speed:** 132mph  
**Brakes:** Front: 282mm discs; Rear: 285mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 185HR  
 Rear: 5.5x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,080kg



## (A &amp; B series) ▲

**911T 1967-69**

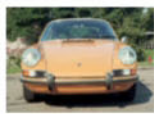
To save money, the 911T's engine used cast-iron cylinder heads (as opposed to the Biral aluminium/iron items, which gave more efficient cooling) and carbs instead of fuel injection.

**Production numbers:** 6,318  
**Issue featured:** 39  
**Engine capacity:** 1,991cc  
**Compression ratio:** 8.6:1  
**Maximum power:** 110bhp @ 5,800rpm  
**Maximum torque:** 156Nm @ 4,200rpm  
 0-62mph: 8.8 sec (est)

**Top speed:** 124mph  
**Brakes:** Front: 282mm discs; Rear: 285mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 185HR  
 Rear: 5.5x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,020kg



## (B series) ▲

**911E 1968-69**

The 911 received its first major update, evolving into what is known as the B series. The 911E replaced the 911L as the 'standard' car. The 'E' stood for 'Einspritz' (injection).

**Production numbers:** 2,826  
**Issue featured:** n/a  
**Engine capacity:** 1,991cc  
**Compression ratio:** 9.1:1  
**Maximum power:** 140bhp @ 6,500rpm  
**Maximum torque:** 175Nm @ 4,500rpm  
 0-62mph: 7.6 sec

**Top speed:** 130mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 185HR  
 Rear: 5.5x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,020kg



## (B series) ▲

**911S 1968-69**

Like the E, the S gained a fuel injection, boosting power to 170bhp. To help cope with the extra demands on the engine, an additional oil cooler was fitted in the front right wing.

**Production numbers:** 2,106  
**Issue featured:** n/a  
**Engine capacity:** 1,991cc  
**Compression ratio:** 9.9:1  
**Maximum power:** 170bhp @ 6,800rpm  
**Maximum torque:** 183Nm @ 5,500rpm  
 0-62mph: 7.0 sec (est)

**Top speed:** 140mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185/70/R15  
 Rear: 6x15-inch; 185/70/R15  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 995kg



## (C &amp; D series) —

**911T 1969-71**

Like the E, the 911T's torque curve was now flatter, making the car more driveable. Ventilated discs from the S were fitted and a five-speed gearbox became standard.

**Production numbers:** 15,082  
**Issue featured:** 107  
**Engine capacity:** 2,195cc  
**Compression ratio:** 8.6:1  
**Maximum power:** 125bhp @ 5,800rpm  
**Maximum torque:** 169Nm @ 4,200rpm  
 0-62mph: 7.0 sec (est)

**Top speed:** 127mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 165HR  
 Rear: Front: 5.5x15-inch; 165HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,020kg



## (E series) ▲

**911E 1972**

2,341cc was achieved by increasing the stroke from 66mm to 70.4mm while at the same time leaving the bore unchanged. New 915 transmission was stronger.

**Production numbers:** 4,406 (including F series)  
**Issue featured:** 117  
**Engine capacity:** 2,341cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 165bhp @ 6,200rpm  
**Maximum torque:** 206Nm @ 4,500rpm  
 0-62mph: 7.5 sec

**Top speed:** 137mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185HR  
 Rear: 6x15-inch; 185HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,077kg



## (E series) —

**911T 1972**

A lower compression ratio and the inclusion of Zenith 40 TIN triple-choke carburettors led to the relatively lower power output of 130bhp despite the new 2,341cc engine size.

**Production numbers:** 16,933 (including F series)  
**Issue featured:** n/a  
**Engine capacity:** 2,341cc  
**Compression ratio:** 7.5:1  
**Maximum power:** 130bhp @ 5,600rpm  
**Maximum torque:** 197Nm @ 4,000rpm  
 0-62mph: 7.6 sec

**Top speed:** 128mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 165HR  
 Rear: 5.5x15-inch; 165HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,077kg



## (F series) ▲

**Carrera 2.7 RS 1973**

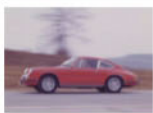
The RS had a 2,687cc engine that developed 210bhp. The body was lightened and fitted with flared rear arches and an optional ducktail spoiler. Sport and Touring versions available.

**Production numbers:** 1,590  
**Issue featured:** 106  
**Engine capacity:** 2,687cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 210bhp @ 6,300rpm  
**Maximum torque:** 255Nm @ 5,100rpm  
 0-62mph: 5.6 sec

**Top speed:** 152mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185/70/R15  
 Rear: 7x15-inch; 215/60/R15  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 975kg (Sport)



## (F series) —

**911T 1973**

US-bound F series 911Ts were the first 911s to have Bosch K-Jetronic fuel injection, improving emissions. This was mainly mechanical, with some electronic sensors.

**Production numbers:** 16,933 (including E series)  
**Issue featured:** n/a  
**Engine capacity:** 2,341cc  
**Compression ratio:** 7.5:1  
**Maximum power:** 130bhp @ 5,600rpm  
**Maximum torque:** 197Nm @ 4,000rpm  
 0-62mph: 7.6 sec

**Top speed:** 128mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 5.5x15-inch; 165HR  
 Rear: 5.5x15-inch; 165HR  
**Length:** 4.163mm  
**Width:** 1.610mm  
**Weight:** 1,077kg



## (G, H, I, J series) ▲

**Carrera 3.0 RS 1974**

Updated version of the 1973 2.7 RS, complete with impact bumpers and Turbo-spec whale tail rear spoiler. Steel arches added by hand at the factory, with 917 brakes.

**Production numbers:** 109  
**Issue featured:** 102  
**Engine capacity:** 2,994cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 230bhp @ 6,200rpm  
**Maximum torque:** 275Nm @ 5,000rpm  
 0-62mph: 5.3 sec

**Top speed:** 152mph  
**Brakes:** Front: 300mm discs; Rear: 300mm discs  
**Wheels & tyres:** Front: 9x15-inch; 215/60/VR15  
 Rear: 11x15-inch; 235/60/VR15  
**Length:** 4.135mm  
**Width:** 1.680mm  
**Weight:** 900kg



## (G, H, I, J series) —

**911 1974-77**

'911' was now the entry level. Bumpers were added to conform to US regs. From 1976, all 911s were hot-dip coated and fitted with 'elephant ear' mirrors.

**Production numbers:** 9,320  
**Issue featured:** n/a  
**Engine capacity:** 2,687cc  
**Compression ratio:** 8.0:1  
**Max power:** 148bhp @ 5,700rpm (165bhp from '76)  
 0-62mph: 8.5 sec  
 Top speed: 130mph

**Max torque:** 235Nm @ 3,800rpm (4,000 from '76)  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185VR  
 Rear: 6x15-inch; 185VR  
**Length:** 4.291mm  
**Width:** 1.610mm  
**Weight:** 1,075kg



## (G, H, I, J series) —

**911S 1974-77**

911S was now a mid-range model comparable to the previous 911E. It had the same body changes as the base model, and came as standard with 'Cookie Cutter' rims.

**Production numbers:** 17,124  
**Issue featured:** n/a  
**Engine capacity:** 2,687cc  
**Compression ratio:** 8.5:1  
**Maximum power:** 173bhp @ 5,800rpm  
**Maximum torque:** 235Nm @ 4,000rpm  
 0-60mph: 7.0 sec

**Top speed:** 142mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185VR  
 Rear: 6x15-inch; 185VR  
**Length:** 4.291mm  
**Width:** 1.610mm  
**Weight:** 1,080kg

▲ **930 3.0 1975-77**

Fitted with a KKK turbo, this was the world's first production Porsche to be turbocharged. Flared arches, whale tail spoiler and four-speed gearbox were standard.

**Production numbers:** 2,850  
**Issue featured:** 116  
**Engine capacity:** 2,994cc  
**Compression ratio:** 6.5:1  
**Maximum power:** 260bhp @ 5,500rpm  
**Maximum torque:** 343Nm @ 4,000rpm  
 0-62mph: 5.5 sec

**Top speed:** 155mph  
**Brakes:** Front: 282mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 7x15-inch; 185/70/VR15  
 Rear: 8x15-inch; 215/60/VR15  
**Length:** 4.291mm  
**Width:** 1.775mm  
**Weight:** 1,140kg (1,195kg from '76)

▲ **930 3.3 1978-83**

Larger engine resulted in an extra 40bhp, and an intercooler on top of the engine led to the adoption of a new 'tea tray' spoiler. Brakes were upgraded from 917 racer.

**Production numbers:** 5,807 (plus '78-'79 Cali cars)  
**Issue featured:** 104  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 300bhp @ 5,500rpm  
**Maximum torque:** 412Nm @ 4,000rpm

**0-62mph:** 5.4 sec  
**Top speed:** 160mph  
**Brakes:** Front: 304mm discs; Rear: 309mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
 Rear: 8x16-inch; 225/50/VR16  
**Length:** 4.491mm  
**Width:** 1.775mm  
**Weight:** 1,300kg

▲ **911 SC 1978-83**

From 1978, the SC was the only normally aspirated 911. Developed from the Carrera 3.0, but produced less power to suit all markets. Upgraded Sport options were available.

**Production numbers:** 60,740  
**Issue featured:** 110  
**Engine capacity:** 2,994cc  
**Compression ratio:** 8.5:1/8.6:1/9.8:1  
**Maximum power:** 180/188/204bhp @ 5,500rpm  
**Maximum torque:** 265/265/267Nm

**0-62mph:** 6.5 sec  
**Top speed:** 141/146mph  
**Brakes:** Front: 287mm discs; Rear: 295mm discs  
**Wheels & tyres:** Front: 6x15-inch; 185/70/VR15  
 Rear: 7x15-inch; 215/60  
**Length:** 4.291mm  
**Width:** 1.626mm  
**Weight:** 1,160kg (1978)

▲ **930 3.3 1984-89**

Revised engine added more power and torque in 1984, while in 1987 Motronic engine management improved efficiency and emissions upon its return to the US market.

**Production numbers:** 11,135  
**Issue featured:** n/a  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 300bhp @ 5,500rpm  
**Maximum torque:** 432Nm @ 4,000rpm  
 0-62mph: 5.4 sec  
 Top speed: 161mph

**Brakes:** Front: 304mm discs; Rear: 309mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
 Rear: 8x16-inch; 225/50/VR16  
**Length:** 4.491mm  
**Width:** 1.775mm  
**Weight:** 1,300kg (1,335kg from '86)





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## Carrera 3.2 1984-89



Almost the same galvanised body as the SC. Engine was claimed to be 80 per cent new, and the first production 911 to feature an ECU to control ignition and fuel systems.

**Production numbers:** 70,044  
**Issue featured:** 114  
**Engine capacity:** 3,164cc  
**Compression ratio:** 10.3:1  
**Maximum power:** 231bhp @ 5,900rpm  
**Maximum torque:** 284Nm @ 4,800rpm  
**0-62mph:** 5.6 sec

**Top speed:** 152mph  
**Brakes:** Front: 286mm discs; Rear: 294mm discs  
**Wheels & tyres:** Front: 7x15-inch; 195/65/VR15; Rear: 8x15-inch, 215/60/VR15 (16 inches for '89)  
**Length:** 4,291mm  
**Width:** 1,652mm  
**Weight:** 1,210kg



## Speedster 1989



Carrera 3.2 with a chopped, steeply raked windscreen and hood and stripped-out interior. Porsche insisted the simple hood was not designed to be 100 per cent water tight.

**Production numbers:** 2,274 (for both wide and narrow-bodied)  
**Issue featured:** 114  
**Engine capacity:** 3,164cc  
**Compression ratio:** 10.3:1  
**Maximum power:** 231bhp @ 5,900rpm  
**Maximum torque:** 284Nm @ 4,800rpm  
**0-60mph:** 6.0 sec

**Top speed:** 148mph  
**Brakes:** Front: 286mm discs; Rear: 294mm discs  
**Wheels & tyres:** Front: 6x16-inch; 205/45/VR16  
**Rear:** 8x16-inch; 245/60/VR16  
**Length:** 4,291mm  
**Width:** 1,775mm  
**Weight:** 1,220kg



## 964 Carrera 2 1990-93



Rear-drive Carrera 2 offered an emphatically more traditional 911 experience, and was 100kg lighter, but looked identical to the Carrera 4. Tiptronic was a new option.

**Production numbers:** 19,484  
**Issue featured:** 55  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 250bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
**0-62mph:** 5.6 sec

**Top speed:** 164mph  
**Brakes:** Front: 298mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 6x16-inch; 205/55/ZR16; Rear: 8x16-inch; 225/50/ZR16  
**Length:** 4,250mm  
**Width:** 1,652mm  
**Weight:** 1,350kg



## 964 Turbo 1991-92



This used the revised 964 body shell, extended arches and 'tea tray' spoiler. The engine was essentially the 3.3-litre unit from the previous model, but updated.

**Production numbers:** 3,660  
**Issue featured:** 97  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 320bhp @ 5,750rpm  
**Maximum torque:** 450Nm @ 4,500rpm  
**0-62mph:** 5.4 sec

**Top speed:** 168mph  
**Brakes:** Front: 320mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x17-inch; 205/50/ZR17  
**Rear:** 8x17-inch; 255/40/ZR17  
**Length:** 4,250mm  
**Width:** 1,775mm  
**Weight:** 1,470kg



## 964 C2 Speedster 1993-94



Combined the 964 bodyshell with the hood and windscreen of the Carrera 3.2 Speedster, plus RS interior. It is thought that Porsche planned to build 3,000, but demand fell.

**Production numbers:** 936  
**Issue featured:** 46  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 250bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
**0-62mph:** 5.5 sec

**Top speed:** 161mph  
**Brakes:** Front: 320mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x17-inch; 205/50/ZR17  
**Rear:** 9x17-inch; 255/40/ZR17  
**Length:** 4,250mm  
**Width:** 1,652mm  
**Weight:** 1,340kg



## 964 Turbo 3.6 1993-94



Engine based on modified 3.6-litre 964 unit. Distinctive 18-inch split-rim Speedline wheels covered the big-red brake calipers. Suspension lowered by 20mm.

**Production numbers:** 1,437  
**Issue featured:** 17  
**Engine capacity:** 3,600cc  
**Compression ratio:** 7.5:1  
**Maximum power:** 360bhp @ 5,500rpm  
**Maximum torque:** 520Nm @ 4,200rpm  
**0-62mph:** 4.8 sec

**Top speed:** 174mph  
**Brakes:** Front: 320mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/ZR18  
**Rear:** 10x18-inch; 265/35/ZR18  
**Length:** 4,250mm  
**Width:** 1,775mm  
**Weight:** 1,470kg



## 993 Carrera 4S 1995-96



The 4S was effectively a C4 with a Turbo wide bodyshell (albeit lacking a fixed rear spoiler). Also boasted Turbo suspension, brakes and Turbo look wheels.

**Production numbers:** 6,948  
**Issue featured:** 109  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 285bhp @ 6,100rpm  
**Maximum torque:** 340Nm @ 5,250rpm  
**0-62mph:** 5.3 sec

**Top speed:** 168mph  
**Brakes:** Front: 322mm discs; Rear: 322mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/ZR18  
**Rear:** 10x18-inch; 285/30/ZR18  
**Length:** 4,245mm  
**Width:** 1,795mm  
**Weight:** 1,520kg



## 993 Carrera RS 1995-96



Lightweight body as per RS tradition, teamed with a 3.8 litre engine, VarioRam intake system and remapped ECU to create 200bhp, fed to the rear wheels only.

**Production numbers:** 1,104  
**Issue featured:** 106  
**Engine capacity:** 3,746cc  
**Compression ratio:** 11.5:1  
**Maximum power:** 300bhp @ 6,000rpm  
**Maximum torque:** 355Nm @ 5,400rpm  
**0-62mph:** 5.0 sec

**Top speed:** 172mph  
**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





## 930 LE 1989



Essentially an SE without a slantnose front, the LE had the same engine, front spoiler, sill extensions and rear air intakes. One made for every OPC of the time.

**Production numbers:** 50  
**Issue featured:** 110  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 330bhp @ 5,500rpm  
**Maximum torque:** 432Nm @ 4,000rpm  
0-62mph: 4.6 sec

**Top speed:** 173mph  
**Brakes:** Front: 304mm discs; Rear: 309mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
Rear: 9x16-inch; 245/45/VR16  
**Length:** 4.491mm  
**Width:** 1.775mm  
**Weight:** 1,335kg

★★★★★

## 930 SE 1986-89



Slantnosed and based on 935 race cars, with pop-up headlamps. Front spoiler made deeper to accommodate extra oil cooler, rear intakes fed air to brakes.

**Production numbers:** 50 (UK only)  
**Issue featured:** 99  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 330bhp @ 5,500rpm  
**Maximum torque:** 432Nm @ 4,000rpm  
0-62mph: 4.6 sec

**Top speed:** 173mph  
**Brakes:** Front: 304mm discs; Rear: 309mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
Rear: 9x16-inch; 245/45/VR16  
**Length:** 4.491mm  
**Width:** 1.775mm  
**Weight:** 1,335kg

★★★★★

## 3.2 Clubsport 1987-89



Removing 'luxuries' sliced off around 40kg of weight. Revised engine management gave a higher rev limit of 6,840rpm. Suspension uprated and LSD standard.

**Production numbers:** 340  
**Issue featured:** 118  
**Engine capacity:** 3,164cc  
**Compression ratio:** 10.3:1  
**Maximum power:** 231bhp @ 5,900rpm  
**Maximum torque:** 284Nm @ 4,800rpm  
0-60mph: 5.1 sec

**Top speed:** 152mph  
**Brakes:** Front: 286mm discs; Rear: 294mm discs  
**Wheels & tyres:** Front: 6x16-inch; 205/55/VR16  
Rear: 7x16-inch; 225/55/VR16  
**Length:** 4.291mm  
**Width:** 1.650mm  
**Weight:** 1,160kg

★★★★★

## 964 Carrera 4 1989-93



Heavily revised bodywork, deformable bumpers over coil-spring suspension and four-wheel-drive marked this radical overhaul of the '87 per cent new' 911.

**Production numbers:** 13,353 (Coupe)  
**Issue featured:** 111  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 250bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
0-62mph: 5.7 sec

**Top speed:** 162mph  
**Brakes:** Front: 298mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 6x16-inch; 205/55/VR16  
Rear: 8x16-inch; 225/50/VR16  
**Length:** 4.250mm  
**Width:** 1.652mm  
**Weight:** 1,450kg

★★★★★

## 964 C4 Lightweight 1991



964 Leichtbau made use of surplus parts from 953 Paris-Dakar project. Highlights include four-way adjustable differential, short-ratio gearbox and stripped interior.

**Production numbers:** 22  
**Issue featured:** 54  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.4:1  
**Maximum power:** 265bhp @ 6,100rpm  
**Maximum torque:** 332Nm @ 4,800rpm  
0-62mph: unknown

**Top speed:** unknown  
**Brakes:** Front: 322mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
Rear: 9x16-inch; 245/55/VR16  
**Length:** 4.275mm  
**Width:** 1.652mm  
**Weight:** 1,050kg

★★★★★

## 964 RS 1991-92



Around 120kg saved by deleting 'luxuries' and fitting magnesium Cup wheels. Power was boosted by 10bhp, suspension lowered by 40mm and uprated, as were brakes.

**Production numbers:** 2,405  
**Issue featured:** 116  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 260bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
0-62mph: 5.2 sec

**Top speed:** 168mph  
**Brakes:** Front: 320mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7.5x17-inch; 205/50/VR17  
Rear: 9x17-inch; 255/40/VR17  
**Length:** 4.250mm  
**Width:** 1.650mm  
**Weight:** 1,230kg (Sport)

★★★★★

## 964 Turbo S 1992-93



180kg lighter than Turbo. Intakes in the rear arches funnelled air to the brakes, while the engine power was boosted by 61bhp. RS-spec uprated suspension.

**Production numbers:** 81  
**Issue featured:** 108  
**Engine capacity:** 3,299cc  
**Compression ratio:** 7.0:1  
**Maximum power:** 381bhp @ 6,000rpm  
**Maximum torque:** 490Nm @ 4,800rpm  
0-62mph: 4.6 sec

**Top speed:** 180mph  
**Brakes:** Front: 320mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/VR18  
Rear: 10x18-inch; 265/35/VR18  
**Length:** 4.250mm  
**Width:** 1.775mm  
**Weight:** 1,290kg

★★★★★

## 964 3.8 RS 1993



Identifiable by a lightweight Turbo bodyside, 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.

**Production numbers:** 55  
**Issue featured:** n/a  
**Engine capacity:** 3,746cc  
**Compression ratio:** 11.6:1  
**Maximum power:** 300bhp @ 6,500rpm  
**Maximum torque:** 359Nm @ 5,250rpm  
0-62mph: 4.9 sec

**Top speed:** 169mph  
**Brakes:** Front: 322mm discs; Rear: 290mm discs  
**Wheels & tyres:** Front: 9x18-inch; 235/40/VR18  
Rear: 11x18-inch; 285/35/VR18  
**Length:** 4.250mm  
**Width:** 1.775mm  
**Weight:** 1,210kg

★★★★★

## 964 Anniversary 1993-94



'30 Jahre' anniversary 964 utilised a 'Turbo' wide body melded to the four-wheel-drive Carrera running gear. Available in Viola metallic, Polar silver or Amethyst.

**Production numbers:** 911  
**Issue featured:** 112  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 250bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
0-62mph: 5.7 sec

**Top speed:** 162mph  
**Brakes:** Front: 298mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x17-inch; 205/50/VR17  
Rear: 9x17-inch; 255/40/VR17  
**Length:** 4.250mm  
**Width:** 1.775mm  
**Weight:** 1,470kg

★★★★★

## 964 RS America 1993-94



Offered in five colours, fixed whaletail spoiler and two cloth sports seats, with just four options: air-con, sunroof, 90 per cent locking rear differential and stereo.

**Production numbers:** 701  
**Issue featured:** 102  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 250bhp @ 6,100rpm  
**Maximum torque:** 310Nm @ 4,800rpm  
0-62mph: 5.5 sec

**Top speed:** 164mph  
**Brakes:** Front: 298mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x17-inch; 205/50/VR17  
Rear: 8x17-inch; 255/40/VR17  
**Length:** 4.250mm  
**Width:** 1.650mm  
**Weight:** 1,340kg

★★★★★

## 993 Carrera 1993-97



Restyled bodywork had swept-back headlamps, curvaceous wings and blended-in bumpers. Engine revised, with VarioRam available from 1996.

**Production numbers:** 38,626  
**Issue featured:** 110  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 272bhp @ 6,000rpm  
**Maximum torque:** 330Nm @ 5,000rpm  
0-62mph: 5.6 sec

**Top speed:** 168mph  
**Brakes:** Front: 304mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
Rear: 9x17-inch; 245/45/VR16  
**Length:** 4.245mm  
**Width:** 1.735mm  
**Weight:** 1,370kg

★★★★★

## 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 a more rear-drive feel.

**Production numbers:** 2,884 (Coupe)  
**Issue featured:** 111  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 272bhp @ 6,000rpm  
**Maximum torque:** 330Nm @ 5,000rpm  
0-62mph: 5.8 sec

**Top speed:** 166mph  
**Brakes:** Front: 304mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 7x16-inch; 205/55/VR16  
Rear: 9x16-inch; 245/45/VR16  
**Length:** 4.245mm  
**Width:** 1.735mm  
**Weight:** 1,420kg

★★★★★

## 993 GT2 1995-96



911 Turbo, but with reduced equipment. Also included rear wheel-drive, making it a better track car. Fitted with huge front and rear spoilers and bolt-on arch extensions.

**Production numbers:** 173  
**Issue featured:** 113  
**Engine capacity:** 3,600cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 430bhp @ 5,750rpm  
**Maximum torque:** 540Nm @ 4,500rpm  
0-62mph: 3.9 sec

**Top speed:** 189mph  
**Brakes:** Front: 322mm discs; Rear: 322mm discs  
**Wheels & tyres:** Front: 9x18-inch; 235/40/VR18  
Rear: 11x18-inch; 285/35/VR18  
**Length:** 4.245mm  
**Width:** 1.855mm  
**Weight:** 1,290kg

★★★★★

## 993 Turbo 1996-98



Fitted with two KKK turbochargers in order to reduce lag. Power went to all four wheels using the Carrera 4's transmission system. Brakes were 'Big Reds'.

**Production numbers:** 5,937  
**Issue featured:** 116  
**Engine capacity:** 3,600cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 408bhp @ 5,750rpm  
**Maximum torque:** 540Nm @ 4,500rpm  
0-62mph: 4.3 sec

**Top speed:** 180mph  
**Brakes:** Front: 322mm discs; Rear: 322mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/VR18  
Rear: 10x18-inch; 285/30/VR18  
**Length:** 4.245mm  
**Width:** 1.795mm  
**Weight:** 1,500kg

★★★★★

## 993 Carrera S 1997-98



The features that come with the Carrera S are similar to the Carrera 4S's, only this time in rear-wheel drive. Sought after for its superb handling and wide-body looks.

**Production numbers:** 3,714  
**Issue featured:** 118  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 285bhp @ 6,100rpm  
**Maximum torque:** 340Nm @ 5,250rpm  
0-62mph: 5.4 sec

**Top speed:** 168mph  
**Brakes:** Front: 322mm discs; Rear: 322mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/VR18  
Rear: 10x18-inch; 285/30/VR18  
**Length:** 4.245mm  
**Width:** 1.795mm  
**Weight:** 1,450kg

★★★★★

## 993 Turbo S 1998



The final hurrah for 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.

**Production numbers:** 345  
**Issue featured:** 115  
**Engine capacity:** 3,600cc  
**Compression ratio:** 8.0:1  
**Maximum power:** 450bhp @ 5,750rpm  
**Maximum torque:** 585Nm @ 4,500rpm  
0-62mph: 4.1 sec

**Top speed:** 186mph  
**Brakes:** Front: 320mm discs; Rear: 322mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/VR18  
Rear: 10x18-inch; 285/30/VR18  
**Length:** 4.245mm  
**Width:** 1.795mm  
**Weight:** 1,583kg

★★★★★



## 911 technology explained



## Carburettor

Before the dawn of fuel injection, early Porsche 911s featured carburettors to feed fuel to the flat six

From the Solex of pre-1967 cars to the Webbers of early 911Ss and Zeniths of later 911Ts, the air/fuel mixture in Porsche's early flat six engines was fed into each cylinder by a pair of three-choke carburettors.

A carburettor's job is to mix together air and fuel before it is pulled into the cylinder during the intake phase of the internal combustion cycle. Making use of the Bernoulli principle (the same scientific tenet that explains how an aerofoil creates lift/downforce), the inside of a carburettor is shaped like an hourglass, with a narrow section at its centre creating a venturi.

At this narrowing, the air travelling through the carburettor is forced to speed up. When this happens, the higher-velocity air creates a low-pressure zone, forcing a vacuum effect that draws petrol out of the float chamber, through a jet and into the intake tract of the carburettor.

Airflow through a carburettor is controlled by two butterfly valves. On a downdraft unit, where air flows in from the top-mounted velocity stacks as per a Porsche 911, the uppermost butterfly valve – mounted about the venturi – is the choke. This is used to prevent airflow during cold starts when engines need a rich mixture (more fuel per unit of air) in order to start. However, in all carburetted 911s, the choke is removed, leaving the throttle butterfly valve mounted below the venturi and main intake jet.

Whenever the intake valves in the cylinder head opens, the suction created by the downward movement of the piston sucks air into the top of the carburettor. As the throttle pedal is pressed, the valve in the carburettor rotates, allowing more air to flow through the venturi and sucking more fuel from the float chamber.

Mounted to the side of the carburettor's body, the float chamber is a reservoir filled with fuel, from which the petrol is sucked into the venturi. The chamber's name comes from the float that is used to control the level of fuel inside the reservoir. As the float drops, it pulls down on the float arm, opening a float valve. Fuel can then be fed into the float chamber via the pressurised fuel line.

### 996 Carrera 1998-2001



An all-new 911 with larger, restyled bodywork and a water-cooled engine. Interior was redesigned in order to enable better ergonomic efficiency and more room.

<b>Production numbers:</b> 56,733	<b>Top speed:</b> 174mph
<b>Issue featured:</b> 117	<b>Brakes:</b>
<b>Engine capacity:</b> 3,387cc	Front: 318mm discs;
<b>Compression ratio:</b> 11.3:1	Rear: 299mm discs
<b>Maximum power:</b> 300bhp @ 6,800rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 350Nm @ 4,600rpm	Front: 7x17-inch;
<b>0-62mph:</b> 5.2 sec	205/50/R17
	Rear: 9x17-inch;
	255/40/R17
	<b>Length:</b> 4,430mm
	<b>Width:</b> 1,765mm
	<b>Weight:</b> 1,320kg

★★★★★

### 996 GT2 2001-03



A lightweight, Turbo-bodied 996 with uprated turbocharged engine and suspension. PCCB was standard. Revised ECU later gave an extra 21bhp.

<b>Production numbers:</b> 1,287	<b>Top speed:</b> 196mph
<b>Issue featured:</b> 108	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 350mm discs;
<b>Compression ratio:</b> 9.4:1	Rear: 350mm discs
<b>Maximum power:</b> 462bhp @ 5,700rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 620Nm @ 3,500-4,500rpm	Front: 8x18-inch;
<b>0-62mph:</b> 4.1 sec	235/40/R18
	Rear: 12x18-inch;
	315/30/R18
	<b>Length:</b> 4,450mm
	<b>Width:</b> 1,830mm
	<b>Weight:</b> 1,440kg

★★★★★

### 996 GT3 RS 2004-05



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

<b>Production numbers:</b> 682	<b>Top speed:</b> 190mph
<b>Issue featured:</b> 118	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 350mm discs;
<b>Compression ratio:</b> 11.7:1	Rear: 330mm discs
<b>Maximum power:</b> 381bhp @ 7,400rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 385Nm @ 5,000rpm	Front: 8.5x18-inch;
<b>0-62mph:</b> 4.4 sec	235/40/R18
	Rear: 11x18-inch;
	295/30/R18
	<b>Length:</b> 4,435mm
	<b>Width:</b> 1,770mm
	<b>Weight:</b> 1,360kg

★★★★★

### 997 Carrera 4S 2005-08



The same 3.8-litre, 355bhp engine as the Carrera S, with four-wheel-drive system on C4. 44mm wider than Carrera S to accommodate for wider rear wheels and tyres.

<b>Production numbers:</b> 30,973	<b>Top speed:</b> 179mph
<b>Issue featured:</b> 14	<b>Brakes:</b>
<b>Engine capacity:</b> 3,824cc	Front: 330mm discs;
<b>Compression ratio:</b> 11.8:1	Rear: 330mm discs
<b>Maximum power:</b> 355bhp @ 6,600rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 400Nm @ 4,600rpm	Front: 8x19-inch;
<b>0-62mph:</b> 4.8 sec	235/35/R19
	Rear: 11x19-inch;
	295/30/R19
	<b>Length:</b> 4,427mm
	<b>Width:</b> 1,808mm
	<b>Weight:</b> 1,475kg

★★★★★

### 996 Carrera 4 1998-2001



Four-wheel drive transmission fed five per cent of power in normal driving, increasing to 40 per cent when required. PSM used for first time, rolled out across the range in 2001.

<b>Production numbers:</b> 22,054	<b>Top speed:</b> 174mph
<b>Issue featured:</b> 111	<b>Brakes:</b>
<b>Engine capacity:</b> 3,387cc	Front: 318mm discs;
<b>Compression ratio:</b> 11.3:1	Rear: 299mm discs
<b>Maximum power:</b> 300bhp @ 6,800rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 350Nm @ 4,600rpm	Front: 7x17-inch;
<b>0-62mph:</b> 5.2 sec	205/50/R17
	Rear: 9x17-inch;
	255/40/R17
	<b>Length:</b> 4,430mm
	<b>Width:</b> 1,765mm
	<b>Weight:</b> 1,375kg

★★★★★

### Gen2 996 C2 2002-04



Facelifted with Turbo-style headlamps and revised front and rear bumpers, fitted with more powerful 3.6-litre engine and VarioCam Plus. Manual and Tiptronic 'boxes updated.

<b>Production numbers:</b> 29,389	<b>Top speed:</b> 177mph
<b>Issue featured:</b> n/a	<b>Brakes:</b>
<b>Engine capacity:</b> 3,596cc	Front: 318mm discs;
<b>Compression ratio:</b> 11.3:1	Rear: 299mm discs
<b>Maximum power:</b> 320bhp @ 6,800rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 370Nm @ 4,250rpm	Front: 7x17-inch;
<b>0-62mph:</b> 5.0 sec	205/50/R17
	Rear: 9x17-inch;
	255/40/R17
	<b>Length:</b> 4,430mm
	<b>Width:</b> 1,770mm
	<b>Weight:</b> 1,370kg

★★★★★

### 996 Turbo S 2004-05



A 911 Turbo with the previously optional 30bhp power upgrade, with larger turbochargers, uprated intercoolers and a revised ECU. PCCB standard.

<b>Production numbers:</b> 1,563	<b>Top speed:</b> 191mph
<b>Issue featured:</b> 62	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 350mm discs;
<b>Compression ratio:</b> 9.4:1	Rear: 350mm discs
<b>Maximum power:</b> 450bhp @ 5,700rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 620Nm @ 3,500-4,500rpm	Front: 8x18-inch;
<b>0-62mph:</b> 4.2 sec	225/40/R18
	Rear: 11x18-inch;
	295/30/R18
	<b>Length:</b> 4,435mm
	<b>Width:</b> 1,830mm
	<b>Weight:</b> 1,590kg

★★★★★

### 997 Turbo 2005-10



Similar to the 997 C4S body, but with extra intakes at the front and sides. Essentially the 996 Turbo engine, but with all-new twin turbos. VTG gave the best of small and large turbos.

<b>Production numbers:</b> 19,201 (up to 2008)	<b>Top speed:</b> 193mph
<b>Issue featured:</b> 107	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 350mm discs;
<b>Compression ratio:</b> 9.8:1	Rear: 350mm discs
<b>Maximum power:</b> 480bhp @ 6,000rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 620Nm @ 1,950-5,000rpm	Front: 8.5x19-inch;
<b>0-62mph:</b> 3.9 sec	235/35/R19
	Rear: 11x19-inch;
	305/30/R19
	<b>Length:</b> 4,450mm
	<b>Width:</b> 1,852mm
	<b>Weight:</b> 1,585kg

★★★★★

### 996 GT3 1998-2000



Commonly called the Gen1 GT3, this was a lightweight 996 with power driving the rear wheels. Suspension was lowered by 30mm and brakes were uprated.

<b>Production numbers:</b> 1,858	<b>Top speed:</b> 188mph
<b>Issue featured:</b> 99	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 330mm discs;
<b>Compression ratio:</b> 11.7:1	Rear: 300mm discs
<b>Maximum power:</b> 360bhp @ 7,200rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 370Nm @ 5,000rpm	Front: 8x18-inch;
<b>0-62mph:</b> 4.8 sec	225/40/R18
	Rear: 10x18-inch;
	285/30/R18
	<b>Length:</b> 4,430mm
	<b>Width:</b> 1,765mm
	<b>Weight:</b> 1,350kg

★★★★★

### Gen2 996 C4 2002-04



Facelifted in line with rear-drive Carrera, though the all-wheel-drive version drives very much like its rear-driven brethren. Cabin received minor updates over Gen1.

<b>Production numbers:</b> 10,386	<b>Top speed:</b> 177mph
<b>Issue featured:</b> 107	<b>Brakes:</b>
<b>Engine capacity:</b> 3,596cc	Front: 318mm discs;
<b>Compression ratio:</b> 11.3:1	Rear: 299mm discs
<b>Maximum power:</b> 320bhp @ 6,800rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 370Nm @ 4,250rpm	Front: 7x17-inch;
<b>0-62mph:</b> 5.0 sec	205/50/R17
	Rear: 9x17-inch;
	255/40/R17
	<b>Length:</b> 4,430mm
	<b>Width:</b> 1,770mm
	<b>Weight:</b> 1,430kg

★★★★★

### 997 Carrera 2004-08



Fully revised 911 with 993-influenced bodywork and a new interior. Engine was like 996, but refined for more power. Six-speed Tiptronic option available.

<b>Production numbers:</b> 25,788	<b>Top speed:</b> 177mph
<b>Issue featured:</b> 112	<b>Brakes:</b>
<b>Engine capacity:</b> 3,596cc	Front: 318mm discs;
<b>Compression ratio:</b> 11.3:1	Rear: 299mm discs
<b>Maximum power:</b> 325bhp @ 6,800rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 370Nm @ 4,250rpm	Front: 8x18-inch;
<b>0-62mph:</b> 5.0 sec	235/40/R18
	Rear: 10x18-inch;
	265/40/R18
	<b>Length:</b> 4,427mm
	<b>Width:</b> 1,808mm
	<b>Weight:</b> 1,395kg

★★★★★

### 997 GT3 2006-07



Track-focused, but based on narrow-bodied Carrera with reworked 996 GT3 engine. PASM standard, revs to 8,400rpm, 200 higher than the Gen2 996 GT3.

<b>Production numbers:</b> 2,378	<b>Top speed:</b> 192mph
<b>Issue featured:</b> 111	<b>Brakes:</b>
<b>Engine capacity:</b> 3,600cc	Front: 380mm discs;
<b>Compression ratio:</b> 12.0:1	Rear: 350mm discs
<b>Maximum power:</b> 415bhp @ 7,600rpm	<b>Wheels &amp; tyres:</b>
<b>Maximum torque:</b> 405Nm @ 5,500rpm	Front: 8.5x19-inch;
<b>0-62mph:</b> 4.3 sec	235/35/R19
	Rear: 12x19-inch;
	305/30/R19
	<b>Length:</b> 4,445mm
	<b>Width:</b> 1,808mm
	<b>Weight:</b> 1,395kg

★★★★★



**996 Turbo 2001-05**

Distinguished by wide rear arches, air intakes and deep front spoiler, plus part-fixed, part-retractable spoiler. Different engine to naturally aspirated 3.6-litre 996 unit.

**Production numbers:** 20,499  
**Issue featured:** 114  
**Engine capacity:** 3,600cc  
**Compression ratio:** 9.4:1  
**Maximum power:** 420bhp @ 6,000rpm  
**Maximum torque:** 560Nm @ 2,700-4,600rpm  
**0-62mph:** 4.2 sec

**Top speed:** 189mph  
**Brakes:** Front: 330mm discs; Rear: 330mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/R18  
Rear: 11x18-inch; 295/30/R18  
**Length:** 4,435mm  
**Width:** 1,830mm  
**Weight:** 1,590kg

**996 Carrera 4S 2001-05**

Basically a Carrera 4 featuring a Turbo bodyside, without rear air intakes, but with a full-width rear reflector panel. Suspension and brakes were similar to the Turbo spec.

**Production numbers:** 23,055  
**Issue featured:** 101  
**Engine capacity:** 3,596cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 320bhp @ 6,800rpm  
**Maximum torque:** 370Nm @ 4,250rpm  
**0-62mph:** 5.1 sec

**Top speed:** 174mph  
**Brakes:** Front: 330mm discs; Rear: 330mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/R18  
Rear: 11x18-inch; 295/30/R18  
**Length:** 4,435mm  
**Width:** 1,830mm  
**Weight:** 1,495kg

**996 Anniversary 2003-04**

Available in GT silver, and included a Turbo front bumper and chrome Carrera wheels. Powerkit, 10mm sports suspension and mechanical LSD standard.

**Production numbers:** 1,963  
**Issue featured:** 112  
**Engine capacity:** 3,596cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 345bhp @ 6,800rpm  
**Maximum torque:** 370Nm @ 4,800rpm  
**0-62mph:** 4.9 sec

**Top speed:** 175mph  
**Brakes:** Front: 330mm discs; Rear: 330mm discs  
**Wheels & tyres:** Front: 8x18-inch; 225/40/R18  
Rear: 10x18-inch; 285/30/R18  
**Length:** 4,430mm  
**Width:** 1,770mm  
**Weight:** 1,770kg

**Gen2 996 GT3 2003-05**

Based on facelifted 996 Carrera, but with new spoilers. Suspension lowered and updated, PCCB optional. Full-spec interior unless Clubsport option was ordered.

**Production numbers:** 2,313  
**Issue featured:** 107  
**Engine capacity:** 3,600cc  
**Compression ratio:** 11.7:1  
**Maximum power:** 381bhp @ 7,400rpm  
**Maximum torque:** 385Nm @ 5,000rpm  
**0-62mph:** 4.5 sec

**Top speed:** 190mph  
**Brakes:** Front: 350mm discs; Rear: 330mm discs  
**Wheels & tyres:** Front: 8.5x18-inch; 235/40/R18  
Rear: 11x18-inch; 295/30/R18  
**Length:** 4,435mm  
**Width:** 1,770mm  
**Weight:** 1,380kg

**997 Carrera S 2004-08**

As per the 997 Carrera, but with more powerful 3.8-litre engine and PASM. 19-inch wheels as standard, with bigger ventilated brakes. Quad exhaust tailpipes.

**Production numbers:** 41,059  
**Issue featured:** 107  
**Engine capacity:** 3,824cc  
**Compression ratio:** 11.8:1  
**Maximum power:** 355bhp @ 6,600rpm  
**Maximum torque:** 400Nm @ 4,600rpm  
**0-62mph:** 4.8 sec

**Top speed:** 182mph  
**Brakes:** Front: 330mm discs; Rear: 330mm discs  
**Wheels & tyres:** Front: 8x19-inch; 235/35/R19  
Rear: 11x19-inch; 295/30/R19  
**Length:** 4,427mm  
**Width:** 1,808mm  
**Weight:** 1,420kg

**997 Carrera 4 2005-08**

Like the 997 Carrera, but with drive to all four wheels via a multi-disc viscous coupling, transferring between five and 40 per cent of traction to the front. 44mm wider at rear.

**Production numbers:** 8,533  
**Issue featured:** 3  
**Engine capacity:** 3,596cc  
**Compression ratio:** 11.3:1  
**Maximum power:** 325bhp @ 6,800rpm  
**Maximum torque:** 370Nm @ 4,250rpm  
**0-62mph:** 5.1 sec

**Top speed:** 174mph  
**Brakes:** Front: 318mm discs; Rear: 299mm discs  
**Wheels & tyres:** Front: 8x18-inch; 235/40/R18  
Rear: 10x18-inch; 295/35/R18  
**Length:** 4,427mm  
**Width:** 1,852mm  
**Weight:** 1,450kg

**997 GT3 RS 2006-07**

Similar to GT3, with inclusion of wider rear bodyside of the Carrera S. 20kg of weight saved from GT3 thanks to carbon engine cover and rear wing, and plastic rear window.

**Production numbers:** 1,106  
**Issue featured:** 110  
**Engine capacity:** 3,600cc  
**Compression ratio:** 12.0:1  
**Maximum power:** 415bhp @ 7,600rpm  
**Maximum torque:** 405Nm @ 5,500rpm  
**0-62mph:** 4.2 sec

**Top speed:** 194mph  
**Brakes:** Front: 380mm discs; Rear: 350mm discs  
**Wheels & tyres:** Front: 8.5x19-inch; 235/35/R19  
Rear: 12x19-inch; 305/30/R19  
**Length:** 4,460mm  
**Width:** 1,808mm  
**Weight:** 1,375kg

**997 GT2 2007-09**

Essentially the 997 Turbo, but with rear-wheel drive only. Enjoyed a more track-orientated suspension and brake setup, with GT3-style interior and extra power.

**Production numbers:** 1,242  
**Issue featured:** 31  
**Engine capacity:** 3,600cc  
**Compression ratio:** 9.0:1  
**Maximum power:** 530bhp @ 6,500rpm  
**Maximum torque:** 680Nm @ 2,200-4,500rpm  
**0-62mph:** 3.7 sec

**Top speed:** 204mph  
**Brakes:** Front: 380mm discs; Rear: 350mm discs  
**Wheels & tyres:** Front: 8.5x19-inch; 235/35/ZR19  
Rear: 9x11-inch; 305/30/ZR19  
**Length:** 4,469mm  
**Width:** 1,852mm  
**Weight:** 1,440kg

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### Gen2 997 C2 2008-12



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).

**Production numbers:** 10,500  
**Issue featured:** 89  
**Engine capacity:** 3,614cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 345bhp @ 6,500rpm  
**Maximum torque:** 390Nm @ 4,400rpm  
0-62mph: 4.9 sec

**Top speed:** 180mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8x18-inch;  
235/40/ZR18  
Rear: 10.5x18-inch;  
265/40/ZR18  
Length: 4,435mm  
Width: 1,808mm  
Weight: 1,490kg



### Gen2 997 C2 S 2008-12



Altered as per the Carrera, but with larger 3.8-litre engine – again using fewer components and Direct Fuel Injection. Had seven-speed PDK optional, like the Carrera.

**Production numbers:** 15,000  
**Issue featured:** 61  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 385bhp @ 6,500rpm  
**Maximum torque:** 420Nm @ 4,400rpm  
0-62mph: 4.7 sec

**Top speed:** 188mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8x19-inch;  
235/35/ZR19  
Rear: 11x19-inch;  
295/30/ZR19  
Length: 4,435mm  
Width: 1,808mm  
Weight: 1,500kg



### Gen2 997 GT3 RS 2009-12



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.

**Production numbers:** 1,500  
**Issue featured:** 110  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.2:1  
**Maximum power:** 450bhp @ 7,900rpm  
**Maximum torque:** 430Nm @ 6,750rpm  
0-62mph: 4.0 sec

**Top speed:** 192mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 380mm discs  
**Wheels & tyres:**  
Front: 9x19-inch;  
245/35/ZR19  
Rear: 12x19-inch;  
325/30/ZR19  
Length: 4,460mm  
Width: 1,852mm  
Weight: 1,370kg



### 997 Speedster 2010



Built to mark Porsche Exclusiv's 25th anniversary. Shorter windscreen, but rake angle same as 997 Carrera. Wide body with 19-inch Fuchs wheels. Rear-wheel drive.

**Production numbers:** 356  
**Issue featured:** 69  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 408bhp @ 7,300rpm  
**Maximum torque:** 420Nm @ 4,400-5,600rpm  
0-62mph: 4.4 sec

**Top speed:** 190mph  
**Brakes:**  
Front: 350mm discs;  
Rear: 350mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch;  
235/35/ZR19  
Rear: 11x19-inch;  
305/30/ZR19  
Length: 4,440mm  
Width: 1,852mm  
Weight: 1,540kg



### 997 C2 GTS 2010-12



Features the C4's wider rear body, and powered by the 3.8-litre Carrera S engine, with a Powerkit producing 25bhp extra. The GTS is laden with Porsche options.

**Production numbers:** Unknown  
**Issue featured:** 118  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 402bhp @ 7,300rpm  
**Maximum torque:** 420Nm @ 4,200-5,600rpm  
0-60mph: 4.6 sec

**Top speed:** 190mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch;  
235/35/ZR19  
Rear: 11x19-inch;  
305/30/ZR19  
Length: 4,435mm  
Width: 1,852mm  
Weight: 1,420kg



### 997 C4 GTS 2011-12



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

**Production numbers:** Unknown  
**Issue featured:** 91  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 402bhp @ 7,300rpm  
**Maximum torque:** 420Nm @ 4,200-5,600rpm  
0-62mph: 4.6 sec

**Top speed:** 188mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch;  
235/35/ZR19  
Rear: 11x19-inch;  
305/30/ZR19  
Length: 4,435mm  
Width: 1,852mm  
Weight: 1,555kg



### 991 Carrera 4S 2012-



Same wider body styling as Carrera 4, coupled to 3.8-litre 400bhp engine. Also features six-piston brake callipers at front, as opposed to four. PTV spread torque more evenly.

**Production numbers:** Currently in production  
**Issue featured:** 118  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 400bhp @ 7,400rpm  
**Maximum torque:** 440Nm @ 5,600rpm  
0-62mph: 4.5 sec

**Top speed:** 185mph  
**Brakes:**  
Front: 340mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x20-inch;  
245/35/ZR20  
Rear: 11x20-inch;  
305/30/ZR20  
Length: 4,491mm  
Width: 1,852mm  
Weight: 1,445kg



### 991 GT3 2013-



Wide body from 991 Carrera 4 was used for the first time. Mezger engine from previous GT3s replaced with revamped DFI version of Carrera S engine. PDK only.

**Production numbers:** Currently in production  
**Issue featured:** 104  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.9:1  
**Maximum power:** 475hp @ 8,250rpm  
**Maximum torque:** 440Nm @ 6,250rpm  
0-62mph: 3.5 sec

**Top speed:** 196mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 380mm discs  
**Wheels & tyres:**  
Front: 9x20-inch;  
245/35/ZR20  
Rear: 12x20-inch;  
305/30/ZR20  
Length: 4,545mm  
Width: 1,852mm  
Weight: 1,430kg





## Gen2 997 C4 2008-12



Numerous engine and body changes as per the Carrera, but with a wider rear end plus full-width rear reflector. New all-wheel drive was initiated from the 997 Turbo.

**Production numbers:** 1,384 (Coupe)  
**Issue featured:** 41  
**Engine capacity:** 3,614cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 345bhp @ 6,500rpm  
**Maximum torque:** 390Nm @ 4,400rpm  
0-62mph: 5.0 sec

**Top speed:** 176mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8x18-inch;  
235/40/ZR18  
Rear: 10.5x18-inch;  
265/40/ZR18  
Length: 4.435mm  
Width: 1,852mm  
Weight: 1,545kg

★★★★★

## Gen2 997 C4S 2008-12



Bodywork as per C4, but with larger engine. Utilised the 997 Turbo's four-wheel drive and PTM. Viscous coupling gives way to electromagnetically controlled multi-plate clutch.

**Production numbers:** 7,910 (Coupe)  
**Issue featured:** 111  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 385bhp @ 6,500rpm  
**Maximum torque:** 420Nm @ 4,400rpm  
0-62mph: 4.7 sec

**Top speed:** 185mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8x19-inch;  
235/30/ZR19  
Rear: 11x19-inch;  
295/30/ZR19  
Length: 4.435mm  
Width: 1,852mm  
Weight: 1,555kg

★★★★★

## Gen2 997 GT3 2009-12



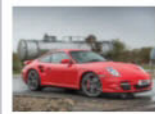
Updated as per the Carrera, but with a unique front spoiler and rear wing, revised PASM, centre-lock wheels and better brakes. 2010 MY GT3s recalled to fix rear hubs.

**Production numbers:** 2,200  
**Issue featured:** 99  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.2:1  
**Maximum power:** 435bhp @ 7,900rpm  
**Maximum torque:** 430Nm @ 3,250rpm  
0-62mph: 4.1 sec

**Top speed:** 194mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 350mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch;  
235/35/ZR19  
Rear: 12x19-inch;  
305/30/ZR19  
Length: 4.460mm  
Width: 1,808mm  
Weight: 1,395kg

★★★★★

## Gen2 997 Turbo 2009-13



Same as the original 997 Turbo, but with new LED tail-lights and driver lights up front. Larger tailpipes and DFI engine, with fuel consumption cut by 16 per cent.

**Production numbers:** 3,800  
**Issue featured:** 90  
**Engine capacity:** 3,800cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 500bhp @ 6,000rpm  
**Maximum torque:** 650Nm @ 1,950-5,000rpm  
0-62mph: 3.4 sec

**Top speed:** 194mph  
**Brakes:**  
Front: 350mm discs;  
Rear: 350mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch;  
235/35/ZR19  
Rear: 11x19-inch;  
305/30/ZR19  
Length: 4.450mm  
Width: 1,852mm  
Weight: 1,570kg

★★★★★

## 997 Sport Classic 2010



Based on a 3.8-litre Powerkit, rear wheel-drive Carrera S, but with 44mm wider rear arches. Retro styling including iconic ducktail spoiler and large Fuchs wheels.

**Production numbers:** 250  
**Issue featured:** 57  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 408bhp @ 7,300rpm  
**Maximum torque:** 420Nm @ 4,200-5,600rpm  
0-62mph: 4.6 sec

**Top speed:** 187mph  
**Brakes:**  
Front: 350mm discs;  
Rear: 350mm discs  
**Wheels & tyres:** Front: 8.5x19-inch; 235/35/ZR19  
Rear: 11x19-inch; 305/30/ZR19  
Length: 4.435mm  
Width: 1,852mm  
Weight: 1,425kg

★★★★★

## 997 GT3 RS 4.0 2010



The engine was upgraded and aerodynamically tweaked too, with the angle of rear wing increased and dive planes on either side of the front nose. A future collectors' gem.

**Production numbers:** 600  
**Issue featured:** 115  
**Engine capacity:** 3,996cc  
**Compression ratio:** 12.6:1  
**Maximum power:** 493bhp @ 8,250rpm  
**Maximum torque:** 460Nm @ 5,750rpm  
0-62mph: 3.5 sec

**Top speed:** 193mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 380mm discs  
**Wheels & tyres:**  
Front: 9x19-inch; 245/35/ZR19  
Rear: 12x19-inch; 325/30/ZR19  
Length: 4.460mm  
Width: 1,852mm  
Weight: 1,360kg

★★★★★

## N/A 997 918 Edition 2010



These exclusive 997 Turbo S-spec 911s were only available to those who had paid a deposit for a 918 Spyder. Acid green badging and brake calipers.

**Production numbers:** 918  
**Issue featured:** 74  
**Engine capacity:** 3,800cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 530bhp @ 6,250-6,750rpm  
**Maximum torque:** 700Nm @ 2,100-4,250rpm  
0-62mph: 3.3 sec

**Top speed:** 195mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 350mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch; 235/35/ZR19  
Rear: 11x19-inch; 305/30/ZR19  
Length: 4.435mm  
Width: 1,852mm  
Weight: 1,585kg

★★★★★

## 997 GT2 RS 2010-11



These exclusive 997 Turbo S-spec 911s were only available to those who had paid a deposit for a 918 Spyder. Acid green badging and brake calipers.

**Production numbers:** 500  
**Issue featured:** 114  
**Engine capacity:** 3,600cc  
**Compression ratio:** 9.0:1  
**Maximum power:** 620bhp @ 6,500rpm  
**Maximum torque:** 700Nm @ 2,500-5,500rpm  
0-62mph: 3.5 sec

**Top speed:** 205mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 350mm discs  
**Wheels & tyres:**  
Front: 9x19-inch; 245/35/ZR19  
Rear: 12x19-inch; 325/30/ZR19  
Length: 4.460mm  
Width: 1,852mm  
Weight: 1,370kg

★★★★★

## 997 Turbo S 2011-13



As standard 997 Turbo but more power and higher level of standard equipment including PCCB, centre-lock wheels, crested sports seats and Sport Chrono Plus.

**Production numbers:** 2,000  
**Issue featured:** 98  
**Engine capacity:** 3,800cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 530bhp @ 6,250-6,750rpm  
**Maximum torque:** 700Nm @ 2,100-4,250rpm  
0-62mph: 3.3 sec

**Top speed:** 195mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 350mm discs  
**Wheels & tyres:** Front: 8.5x19-inch; 235/35/ZR19  
Rear: 11x19-inch; 305/30/ZR19  
Length: 4.435mm  
Width: 1,852mm  
Weight: 1,585kg

★★★★★

## 991 Carrera 2011-



First of the newest and latest 991, takes styling hues from 993. Redesigned chassis with lengthened wheelbase reduces overhang of engine.

**Production numbers:** Currently in production  
**Issue featured:** 83  
**Engine capacity:** 3,436cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 350bhp @ 7,400rpm  
**Maximum torque:** 390Nm @ 5,600rpm  
0-62mph: 4.8 sec

**Top speed:** 179.6mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch; 235/40/ZR19  
Rear: 11x19-inch; 285/35/ZR19  
Length: 4.491mm  
Width: 1,808mm  
Weight: 1,380kg

★★★★★

## 991 Carrera S 2011-



Same as Carrera, including seven-speed manual 'box, but utilising bigger engine. Slightly larger front brakes than the standard Carrera. PASM as standard equipment.

**Production numbers:** Currently in production  
**Issue featured:** 114  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 400bhp @ 7,400rpm  
**Maximum torque:** 440Nm @ 5,600rpm  
0-62mph: 4.5 sec

**Top speed:** 188.9mph  
**Brakes:**  
Front: 340mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x20-inch; 245/35/ZR20  
Rear: 11x20-inch; 295/30/ZR20  
Length: 4.491mm  
Width: 1,808mm  
Weight: 1,395kg

★★★★★

## 991 Carrera 4 2012-



22mm wider body than C2, with 10mm wider tyres and connecting rear tail light as standard. Also features a torque distribution indicator on the digital dash clock.

**Production numbers:** Currently in production  
**Issue featured:** 98  
**Engine capacity:** 3,436cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 350bhp @ 7,400rpm  
**Maximum torque:** 390Nm @ 5,600rpm  
0-62mph: 4.9 sec

**Top speed:** 177mph  
**Brakes:**  
Front: 330mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 8.5x19-inch; 235/40/ZR19  
Rear: 11x19-inch; 305/35/ZR19  
Length: 4.491mm  
Width: 1,852mm  
Weight: 1,430kg

★★★★★

## 991 Turbo 2013-



The new Turbo marks the introduction of rear axle steering, plus PDK-only transmission to forced induction 991 models. Rear fenders 28mm wider than C4.

**Production numbers:** Currently in production  
**Issue featured:** 109  
**Engine capacity:** 3,800cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 520hp @ 6,000-6,500rpm  
**Maximum torque:** 660Nm @ 1,950-5,000rpm  
0-62mph: 3.4 sec

**Top speed:** 195mph  
**Brakes:**  
Front: 380mm discs;  
Rear: 380mm discs  
**Wheels & tyres:**  
Front: 8.5x20-inch; 245/35/ZR20  
Rear: 11x20-inch; 305/30/ZR20  
Length: 4.506mm  
Width: 1,880mm  
Weight: 1,595kg

★★★★★

## 991 Turbo S 2013-



Same dimensions as 991 Turbo, but with a tweaked map to provide an extra 40hp. Usual Turbo options as standard, including centre-lock wheels, PCCB, PDCC and Bose sound.

**Production numbers:** Currently in production  
**Issue featured:** 115  
**Engine capacity:** 3,800cc  
**Compression ratio:** 9.8:1  
**Maximum power:** 560hp @ 6,500-6,750rpm  
**Maximum torque:** 700Nm @ 2,100-4,250rpm  
0-62mph: 3.1 sec

**Top speed:** 197mph  
**Brakes:**  
Front: 410mm discs;  
Rear: 390mm discs  
**Wheels & tyres:**  
Front: 9x20-inch; 245/35/ZR20  
Rear: 11x20-inch; 305/30/ZR20  
Length: 4.506mm  
Width: 1,880mm  
Weight: 1,605kg

★★★★★

## N/A 991 Anniversary 2013-14



Exuberantly styled Carrera S with wide body and generous spec. Many styling cues inside and out taken from original 901. Powerkit only came as standard spec in US.

**Production numbers:** 1,963  
**Issue featured:** 112  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 400bhp @ 7,400rpm  
**Maximum torque:** 440Nm @ 5,600rpm  
0-62mph: 4.5 sec

**Top speed:** 188mph  
**Brakes:**  
Front: 340mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 9x20-inch; 245/35/ZR20  
Rear: 11.5x20-inch; 305/30/ZR20  
Length: 4.491mm  
Width: 1,852mm  
Weight: 1,420kg

★★★★★

## N/A 991 Carrera GTS 2014-



Big spec GTS utilises wide body and a host of good options including Powerkit, PASM, Sport chrono, Sport exhaust to name a few, all for £7,000 more than Carrera S.

**Production numbers:** Unknown  
**Issue featured:** 121  
**Engine capacity:** 3,800cc  
**Compression ratio:** 12.5:1  
**Maximum power:** 430bhp @ 7,500rpm  
**Maximum torque:** 440Nm @ 5,750rpm  
0-62mph: 4.0 sec

**Top speed:** 190mph  
**Brakes:**  
Front: 340mm discs;  
Rear: 330mm discs  
**Wheels & tyres:**  
Front: 9x20-inch; 245/35/ZR20  
Rear: 11.5x20-inch; 305/30/ZR20  
Length: 4.491mm  
Width: 1,852mm  
Weight: 1,425kg

★★★★★



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## PORSCHE 997 - TURBO, C2S, C4S, CARRERA

**2010 - 997 GEN II TURBO COUPE (CARRERA WHITE) 19,000 Miles**  
Metropole Blue Leather Interior, Manual, PSM, PASM, PCM, Touchscreen Sat Nav, BOSE Surround Sound System, CD Changer, Xenon Headlights, 19" Turbo Alloy Wheels (GEN II), Full Porsche Service History.

**2009 - 997 TURBO COUPE TIP S (CARRERA WHITE) 36,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Touchscreen Sat Nav, BOSE Sound System, CD Changer, iPod Connection, White Dials, Alcantara Headlining, Chrono Package Plus, Climate Control, Xenon Headlights, 19" Turbo Alloys, Full Porsche Service History.

**2008 - 997 TURBO COUPE TIP S (BASALT BLACK) 19,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Sat Nav, BOSE Sound System, Porsche Crest Headrest, Xenon Headlights, Full Porsche Service History.

**2008 - 997 TURBO CABRIOLET TIP S (BASALT BLACK) 54,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Sat Nav, BOSE Surround System, White Dials, Chrono Package Plus, Rear Park Assist, 19" Fuchs Alloy Wheels, Full Porsche Service History.

**2007 - 997 TURBO COUPE TIP (BASALT BLACK) 47,000 Miles**  
Black Leather Interior, Sports Chrono Package, PASM, PSM, PCM, Sat Nav, White Dials, Porsche Crested Headrest, Traction Control, 19" Turbo Alloy Wheels, Full Porsche Service History.

**2009 - 997 GEN II C2 COUPE PDK (GT SILVER) 33,000 Miles**  
Black Leather Interior, PSM, PCM 3, Touchscreen Sat Nav, BOSE Sound System, iPod Connector, Chrono Pack, Alcantara Headlining, 19" GEN II Carrera Alloy Wheels, Full Main Dealer Service History.

**2008 - 997 C4S COUPE TIP (SPEED YELLOW) 26,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Sat Nav, CD Changer, White Dials, Switchable Sports Exhaust, Multi Function Steering Wheel, Sunroof, Xenon Headlights, 19" Sports Design Wheels, Full Main Dealer Service History.

**2008 - 997 C4S COUPE MAN (BASALT BLACK) 46,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Sat Nav, BOSE Sound System, White Dials, Alcantara Headlining, 19" Turbo Alloy Wheels, Full Porsche Service History.

**2006 - 997 CARRERA 4S COUPE (BASALT BLACK) 39,000 Miles**  
Black Leather Interior, Manual, PSM, PCM, Sat Nav, White Dials, Multi Function Steering Wheel, Alcantara Headlining, Full Main Dealer Service History.

**2006 - 997 C2S COUPE TIP (BASALT BLACK) - 55,000 Miles**  
Full Black Leather Interior, PSM, PCM, PCM, Sat Nav, BOSE Sound System, White Dials, Switchable Sports Exhaust, Alcantara Headlining, 19" Split Rim Alloy Wheels, Full Main Dealer Service History. Just Been Serviced.

**2005 - 997 C2S COUPE MANUAL (SEAL GREY) 47,000 Miles**  
Black Leather Interior, PSM, PCM, Sat Nav, Chrono Pack, Cruise Control, Multi Function Steering Wheel, White Dials, Sports Exhaust, BOSE CD Changer, Alcantara Headlining, 19" Sport Design Alloy Wheels, Full Service History.

**2006 - 997 C2 COUPE MANUAL (BASALT BLACK) - 56,000 Miles**  
Sand Beige Leather Interior, PSM, PCM, PCM, Alcantara Headlining, BOSE Sound System, 18" Carrera Alloys, Full Main Dealer Porsche Service History.

## PORSCHE PANAMERA

**2012 - G1 D V6 PDK DIESEL (DARK CARBON GREY) 14,000 Miles**  
Black Leather Interior, PSM, PASM, PCM, Touchscreen Sat Nav, BOSE Sound System, CD Changer, Sports Exhaust, Chrono Pack, 20" Alloy Wheels, Full Main Dealer Porsche Service History, One Owner From New.

## PORSCHE 993 - TURBO, C2S, C2, C4, CARRERA

**1998 - 993 TURBO "S" COUPE MAN (SPEED YELLOW) 60,000 Miles**  
Black Leather/Carbon Fibre Interior, Litronic Lights, Yellow Dials, CD Changer, Yellow Seat Belts And Callipers, 18" Turbo S Alloy Wheels, Full Service History.

**1996 - 993 TURBO COUPE MAN (MIDNIGHT BLUE) 21,000 Miles**  
Grey Leather Interior, Electric Windows, Electric Mirrors, Air Conditioning, Becker Radio Player, 18" Turbo Alloy Wheels, Full Main Dealer Service History.

**1995 - 993 TURBO COUPE MANUAL (ARENA RED) 31,000 Miles**  
Grey Leather Interior, Wood Package, Upgraded Becker CD Player, Sat Nav, 18" Turbo Alloy Wheels, Official Porsche Centre Service History.

**1997 - 993 C2S COUPE MAN (ARCTIC SILVER) 71,000 Miles**  
Varioram, Metropole Blue Leather Interior, White Dials, Factory Fitted Alarm System, 18" Turbo Alloy Wheels, Fully Documented Service History.

**1995 - 993 C2 COUPE MAN (IRISH BLUE) 88,000 Miles**  
Black Leather Interior, Porsche Immobiliser And Spare Keys, Recent Cosmetic Paintwork Carried Out To Remove Stone Chips, Porsche Document Wallet And Manuals, Electric Spoiler Risers And Falls As It Should, Porsche Inscribed Mats, The Car Is Always Garaged And Is A C16 UK Car, A Very Nice Example In Excellent Condition.

**1994 - 993 C2 COUPE TIP (BLACK) 93,000 Miles**  
Black Leather Interior, Becker Radio, Electric Seats, Electric Windows And Mirrors, Rear Wiper, 17" Alloy Wheels, Full Porsche & Specialist Service History (Just Been Serviced).

**1994 - 993 C2 COUPE TIP (BLACK) 99,000 Miles**  
Marble Grey Leather Interior, Sunroof, Becker Radio, Electric Seats, Electric Windows And Mirrors, 17" Alloy Wheels, Full Porsche And Specialist Service History (Just Been Serviced).

**1987 - 911 CARRERA 3.2 CAB 1989 (G50 GEARBOX) 126,000 Miles**  
Immaculate Blue Metallic, Full Marble Grey Interior, Matching Numbers Example, Matching Dark Blue Hood, Period Correct Fuchs Alloy Wheels, Comprehensive Service History, Very Original Condition, 10 Years With One Owner.

**1984 - 911 3.2 COUPE SPORT (BALTIC BLUE) 74,000 Miles**  
Manual, Baltic Blue Metallic Coach Work, Black Leather Interior, Factory Fitted Air Conditioning, Factory Fitted Alarm System, Fully Documented Service History.

**1991 - 911 (964) CARRERA 2 COUPE TIP 64,000 Miles**  
Midnight Blue Coachwork, Full Grey Leather Interior, Air Conditioning, Becker Radio Player, 17" Alloy Wheels, Fully Documented Service History.

## FERRARI - MODELS FROM 1967 +

**2010 - CALIFORNIA (1) 2 PLUS 2 SPIDER 12,000 Miles**  
Grigio Silverstone With Sabbia, Crema Daytona Seats, Dual Mode Suspension, 19" Forged Diamond Wheel Rims, Full Ferrari Main Dealer Service History.

**2008 - FERRARI 612 SCAGLIETTI COUPE (NERO BLACK) 11,000 Miles**  
Full Nero Black Leather Interior, HGTC Package, Sport Mode, Latest Software On Gearbox To Enhance Gearchange Speed, Sports Exhaust, Ferrari Ceramic Brakes, Second Generation Sat Nav, iPod Connection, USB Connection, Enhanced Sound System (BOSE), Nero Daytona seats, Xenon Headlights, Full Climate Control, Tracker System, 19" Modular Alloy Wheels (HGTC Special), Full Ferrari Service History.

**1998 - 550 MARANELLO COUPE MANUAL (SILVER) 53,000 Miles**  
Navy Leather Interior, Sat Nav With DVD, ASR Sports Mode, Electric Seats, Upgraded Radio And 6 CD Changer, Climate Control, Ferrari Service History.

## 2008 - F430 SPIDER F1 20,000 Miles

Fully Protected And Wrapped In White, Grigio Silverstone Coachwork As New, Nero Black Leather Interior With Red Carpet, Carbon Fibre Trim, Ferrari Stereo, Manettino With Sports And Track Settings, Climate Control, Ceramic Ferrari Shield, Ferrari Crested Headrests, Full Ferrari Service History, Very Well Kept Example.

## 2002 - 360 SPIDER F1 (BLUE SILVER METALLIC) 33,000 Miles

Azzuro California Coachwork, Nero Black Leather Interior, Nero Daytona Seats, Cruise Control, Kenwood Radio And CD Player, Ferrari Crest On Headrest, Climate Control, 19" Daytona Alloy Wheels, Full Main Dealer Ferrari Service History.

## 1996 - F355 SPIDER MANUAL (GIALLO MODENA) 28,000 Miles

Giallo Modena Yellow, Full Nero Black Interior, 18" Ferrari 355 Alloys, Full Service History, Recently Serviced, Known To Us For A Period Of 5 Years.

## 1973 - DAYTONA 365 GTB/4 RHD (ROSSO RED) 38,000 Miles

Black/Red Leather Interior, Detailed Restoration History, Sales Invoice, Numerous Concourse And Awards Winner, Engine Rebuilt By Ferrari In Johannesburg, 26,000 KMS Ago, Comprehensive Photos, Exceptional Condition Throughout.

## 1967 - 275 GTB/4 MANUAL LHD (ARGENTO SILVER) 59,000 Miles

Full Black Leather Interior, Detailed Restoration History, Sales Invoice, Numerous Concourse And Awards Winner, Engine Rebuilt By Ferrari In Johannesburg, 26,000 KMS Ago, Comprehensive Photos, Exceptional Condition Throughout.

## CLASSICS - AC, PORSCHE, JAGUAR, BENTLEY

## 1991 - AC COBRA LIGHTWEIGHT (BLACK METALLIC) 5,000 Miles

1 Of 26 RHD Lightweight, Black Leather, Black Metallic Coachwork With White Stripes Full Black Leather Interior, Absolutely Stunning Condition, Very Rare With Approximately Only 26 Vehicles Manufactured.

## 1964 - PORSCHE 356 B SUPER 90 COUPE LHD (SIGNAL RED)

1600cc Signal Red Coachwork, Soft Beige Leather Interior, 4 Speed Manual, Recent Restoration To Concours Standard, Eligible For Many European Events.

## 1958 - PORSCHE 356 A COUPE 1600cc (SILVER) 73,000 Miles

Silver Coachwork, Green Leather Seats, Sunroof, 15" Wheels, Superbly Restored, Concours Condition.

## 1973 - JAGUAR E-TYPE ROADSTER SERIES III AUTO 25,000 MILES

Finished In Carmen Red With Black Hide Interior And Crema Soft Top, The Finest Chrome Wire Wheels, Chrome Exhaust System, Totally Restored To A Very High Standard, Drives Like New - This Car Is Just Amazing.

## 1962 - JAGUAR 3.8 MARK II AUTOMATIC LHD (BLACK) 16,478 Miles

Automatic Black Coachwork, Red Leather Interior, Power Assisted Steering, Wire Wheels, Recent Restoration To Virtually Concours Standard.

## 1962 - JAGUAR 'E' TYPE ROADSTER 3.8

Opalescent Silver Blue, Black Leather Seats, Series 1, Refurbished By One Of The UK's Most Renowned E-Type Specialists, Restored To Concours Level, Manual, Chromed Wire Wheels, Restoration Work Fully Documented.

## 1936 - BENTLEY 4 1/4 PILLARLESS COUPE (MIDNIGHT BLUE)

Grey Leather Gurney Nutting Coachwork, 1 Owner In 40 Years, Exhibited At Luois Vuitton Concours D'Elegance In Paris 2003. Chassis Completely Original.

## 1998 - FIAT BARCHETTA CONVERTIBLE MAN 51,000 Miles

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111,195 km (69,907 miles) • 1995 (N)  
£199,995



**911 Turbo (930, 6-Speed)**  
Arctic Silver • Boxster Red Leather Sport Seats  
Sports Exhaust • Air Conditioning • 57,873 miles  
1997 (R)  
£99,995



**911 Carrera Supersport Targa (5-Speed)**  
G-50 Gearbox • Baltic Blue • Linen Leather Sports  
Seats • 16" Fuchs Wheels • 3-Spoke Clubsport  
Steering Wheel • 15,765 miles • 1989 (G)  
£69,995



**911 Carrera 2 S (997 GEN II, PDK)**  
Basalt Black • Black Leather Seats • 19" Turbo  
II Wheels • Touchscreen Satellite Navigation  
9,948 miles • 2011 (11)  
£55,995



**911 Carrera 2 S (997 GEN II, 6-Speed)**  
Basalt Black • Black Leather Seats • Sports Exhaust  
Touchscreen Satellite Navigation • 31,378 miles  
2011 (61)  
£49,995



**911 Carrera 2 S (997 GEN II, PDK)**  
Platinum Silver • Dark Blue Leather Seats • 19"  
Carrera S Wheels • Touchscreen Satellite Navigation  
38,996 miles • 2011 (61)  
£46,995



**Boxster Spyder (987, PDK)**  
Carrera White • Black Carbon Backed Bucket Seats  
19" Spyder Wheels • Sport Chrono Pack with Sport  
Plus • 28,739 miles • 2010 (10)  
£38,995



**Cayman 2.9 (GEN II, 6-Speed)**  
Jet Black • Black Half Leather Seats With Alcantara  
Inserts • Touchscreen Satellite Navigation • 18"  
Cayman S II Wheels • 34,207 miles • 2011 (11)  
£27,995



**Cayenne GTS (Tiptronic S)**  
Carmen Red • Black Half Leather Seats With  
Alcantara Inserts • 21" Cayenne Sport Wheels  
Satellite Navigation • 2008 (08)  
£24,995



**Boxster S (987, 6-Speed)**  
Basalt Black • Black Leather Seats • Satellite  
Navigation • 19" Sport Design Wheels • 48,053  
miles • 2008 (58)  
£19,995



**Boxster S (987, 6-Speed)**  
Arctic Silver • Blue Leather Seats • 19" Carrera S  
Wheels • BOSE Surround Sound System • 43,220  
miles • 2005 (05)  
£17,995



**Boxster S (987, Tiptronic S)**  
Basalt Black • Black Sport Seats • Satellite  
Navigation • 19" Carrera S wheels • 51,789 miles  
2005 (05)  
£16,995

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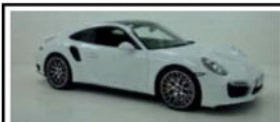


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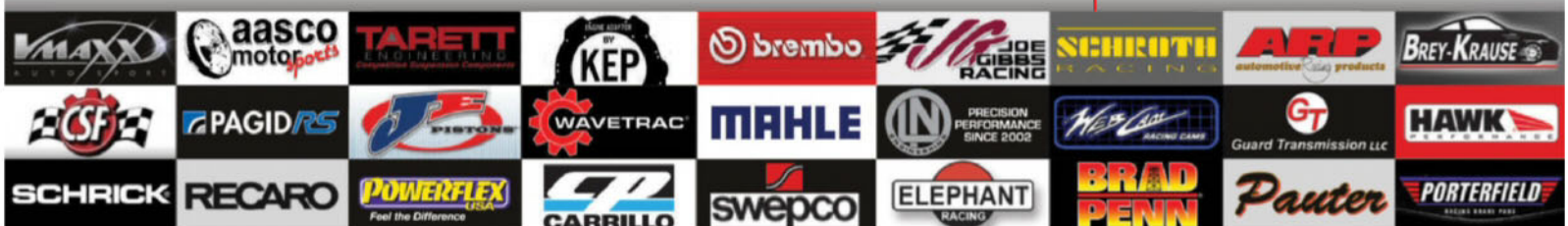
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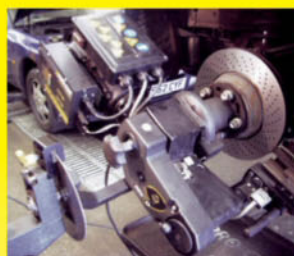
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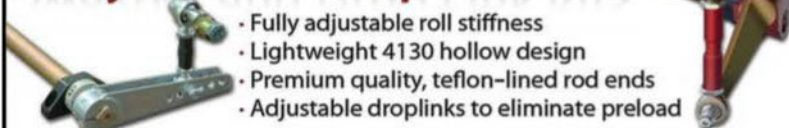
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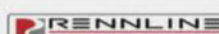
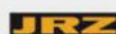


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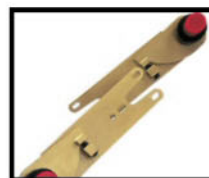
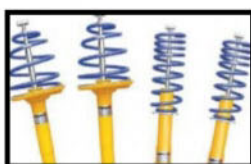
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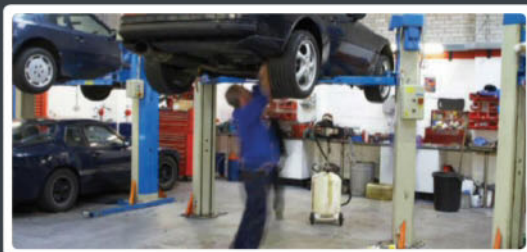
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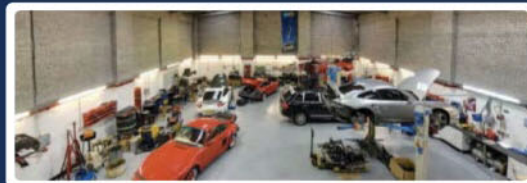
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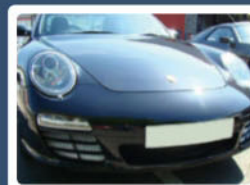
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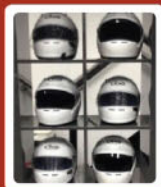
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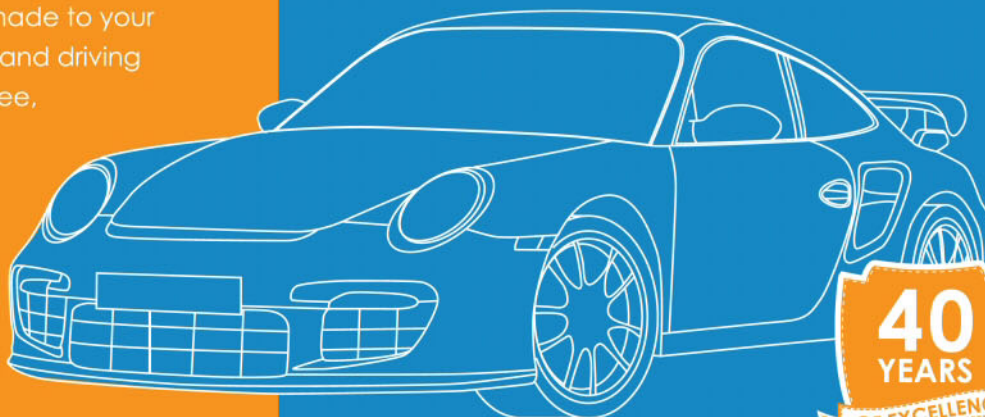
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Issue 123 in shops and available for download from **February 4**



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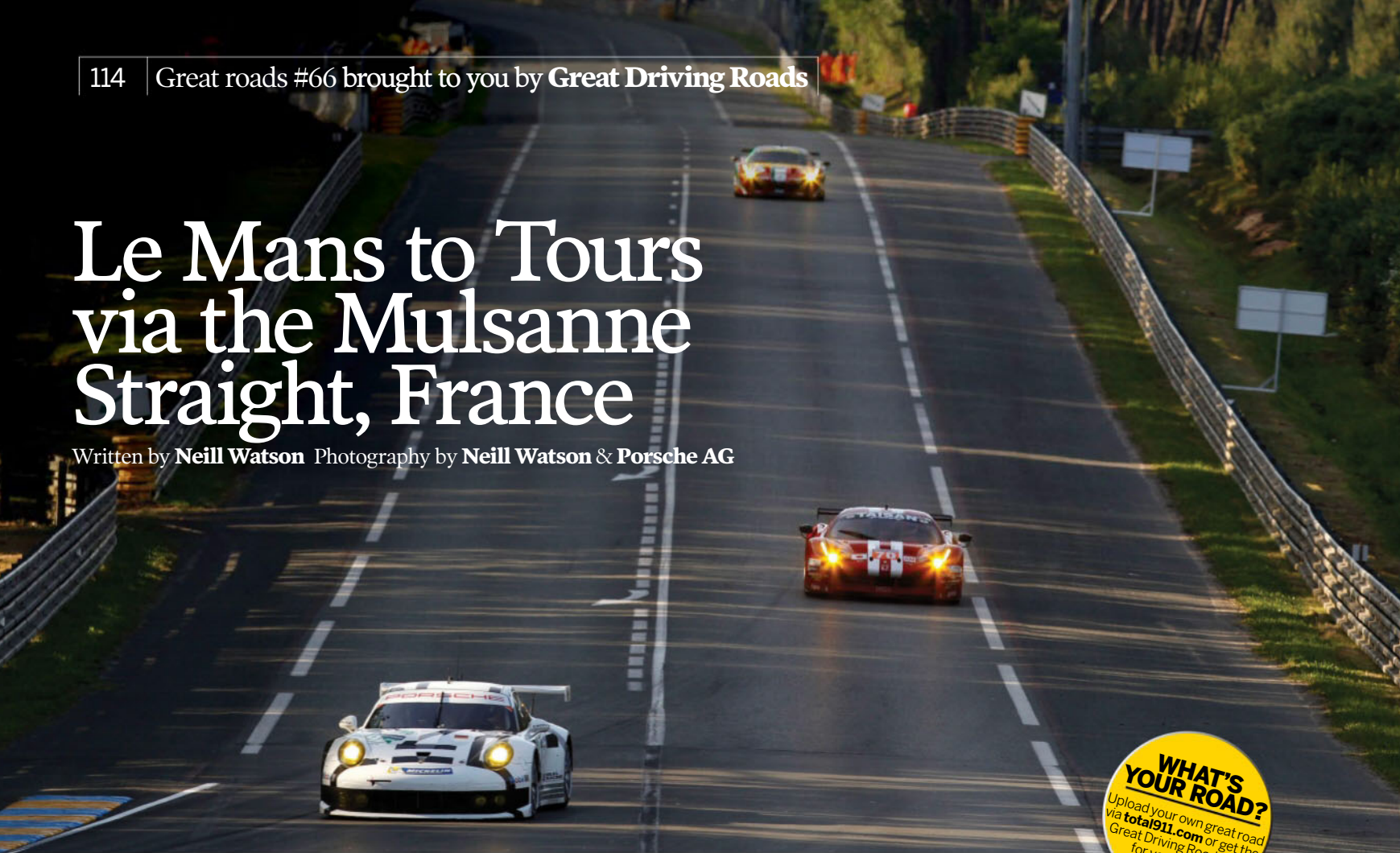
### THE M96-ENGINED 996 IS REBORN

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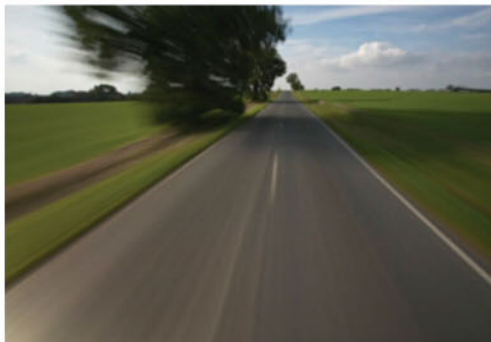


# Le Mans to Tours via the Mulsanne Straight, France

Written by **Neill Watson** Photography by **Neill Watson & Porsche AG**



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## Essential info

**LOCATION:** Le Mans, France  
**COORDINATES:** 47.9081° N, 0.2481° E



**LENGTH OF DRIVE:**  
81km

**POINTS OF INTEREST:**  
Le Mans Museum, The Mulsanne Straight, Mulsanne Village

**FOOD AND ACCOMMODATION:**  
Great food is everywhere. The Tabac in Mulsanne village is a great place for an Espresso and to top up on Gitanes; [www.lhoteldefrance.fr](http://www.lhoteldefrance.fr) Famous hotel from the golden days of the 24-hour race

One of the most evocative stretches of road in Porsche history is open to the public. Get your Steve McQueen impressions ready...

**A**fter visiting the great Le Mans Museum, it'll be hard to resist the urge to investigate that famous arrow-straight stretch of race track before heading home. "Drive out of the main gates of Le Mans circuit and turn right three times," they'll tell you in the Museum reception, and sure enough, you see the high circuit wall on your right as you join the D338, before the track slides imperceptibly under your wheels. Suddenly you're on the Mulsanne Straight, barriers either side, the road stretching into the distance.

You can almost hear the flat 12 of a Porsche 917 and expect to see Steve McQueen in his pretty 2.2-litre 911S parked halfway down. Every

few minutes, you're reminded of the size of this track as you traverse the new chicanes before seeing the race surface move off beside the road, where you'll see rubber-stained race track curbs. Without them, it must have been an incredibly intense experience at 240mph.

You can drive through the Mulsanne Kink, which would have been flat in a 917, and into what would be the braking area. Today, you'll share the road with school busses and daily traffic, yet there's Armco barriers and crash fencing on both sides. It's surreal. At the end of the straight you'll blend off the track to a roundabout. Glancing to the right, you'll see the circuit continuing on. Turn right here and you can continue following the circuit

towards 'Indianapolis', but instead you should head into Mulsanne, a small picturesque town with an evocative name and immaculate flower beds.

South of Mulsanne, you can head out to the D338 again. The road is now caricature French rural 'D' road, with trees lining each side, creating a green canopy in the summer. Hopefully you'll be in a 911 Targa or Cabriolet, as this is a beautiful stretch of road for open-top driving. There are two ways to drive this: either chill out, admire the scenery and cruise it, or heel-toe down a few gears and revel in the open bends, smooth surface and light traffic. For 71 kilometres, the road continues like this, passing through villages until you arrive at Tours and the blue Peage signs appear. **911**





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