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“Excuse me if I get a bit political, but I’m writing this the day after Scotland voted no to independence and so opting to stay within the United Kingdom. Why on earth do I mention this? Well, Porsche’s own adventures with independence went wrong, when Wendelin Wiedeking got a bit power-crazed and tried to take over the world. The result? A massive backfire and Porsche got unceremoniously gobbled up by VW, the company that Porsche has had an on-off relationship with for most of its existence.

Has this been a bad thing? Despite all sorts of gloomy

“VW has kept its distance and allowed Porsche autonomy”

predictions about inappropriate platform sharing and Boxsters with Golf engines, I don’t think so. The parent company has kept its distance and allowed Porsche autonomy. Take the Macan. Yes, it’s based loosely on an Audi platform, but it is bristling with bespoke Porsche components, including Porsche’s own dry sump V6 engine, to keep the centre of gravity down and so enable the Macan to handle like a Porsche.

Golf engines in Boxsters? No, Porsche is developing a turbocharged flat-four. Taking on Audi at Le Mans? Go ahead. Would all this have been possible for an independent Porsche? Probably not. Better together, you see.

**Steve Bennett**



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RHD 993 RS Clubsport – We are delighted to offer for sale this incredibly rare RHD 993 RS Clubsport. One of only 7 new deliveries in the UK. This RS has covered a mere 26,448 miles from new.



LHD 997 GT3 RS 4.0L – We are thrilled to offer yet another meticulously maintained LHD 997 GT3 RS 4.0L. This Porsche has received a full JZM one and a half hour bumper to bumper inspection and we are glad to report this GT really is as good as it looks.



RHD 993 Carrera RSL – A splendid example of this rarely available 993 RS, certainly in RHD form and a vehicle we are delighted to secure for the showroom.



993 Turbo – This 993 Turbo is supplied in outstanding cosmetic condition, the paintwork is practically flawless and the interior commensurate with a vehicle that has covered half this mileage, which lets face it is not high by any stretch at just over 36,000 miles from new!



993 C2 Cabriolet – This 993 Cab is no stranger to the team at JZM as we have previously sold this Porsche before, we are also delighted to have it back again. The level of detail and visual appeal on this vehicle is superb and it comes beautifully prepared with just 48,722 miles from new!

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# PORSCHE NEWS

## CLASSICS STAY AWAY

After the soaraway Porsche prices at the international classic car auctions at Pebble Beach in August, the annual London sale hosted by RM Auctions was something of a damp squib as far as the German marque was concerned. A mere four Porsches were offered for sale at the 8th September event at Battersea Evolution, located in Battersea Park, with two failing to reach their reserve and another selling below its pre-sale estimate.

The highest price paid, £134,400 including buyer's premium (only slightly above the lower range of the pre-sale estimate), was for a right-hand drive 1974 911 Carrera 2.7, equipped with the rare

sunroof and having been fully restored in early 2014. This model's powertrain is the same as that of the iconic and highly sought after RS version.

A red 1993, 964-series 911 Carrera RS America (a US market model that, to comply with safety regulations, lacked some of the lightweight features of the European-spec Carrera RS) went under the hammer for £64,000, against a £70,000-£80,000 estimate, while the high bid of £215,000 on a 1996 993 Carrera RS 3.8 was below reserve. The other Porsche that found no buyer was a 1962 356B Super 90 Cabriolet by Reutter, the bidding running out at £120,000.

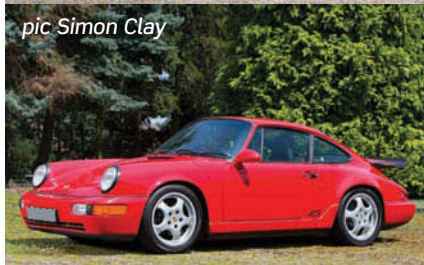
But while some might feel that Battersea reflected observers' predictions over the last year that premium classic car prices would either level off or even fall slightly, the latest data appears to show that the boom continues. According to Historic Automobile Group, which compiles a classic car price index along stock market lines, Porsche values dipped five per cent in April and four per cent in May, but climbed eight and five per cent in June and July. 'Better prices were achieved privately and at auction for rare Porsches from all periods, including 911RS and 959 types,' the London-based firm commented.



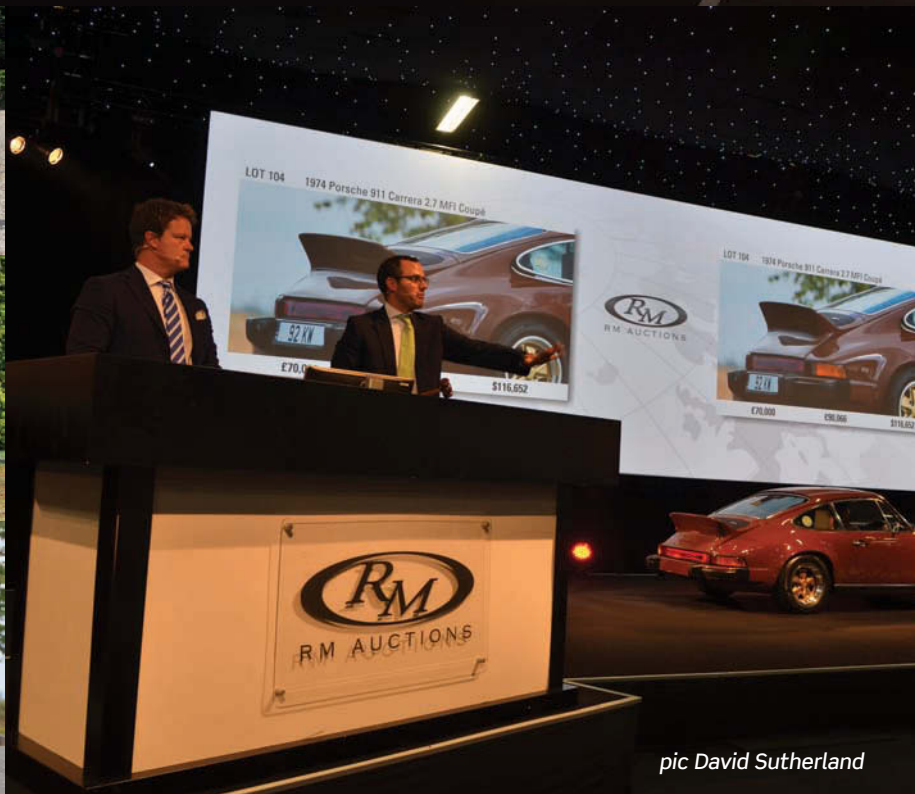
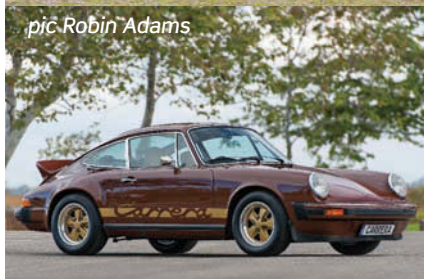
pic Tim Scot



pic Simon Clay



pic Robin Adams



pic David Sutherland







pic David Sutherland



pic David Sutherland



## GRIPPING TEST

After several weeks of testing during the summer using models such as the 356, early 911 G-Series Carrera and 930 Turbo, Porsche engineers have compiled a new list of approved tyres for all its past models. It can be seen on the Porsche Classic website, and the company claims to be the only carmaker offering such an extensive list for older models – 183 tyre recommendations for summer tyres for Porsches between 1949 and 2005, and 129 for winter tyres.

It's an initiative to ensure that its older models can benefit fully from constantly evolving tyre technology, Porsche pointing out that around two thirds of all its cars ever built are still being driven on the road. 'Porsche cannot abandon owners with regards to the right tyre types, because many owners are still lovingly taking care of and driving their Porsche models that reach back into the fifties and sixties,' it says. 'Independent tyre businesses, if faced with a 1963 Porsche 356 and tyre format 185/70 R 15, would for instance probably use those tyre types that are generally available for the remaining VW Beetle population and the various Transporter models.' Porsche also stresses that the benefit of the correct tyres on older models is felt most in the wet.

The tests also highlighted the effect age has on a tyre. After evaluating a 12-year-old tyre on a 1988 930 Turbo, Expert tyre tester Dieter Röscheisen concluded, 'This tyre offers very little traction, particularly when wet, with correspondingly weak braking performance, and is therefore extremely tricky to drive, especially in vehicles without ABS, due to the high blocking tendency of the front wheels.'

The cars used in the tests, at Continental Tyres' Contidrom near Hanover in Germany, were liberated from the Porsche Museum, and the testing procedures included brake testing, aquaplaning and steering movement. The tests are updated every two years. For decades, tyres approved for Porsches have carried an "N" followed by a number on the sidewall – Porsche originally wanted this to be a 'P', but had to bow to international standards of approval.





## SPYDER HAS SUSPENSION ISSUE

Porsche has modified the rear suspension on all 918 Spyders after the discovery of a possible fault. The carmaker says this did not amount to an official recall, because all the cars affected – those built between 7th May and 18th June this year – were rectified before they were delivered to customers. The action was made public following a press release from The National Highway Traffic Safety Administration in the US, which said that five vehicles in the US were potentially affected by the fault.

An estimated 45 of the £650,000-plus hybrid supercar have been



delivered to customers worldwide. The issue was the rear axle's control arms, which could have broken, 'causing difficulty controlling the vehicle,' the NHTSA said in its statement.

Porsche, which noticed

the fault while undertaking 'heavy duty durability testing' at the Nardo test track in Italy, phoned customers warning them not to take their Spyders on a track. The fault can only be potentially embarrassing

for Porsche, not only because it was on the flagship model, but because it came shortly after all 785 991-series GT3s sold were recalled for an engine replacement following incidences of fire.



## PORSCHE IMAGE IN DANGER

Porsche appears to be heading unstoppably towards its target of 200,000 cars per year well ahead of its 2018 timetable, that figure achievable either in 2014 or 2015 – but the question that increasingly needs answered, some

say, is whether the German manufacturer can maintain its exclusive image with these numbers. 'They are now going to squeeze the brand by using the VW toolbox, re-engineering a few bits here and there, rebadging it as a Porsche

and then selling 50,000 to 100,000 units, since they know the Chinese will buy them,' Arndt Ellinghorst, head of research at ISI in London told the US industry publication, *Automotive News*.

'It's a sales driven business and Porsche is

going for volume,' he added. 'The question then becomes, at what point do you lose your premium image? Porsche is already becoming a pretty mainstream product in some markets such as London.' A poll organised by Autoblog reports that 47.6 per cent of those taking part believed that Porsche expanding sales to 200,000 sales per year would 'erode its desirability', while 47 per cent felt it would not, with 5.5 per cent undecided.

The Automotive News article goes on to sound a warning that a rapidly increasing output can also lead to quality issues, linking this to the recent GT3 engine recall and a brake booster check on the Macan (pictured). However, Porsche points to the clutch of quality awards its cars receive each year from the likes of JD Power in the US.

## OUR TAKE

### VOLUME CONTROL

**It doesn't matter how many vehicles, and of what type, Porsche makes, Zuffenhausen's sports cars will always be special, David Sutherland argues**

As Porsche's production soars towards 200,000 per year, some analysts understandably wonder if the German carmaker can hold on to its hard won reputation as the nameplate most people aspire to. One expert reckons the marque's prestige is dwindling already, with the streets of London so crammed with them that the cars no longer seem special.

The "problem" is largely the Cayenne, Macan, Panamera and, in the coming years, possibly a shortened version of the Panamera to compete with the BMW 3-Series. With styling that is not so different to that of rivals' products – 20 years ago you could never have imagined a Porsche and a Mercedes looking anything like each other, but compare the Macan with Mercedes' GLA – their wow factor is much reduced.

In a decade Porsche has achieved incredible success industrially, going from a little over 71,000 cars in 2003 to 162,100 last year, despite undergoing a sudden near bankruptcy and a change of owner in the midst of these years. But the more of a particular car built, the less exclusive it can be, and you can see that even with the 911. This is emphasised by values of any air-cooled 911 rising as fast as those of 996s and after are falling.

Porsche has no choice but to live with this, and no doubt foresaw it when in the mid 1990s it designed both the Boxster and the 996 around one platform, and ramped up production. However, the company will surely never allow its sports cars to become "ordinary", and the one way it can avoid this, regardless of how many are on the roads, is to pull out an engineering lead. So, it might not be rare, but a Porsche is always going to be the best – not a prediction too many will argue with, surely.







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## SUMMER DAZE

'What did you do on your holidays, kids?' will have been asked many times in schools recently as the new term began. And it seems this is also a relevant question for Porsche's class of 2014, including former F1 ace Mark Webber, who pilots the works LMP1-H cars in this year's FIA World Endurance Championship – they all had plenty of activities organised to keep them from becoming bored during the three-month summer break between Le Mans and 6 Hours of Circuit of the Americas in Austin, Texas in mid September.

After Le Mans, Webber swapped his g19 Hybrid for a g18 Spyder, metaphorically donned his chauffeur's cap and ran fellow Porsche brand ambassador and Wimbledon tennis star Maria Sharapova around London, before joining his former F1 employer at its party at the Austrian Grand Prix. Though quite

what Red Bull Racing was celebrating beyond the return of the race to Austria is hard to fathom, seeing as Ricciardo finished eighth and Vettel not at all.

From there he participated in the Goodwood Festival of Speed and then turned up at the British Grand Prix, after which he lived out a schoolkid's dream holiday – a three-week trip to Colorado, including lots of mountain biking. But all play can make a boy bored: 'By August I could hardly wait to get back testing again,' he commented.

LMP1-H team mate Romain Dumas wisely has not placed all his eggs in the Porsche basket – and hence devoted himself to his own rally team, two weeks after Le Mans turning out for the famous Pikes Pike hill climb in Colorado, and winning the 13-mile event in a 600kg prototype (Norma M20 RD Limited).



There was time for a two-week trip to France's Côte d'Azur with his young family, for lots of water sports.

Neel Jani seemed to spend a lot of time driving a six-gear go-kart on a circuit near his home in Switzerland. He did manage to squeeze in a few days' holiday with his wife Lauren on Mallorca in the Mediterranean, though admits that one

reason he went there was to check out the Spanish island's racetrack.

The youngest of the LMP1-H squad, 24-year-old Brendon Hartley, spent time driving classic Porsche racers, notably the 1998 Le Mans winning GT1 g8. There was another short holiday, in the Caribbean, where he took and passed his diving test. Presumably for Caribbean roads only.



## NEWS IN BRIEF

In January to August, Porsche delivered over 120,000 new cars, an increase of 12 per cent over the same period in 2013. The fastest climbing model was the Panamera, up 23 per cent to 16,700. China's consumption of Porsches rose 15 per cent to 28,000 vehicles, but Europe actually grew faster, at 16 per cent to 39,000 cars.

Australia based Carbon Revolution plans to launch what is claimed to be the first aftermarket carbon fibre road wheel to be manufactured on a cost effective basis. The lightweight, one-piece rim will have TÜV approval, says the firm's Brett Gass, and to see it tested on a g11, look up Jay Leno's garage on YouTube.

It is now eight years since Porsche management of the time allegedly indulged in illegal share dealings while trying to buy a controlling interest in Volkswagen Group, but the affair is still far from over. A German court has revived charges of stock market manipulation against former Porsche CEO Wendelin Wiedeking and his chief financial officer Holger Haerter.

Porsche is planning to open a "record store" in London which will allow visitors to see and hear everything about Porsches. Similar to the "Porsche Pop Up" in New York, "The Sound of Porsche: Stories of the Brand" will have three areas: the Sound Lab Experience, Media Stations, and the Design Corners, where visitors can draw what the sound of a Porsche means to them, and upload it to social media.

Our friends at Audi Driver magazine are holding their annual track day at Castle Combe on October 11. If you fancy mixing it up with a bunch of hot Audis, then all are welcome. The guys at Audi Driver magazine are keen to attract other VW Group cars, including Porsches. Above all, perhaps, it's a rare opportunity to do some laps at Castle Combe ([www.audidriverinternational.co.uk](http://www.audidriverinternational.co.uk)).

## CATCHING UP WITH

## RICHARD TUTHILL



**The boss of Tuthill Porsche, which campaigns g11s in classic rallies, and more recently a Tuthill homologated GT3 in the World Rally Championship**

**How old are you and where do you live, and work?**

I'm 39, live in Deddington, Oxfordshire and work in Waddington, near Banbury.

**What was your big break into the motor industry?**

Being the son of my father Francis, which means by default I was straight in the mix.

**Summarise your career**

In 1992 I was the youngest ever driver to take part in a WRC rally, when I drove a VW Beetle. Then followed the British junior championship in 1996 in which we won. I finished second in the British production cup championship, driving a Subaru Impreza, before spending two years in the American rally championship, again in 4WD machinery. I joined Tuthill Porsche in 2003 and am still flat out every day working with Porsches.

**Are you a petrolhead?**

I would actually say no! I love doing what I do and all aspects of the business and driving cars, but I am not a traditional petrolhead.

**What was your first car?**

VW Beetle aged seven, which I rolled in a field, aged eight.

**What was the first Porsche you ever drove?**

A 1965 Porsche g11.

**Which Porsche past or present do you like best?**

Impossible to say, but any 356 or g11 is great.

**What car do you drive daily?**

If I am not driving a Porsche, a Škoda Octavia estate.

**What gets you out of bed in the morning?**

Children, or the Teasmade – whichever comes first.

**What has been the biggest challenge in your working life?**

Transition between father and son – we have managed very successfully, and with good humour, and with good humour, I am pleased to say. Now I look forward to the next generation coming in.





## 1989 PORSCHE 930 TURBO LE - RHD

Metallic Baltic Blue with White Full leather interior - the car has covered a mere 29,100 miles and has full service history.

This model was built to commemorate the final 930 Turbo production and is 1 of only 50 right hand drive cars made.

This stunning 930 Turbo LE is in immaculate condition - a rare opportunity.



2008 PORSCHE 997 TURBO - RHD  
23,000 miles with FSH. - Extensive features including Sport chrono package - 911 (turbo) - a modern classic in the making.



1989 PORSCHE 911 SPEEDSTER - RHD  
Only 9000 miles - the car is in as new condition and drives as if it had just left the factory. A true opportunity for the collector.



1995 PORSCHE 993 CARRERA 2 COUPE - RHD  
Only 38,700 miles, with full service history, a number of upgrades and is in stunning condition throughout.



1989 PORSCHE 930 TURBO G50 - RHD  
Excellent Condition throughout. Many extras and upgrades - great value. 71,700 miles.



1989 PORSCHE 911 3.2 - LHD  
Only 49,350 miles with FSH. Option of air-conditioning. One of the best examples we have come across for some time.



1987 PORSCHE 911 SUPERSPORT CABRIOLET - RHD  
Original factory wide body example comes with full service history. Full black leather with electric soft top. 60,000 miles.



1997 PORSCHE 993 TURBO - RHD  
Only 46,100 miles with full service history. Desirable Metallic Black with Grey full leather interior. In stunning condition.



1988 PORSCHE 930 TARGA TURBO - RHD  
One owner car with only 10,200 miles - Solid Guards Red with Beige Full leather interior. Absolutely stunning condition.



1962 PORSCHE 356B SUPER T6 CABRIOLET - LHD  
Desirable 'Twin Grill' model with period chrome luggage rack. Exquisite example in Jet black with Tan Leather interior.

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## RON SMITH 1931-2014

### Paul Davies charts the important contribution an early member made to Porsche Club Great Britain

With the death in August of Ron Smith, Porsche Club Great Britain has lost the last of its "founding fathers". One of the original seven Porsche owners who met at the Grand Hotel, Birmingham, to establish the club, Ron helped organise the first ever national meeting, was a long-serving committee member, and a loyal supporter.

Ron, a successful architect, owned a fair cross-section of European motoring history through the years in addition to seven Porsches. He was made an Honorary Member of PCGB

for his part in setting up the club, and at one time held the membership number 005.

When I last interviewed him, in 2007, he paid tribute to the enjoyment he gained from being a member, and the large part it had played in his motoring life. 'My first sight of a Porsche 356 was in July 1959 when I saw a pair parked under the trees in the paddock at Aintree race circuit,' he recalled. 'It was love at first sight.'

He said his interest in the marque started, in part, from reading stories by 'Jenks', Denis Jenkinson, who ran a 356 whilst reporting on European race meetings for *Motor Sport* magazine. Ron bought his first 356A in 1961, and in August of that year attended the Grand Tour meeting.

The original 356 was replaced

by a 'B', previously the property of club member (and well-known hillclimber) Betty Haig, while his third Porsche was also a 356B – a later T6 model – that had been owned by founder chairman Arthur Sheffield. Each of these first three cars cost the same £1050 to buy!

His fourth Porsche was also a 356, this time a C model, which, he said, had 'rather a lot of filler, but went very well'. Two 911s followed, before Ron acquired his last Porsche, a 928 S2. He also owned an Alfa Romeo-engined replica 550 Spyder which his son, Adam, sprinted. Among mourners at Ron's funeral was his 'favourite' 356, the car originally owned by Arthur Sheffield and now – after 40 years of searching – the property of Arthur's nephew, John Arnold.

## EVENTS

### THE PORSCHE MONTH AHEAD

#### SHOWS AND EVENTS

October 5

##### Goodwood Breakfast Club

Goodwood Circuit, West Sussex  
Great excuse for an early morning drive.  
Theme is 'Hot hatch Sunday.'  
[www.goodwood.com](http://www.goodwood.com)

October 11

##### Audi Driver magazine track day

Castle Combe, Wiltshire  
Fancy mixing it up with some hot Audis? Our friends at *Audi Driver* magazine are having a track day at Castle Combe and all are welcome. Well, we're part of the same happy family now!  
[www.audidriverinternational.co.uk](http://www.audidriverinternational.co.uk)

October 12

##### Shelsley Walsh Breakfast Club

Shelsley Walsh Hillclimb, Worcestershire  
OK, so maybe taking a leaf out of Goodwood's book, but frankly Shelsley Walsh is a stunning venue for a Sunday drive as the world's oldest running motorsport venue. Walk the hill, have a great breakfast. Hell, think we'll go too!  
[www.shelsley-walsh.co.uk](http://www.shelsley-walsh.co.uk)

October 26

##### Brooklands Autumn Classic Breakfast

Brooklands, Surrey  
Blimey, we've really got a theme going here, and why not? Get up early, enjoy a great drive, have some breakfast. Brooklands is dripping history and stuff to see, too  
[www.brooklandsmuseum.com](http://www.brooklandsmuseum.com)

November 14-16

##### Lancaster Insurance Classic Motor Show

NEC, Birmingham  
The biggest classic show of the year and all under the roof of the National Exhibition Centre. Club displays, trade stands and more  
[www.necclassicismotorshow.com](http://www.necclassicismotorshow.com)

#### Sport

October 4

##### Porsche Club Speed Championship

Round 12  
Prescott, Gloucestershire  
[www.porscheclubmotorsport.co.uk](http://www.porscheclubmotorsport.co.uk)

October 11

##### Porsche Supercup/Russian GP

Rounds 9-10  
Sochi, Russia  
[www.porsche.com](http://www.porsche.com)

October 11-12

##### Porsche Carrera Cup/BTCC

Rounds 19/20  
Brands Hatch, Kent  
[www.porsche.com](http://www.porsche.com)

October 17

##### MSA British Historic Rally Championship

Round 8  
Rallye Sunseeker, Poole  
[www.hrcr.co.uk](http://www.hrcr.co.uk)

October 18-19

##### BRSCC Porsche Championship

Rounds 15/17/17  
Donington Park, Derbyshire  
[www.porscherracingdrivers.co.uk](http://www.porscherracingdrivers.co.uk)

### New face for Porsche watches

Having recently bade farewell to Eterna, the Swiss watchmaker that has supplied its chronographs for over four decades, Porsche Design has set up a new company to produce them. Porsche Design Timepieces AG will operate from the Jurasuedfuß region of Switzerland, with Porsche Design in Ludwigsburg, Germany, marketing the watches, as before.

A highly regarded watch expert, Patrick Kury, who developed the Porsche Indicator, said to be the most complex watch mechanism in the world, has been hired as CEO, and Porsche wants to revive the glory days of its early watches – the first of which was the Chronograph I (pictured) in 1972 – which are now collectable. The first of the new generation of watches are due imminently.

'As part of the new strategic realignment, we are consciously going back to the roots of Porsche Design timepieces,' Kury says. 'These revolutionised the industry in the 1970s and 1980s in terms of design and the materials used, as they included the world's first black watch as well as the world's first titanium watch.'





## BJÖRN WALDEGÅRD – 1943-2014

**Martin Sharp recalls with affection the former Porsche rally ace, who died in August, aged 70.**

Rally Barbados, 2008. A sole 911 sat in line awaiting its scrutineering slot. It was just great to have a Caribbean chat with its driver, the first ever World Rally Champion (in 1979). Over a cold beer, of course.

I knew Björn for years, we often met for cold beers and chats on events: Paris-Dakars, Safari Rallies and many other WRC events. The time we met before Barbados was on the East African Safari Classic the year before, when he won in a Mk 1 Escort, with his son Matthias co-driving.

Anybody who knew Björn was privileged to know a genuine, honest, calm, thorough gentleman with a subtle Swedish sense of humour – and a lasting ability to drive cars faster than most on all surfaces, applied to many competition Porsches over the years, predominantly at the beginning and toward the end of his five-decade

driving career.

During a pre-Rally Barbados test he told me, typically modestly: 'I didn't feel the oversteer in a 911 in my younger days – when you have such a quick car you are beating everybody... and of course when you get the helmet on you try!'

He was always a thoughtful man. On that 2007 Safari Classic, while other competitors sat down to sumptuous Safari Lodge dinners, Björn would be out in the service park, he and Matthias attending to the multitude of maintenance requirements needed to keep the Escort on the winning pace. It was only when those requirements had been fulfilled that the man would allow a sorely needed beer down his throat.

He was 65 when he drove Steve Perez's 911 in that Barbados rally; he was 25 when he drove official Porsche works 911s to victory in the 1969 Monte Carlo and Swedish Rallies. In 1970 Porsche entrusted Waldegård with most of the testing of the works



*Björn Waldegård in flying form en route to winning the 2011 Safari Classic Rally in a Tuthill prepped 911. It was his third Safari win and an event that he was synonymous with*

914/6 rally car, but he was convinced the 911's superior direction change response and traction made it a better rally car.

But Porsche didn't listen. Before the three works 914s started the 1971 Monte, Waldegård insisted that the 911 would have been a better choice and could likely have won again. Alpines took the top two places, with Björn's 914/6 joint third – with an Alpine.

Moving to drive the Stratos for the works Lancia team in 1975,

Björn won the Swedish and Sanremo Rallies, and was third on the Safari that year. He and the Stratos were second overall on the 1976 Monte and the combination scored a stunning first overall in Sanremo that year. Waldegård's Stratos went to the final stage of that Italian rally, Colle Langan, with a four-second overall lead advantage over team mate, Italian idol Sandro Munari.

After Munari had started that stage, Lancia team boss Cesare Fiorio ordered Waldegård to be delayed four seconds, supposedly to give his drivers an equal chance, but actually to help Munari, the popular Italian stallion. Fired-up, Björn blasted that stage to beat Munari by that very four-second margin, and win the rally.

A second on the RAC Rally that year in a works Ford Escort RS1800 came next, beginning the halcyon

Mikkola/Waldegård Escort days. Then, in 1991, came the legendary Toyota Team Europe (TTE) years, where he saw out his professional career.

Waldegård won the Safari Rally four times and the Ivory Coast Rally thrice. In testing, preparing for and competing on the Safari, Björn calculated that he spent a total of three years of his life in Kenya. He loved Kenya and Kenyans loved him, christening him 'Simba' – The Lion of Safari. He first drove the Safari in 1971, in a 911, but crashed. Returning in 1973, again in a Porsche, he again retired, but this time due to engine failure. His first Safari win came with Ford in 1977.

He won the Safari again in 1984 in a Toyota Celica Twin Cam Turbo, repeating this in 1986. Then Björn, at 46, became the oldest driver ever to win a World Championship rally when he won the Safari, in a Celica GT-Four, in 1990.

Fittingly, in 2011 Björn won his final Safari – the Safari Classic. In a Tuthill Porsche 911. As Richard Tuthill so correctly recorded: 'One of the most gifted men ever to get behind the wheel of a rally car.'

A superstar rallyman to the end.



*Waldegård (left) with long time rival and friend, Stig Blomqvist, on the Safari Rally in 2013. The Kenyans christened Waldegård 'Simba' - The Lion of Safari*



# NORTHERN SOUL

**FUN IN THE SUN AT THE YORKSHIRE FESTIVAL OF PORSCHE,  
WHICH JUST KEEPS GETTING BETTER AND BETTER**

It would seem the Yorkshire Festival of Porsche has come a long way since its humble beginnings 19 years ago. Then it was just a handful of folk and their cars from Strasse and Specialist Cars of Malton, who were also much smaller (not to mention somewhat younger, too). Times change, events and businesses grow.

So fast forward, and

over 400 cars attended this year's event at Lotherton Hall, for a day of catching up with Porsche friends old and new. Displays there were many, from tractors to the motor sport activities of Strasse, including Richard Ellis's 993, Any Toon's 968, the Strasse racing Cayman and Tim Mason's historic rally 911. Porsches aside, Strasse head honcho, Dave Forrest, couldn't resist displaying his rally

Mk 2 Escort

There were plenty of cars to buy too, with Porsches for sale from Strasse and Specialist Cars. Oh, and mustn't forget the master class in detailing from Glyn O'Donnell or the home made ice creams, delicious coffees and pastries, fab hog roast and the Strasse bar, with ice cold beer and refreshing Pimm's, all of which was topped off

with live music and sunshine!

The concours cars gleamed and shone, with front-engined Porsches doing particularly well. The Ian Parkin Memorial Trophy, awarded by Specialist Cars' John Hawkins, was won by Tony Booth and his 944 Turbo S. The Mark Pendleton Trophy, awarded in memory of late Strasse partner, Mark Pendleton, was awarded by Strasse's

Sam Forrest. His choice? The stunning 924 Carrera GTS of Chris Whittle.

Finally, over £4500 was raised for Candlelighters Children's Cancer Charity and we're pleased to report that Dave Forrest and John Hawkins both dipped into their wallets and pulled out a bag of sand each – as they rarely say in Yorkshire.

A top show. We're looking forward to next year's event already! **PW**



Over 400 Porsches turned out at Lotherton Park. A great day was had by all. Below left: Alfie represented the Candlelighters Children's Cancer Charity, for which over £4500 was raised. Below: Let them eat cup cakes!





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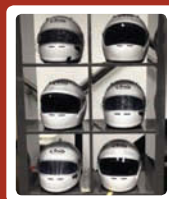
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# BUYING POWER

THIS MONTH'S MUST-HAVES AND PORSCHE ACCESSORIES

## Damage limitation

There is no engine under the front bonnet of a Boxster, Cayman or 911, so all the major mechanicals escape the punishment of stones and general road debris flung up at the nose of the car. However it is here that vulnerable cooling and air conditioning radiators are sited, and these can easily be damaged. For example, collected leaves and dirt, once dried out, can block parts of a radiator, causing a hot spot and possible engine cooling problems.

It was this issue that prompted Porsche specialist Parr to come up with a range of grilles to provide increased protection. The multi-piece set comes in two forms: that which fits on the outside of the air intakes (as seen on the yellow 911 GT3 here), and which is a reasonably straightforward DIY install, coming complete with wire locks and so forth; and one which fits on the inside of the bumper (as on the green 911), obviously necessitating bumper removal but which is of a neater appearance.

The grille kits, finished in silver or black, come from a number of sources including Cargraphic in Germany, some being fabricated by Parr in its West Sussex premises. Prices start from around £120, the internally fixed one having a four-hour fitting time.

For more information on the grille kits call Parr on 01293 537911 or go to [www.parr-uk.co.uk](http://www.parr-uk.co.uk)



## Spring time

Bilstein, the long established suspension specialist, and an original equipment supplier to Porsche, has introduced a shock absorber for all 997-series 911s apart from the Turbo. It is very similar in specification to the one it originally made for factory fitment on the car, but features the very latest gas pressure technology (an agreement with Porsche would prevent Bilstein offering exactly the same damper, which it still makes for Official Porsche Centre parts departments).

The Bilstein B4 damper package is aimed at owners who want to restore handling to "day one" levels, and integrates with the Porsche's PASM active suspension, although as a development over the original, it offers improved squat and dive properties, the maker claims. The hand finished dampers, made in Bilstein's factory in Germany, are also said to have a greater service life than the original.

The front and rears retail at £391 each including VAT, but not fitting. This appears to be more expensive than the Porsche price (as a guide, £347 front and £321 rear), so we assume the extra is accounted for by the uprated specification. For further details, visit [www.bilstein.de](http://www.bilstein.de)

## Wide ranging rim

Cargraphic has released a new forged alloy rim with a comprehensive fitment range. It is compatible with all Boxsters and Caymans, 911s from the 996 on (and any 911 previous to that which can take a 19-inch diameter rim), Panameras, Cayennes and Macans.

The three-piece, German-made Performance Wheel comes in 19- and 20-inch diameter, which have a flat outer rim, and in 21- and 22-inch which use a stepped rim. They can be either centre locking or use the normal Porsche five-bolt fixings.

Cargraphic, based in Landau, 70 miles north west of Stuttgart, had not yet announced a price as this was being written, but to give some reference, the firm's Racing Wheel, on which this is based, is around £1150 per rim.

For more details on Cargraphic wheels go to [www.cargraphic.de](http://www.cargraphic.de) or contact the UK importer, Crawley-based Parr, on 01293 537911, or at [www.parr-uk.co.uk](http://www.parr-uk.co.uk)





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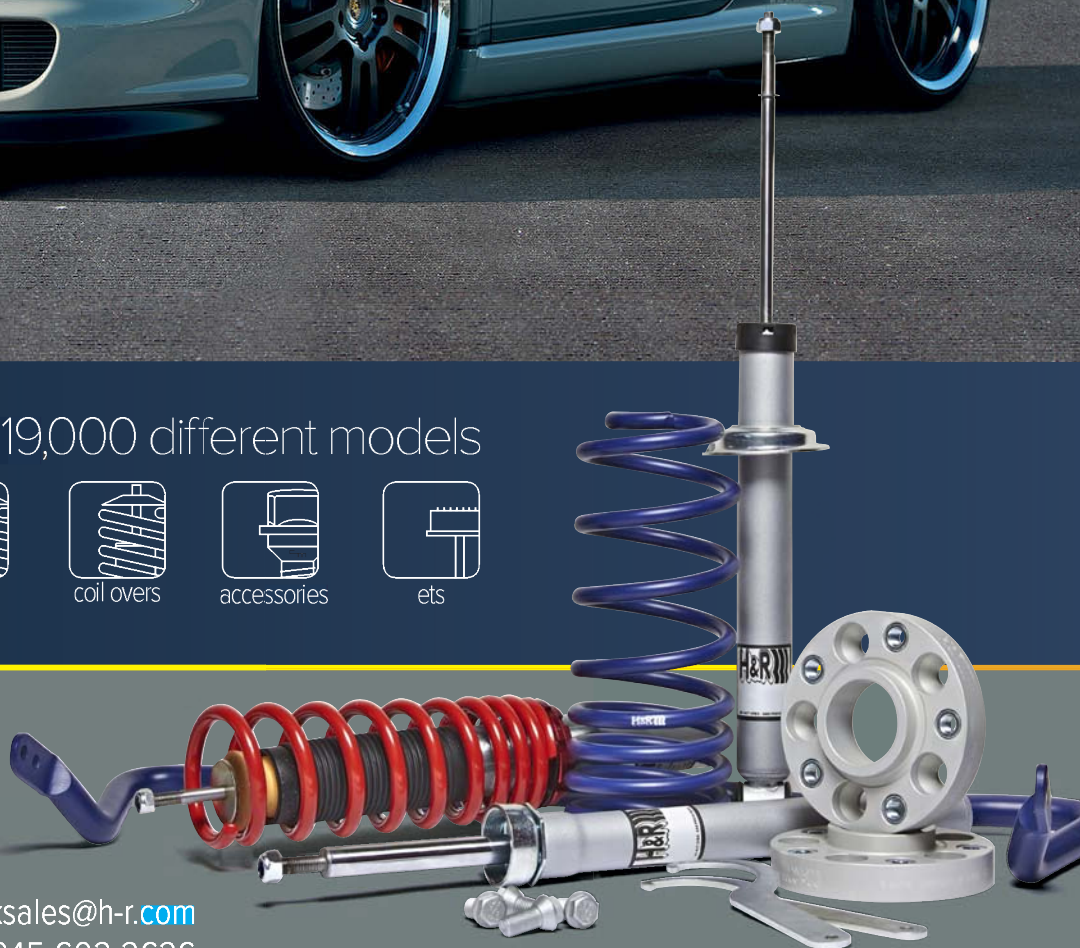


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## Bit of a wrench

The wheel wrenches that manufacturers including Porsche supply with their cars look insubstantial, and certainly not up to the job of loosening the wheel nuts if the local tyre fitter has previously torqued them up with a vengeance (recommended torque on a 911 is 130Nm, or 96lb ft). You might think this is the carmaker being mean, or perhaps if in a more generous frame of mind, that they are kept small to save weight. However there is another reason – if owners were supplied with something that afforded massive purchase on a nut to loosen it, the temptation would be to over-tighten it when the wheel went back on, possibly damaging something.

That health warning aired, with owners increasingly changing over sets of wheels, be it for track day use, or fitting winter tyres, it makes sense to have a decent wrench, and this one from the extensive Laser Tools range, the Power Bar with ½-inch drive and priced at £22, is a good compromise. It is substantial enough to loosen really tight nuts but doesn't give you too much tightening power, and, measuring 430mm in length, is still sufficiently compact to carry in the car.

You need the right socket, and Laser also offers a wheel nut socket range. Super strong and with thin walls, they are designed specifically for alloy wheels, having a plastic shroud to protect the rim. Typically priced at £21 (you need 19mm for a Porsche), they are not cheap, but are claimed to last five times as long as normal sockets. To see the firm's range of wrenches, visit [www.lasertools.co.uk](http://www.lasertools.co.uk)



## Taking new guidance

In the last issue we reviewed Garmin's recently launched nüvi 65/66 satellite navigator, with its six-inch screen and clever features, and concluded that despite the availability of route guidance on smartphones, there might be life in the stand alone device yet. At the same time, the firm, a leader in GPS products, introduced the Garmin HUD+ that projects the information onto the windscreen, and which also draws the smartphone into the equation.

The user downloads the HUD (head up display) app to a phone, then inputs the destination to it. Route details are then seen and heard on the phone, while the Garmin unit – which with its sticky base sits securely on top of the dash – reflects directions, speed, speed limit and so forth on the screen. A plastic reflector is included, which is attached to the screen for improved definition. The phone is integrated into the operation – for example, if you're playing music into the car's audio, the volume dips when an instruction is voiced.

So is it better than the traditional navigator? We think, and many on-line reviewers agree, that this is clever technology that doesn't offer any clear cut advantage. Utilising the phone entails two



rather than one power lead, and without the reflector attached (which is a semi-permanent, though not especially pretty, fixture) the clarity of the information on the windscreen leaves a lot to be desired. But it might appeal to some, and typically costs around £100, about the same as the nüvi 65. More information is available at [www.garmin.com](http://www.garmin.com)



## The tyre depot

**Accurate tyre balancing makes your Porsche smoother – and cheaper to run.**

Incorrect tyre balancing not only causes vibration in the steering wheel and dashboard, but can cost you money! It also brings on premature wear on tyres and also on suspension parts.

If you find that your steering “wobbles” above a certain speed, this may be a sign that your wheels are not balanced properly. This will not only leave your Porsche uncomfortable to drive, but can affect its performance. Wheel balancing is the process of equalising the weight of the combined tyre and wheel assembly, so that it spins smoothly at high speed. Balancing involves putting the wheel and tyre on a “balancer”, which centres the wheel and spins it to determine where the weights should go.

In reality, wheels and tyres are never exactly the same weight all around. The wheel's valve stem hole subtracts a small amount of mass from that side of the wheel. Tyres will also have slight weight imbalances, whether from a joining point of the beads, or a slight deviation from perfectly round, because that kind of perfection is impossible to achieve.

At high speeds, a tiny imbalance in weight can easily become a large imbalance in centrifugal force. This usually translates into a vibration in the car as well as some very irregular and damaging wear on the tyres. Bear in mind that balancing cannot eliminate vibrations from bent rims or irregularly worn tyres.

The latest wheel balancing machines have an increased ability to compensate weight. They allow for more variation on the placement of weights, meaning they can be hidden behind the spokes of the wheels on your Porsche, giving it a cleaner appearance. Balance weights themselves are now also available in a range of colours and styles so if you have a 911 with black wheels you can have black balance weights coloured to match.





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If you find that your steering “wobbles” above a certain speed, this may be a sign that your wheels are not balanced properly. This will not only leave your Porsche uncomfortable to drive, but can affect its performance. Wheel balancing is the process of equalising the weight of the combined tyre and wheel assembly, so that it spins smoothly at high speed. Balancing involves putting the wheel and tyre on a “balancer”, which centres the wheel and spins it to determine where the weights should go.

In reality, wheels and tyres are never exactly the same weight all around. The wheel's valve stem hole subtracts a small amount of mass from that side of the wheel. Tyres will also have slight weight imbalances, whether from a joining point of the beads, or a slight deviation from perfectly round, because that kind of perfection is impossible to achieve.

At high speeds, a tiny imbalance in weight can easily become a large imbalance in centrifugal force. This usually translates into a vibration in the car as well as some very irregular and damaging wear on the tyres. Bear in mind that balancing cannot eliminate vibrations from bent rims or irregularly worn tyres.

The latest wheel balancing machines have an increased ability to compensate weight. They allow for more variation on the placement of weights, meaning they can be hidden behind the spokes of the wheels on your Porsche, giving it a cleaner appearance. Balance weights themselves are now also available in a range of colours and styles so if you have a 911 with black wheels you can have black balance weights coloured to match.





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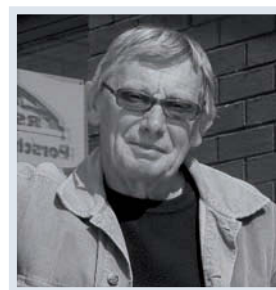


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# USUAL SUSPECTS

OUR ROVING REPORTER JOINS A HORDE OF PORSCHE-OWNING MOTORING HACKS FOR A BARBECUE AT SILVERSTONE, APOLOGISES TO A READER, COMMENTS ON EVER-RISING VALUES, AND GIVES US HIS OWN CANDIDATE FOR ROOM 101



**PAUL DAVIES**  
Roving Reporter

## SIZZLING SILVERSTONE

If you think about it, especially within the understandably narrow confines of the subject matter of this magazine, it's a case of stating the bleedin' obvious if I told you that three out of four motoring writers prefer Porsche. At least, it seemed like that one evening at Silverstone recently.

The get-together was a masterstroke for Mike Orford, press chief of Porsche Cars GB, who reasoned that quite a few UK muttering rotters drove Porsches, and why not try and get them all together for a chin-wag. The magnificent Porsche Experience facility at Silverstone could be the setting, and what better than a balmy August evening? Unfortunately the event seemed to coincide with the British summer going into one of its many down-turns but

– apart from that – it was a great idea.

Greater, I suspect, than Mike at first thought. He got digging into his press list, and then people started to join in with things like 'do you know so-and-so has a 924 at the back of his garage and would welcome a chance to give it a blast', and before he knew it he had 38 Porsche owning journo's to invite, some lucky sods with more than one example of the marque on their books. Perhaps my three out of four is an exaggeration, but it seemed like it when 25 owner writers turned up at Silverstone to be welcomed by Mike and colleague Rob Punshon.

Editor Bennett had of course sent out the message to us writers that he was imposing a three-line whip on the proceedings, and I'm pleased to say that

between *g11 & Porsche World* and *Classic Porsche* we did CHPublications proud. Sad to say, several other Porsche publications – which you, dear reader, wouldn't buy of course – were absent, which either means the staff were away playing sandcastles somewhere, or simply didn't have appropriate cars to attend.

Not that I'm counting of course (just like not checking the Australia versus England medal tally at the European Games) but I think it's fair to say the CHP boys really do practice what they preach!

In fact Bennett couldn't bring his 944 to the party – it was at super-chippers Augment Automotive for further wizardry at the time – but Yours Truly was present with the faithful Carrera 3.2 Targa, as was the sartorially

A real bunch of *Usual Suspects* enjoying the *Porsche Experience*. From the left: Johnny Tipler, Delwyn Mallett, Keith Seume, Steve Bennett, Antony Fraser

sublime Johnny Tipler (He appeared to be wearing a pair of curtains. Ed) with his wife's Boxster, the Peppermint Pig 964 currently leaking lubricant. Consultant editor Chris Horton came in his recently acquired 924S, and *Classic Porsche* contributor Delwyn Mallett took the prize for the, in my mind, most desirable machine of the evening with his 356 Speedster. Keith Seume's six-pot 912 project is still 'work in progress', so the *Classic Porsche* editor blagged a very nice 911T from his West Country neighbour Roger Bray.

But it was the Fraser family who stole the



show and got an 'A' for effort as well. *g11&PW* Dep Ed Brett brought along his Boxster, while photographer Antony had both his 996 GT3 and wife Emma's Porsche tractor in attendance, transport to Silverstone of this pair involving complicated logistics



Two of my favourites at Silverstone. Delwyn's Speedster along with Robert Coucher's 911 2.4 Targa, plus owner



Apparently this is not the first time Chris Horton has driven a Porsche tractor, and I don't mean a 924!



Here they are: The usual suspects, g11 & Porsche World's elite squad of journalists and Porscheophiles. They've always got plenty to say so we've given them a couple of pages each month to chunter on



KEITH SEUME



CHRIS HORTON



JOHNNY TIPLER



STEVE BENNETT



BRETT FRASER

## DOWN THE CHUTE

You may have seen the UK television programme where 'celebrities' nominate their pet hates to be sent down a chute to the depths of Room 101, presumably to be never seen again. Here's my candidate – concours d'elegance.

Now to be fair, I'm more agin the way many miss-spell the French language and call it 'concourse', which, as every schoolboy knows, is an area where people assemble. At a railway station for example. Concours, as we'll abbreviate it, in automobile terms, is an exhibition of the best. Only people get carried away.

I don't object to them parking their Porsche in a field so that others can come along and admire their pride and joy, and perhaps chat with the owner on what they've done to it, or how it drives. What annoys me is the way showing the car – or showing off may be a better description – and how pretty-perfect it is takes precedence over all else. People with beards and clip boards come along, stand and tut-tut about the lack of polish on the under-tray, or that not all the screw slots are in line, whilst owners wait nervously to see if they've gained half a point more than the person next door. Bet they're all bitchy about each other behind backs as well.

Concours cars are often trailered to events, and I've seen owners touching up stone chips and 'planing' the resultant paint blob with a little tool before the beards and clip boards arrive. Tool kits are as important as the engine itself. The extreme are the exclusive shows – usually sponsored by some luxury brand – held at 'prestige' locations, world-wide. It's no more than a mechanical beauty pageant.

Not for me. Cars, especially Porsches, have one function in life – to be driven. I like a good looking car as much as the next man, particularly a spot-on restoration. But the real owner experience is when you get behind the wheel and give it some welly; 356, g11 RS, Boxster or Cayman, they're all driver's cars and deserve to be treated so.

Which is why I'm in favour of the 'oily rag' car promoted by *The Automobile*. This publication deals with pre-'60 cars, so there's very little Porsche content, but they do like an historic that runs well, is not over-restored, and proudly shows patina or, if you like, good old wear.

So, I'm pulling the lever now. Concours – it's Room 101 for you!

## DEAR JOHN, HOW I HATE TO WRITE

This is just for reader John Pearson, who so rightly picked up the error in my last Usual Suspects offering. The Vulcan bomber does, of course, have fly-by-wire controls, not levers and cables like the Lancaster. Sorry, don't know where I got that idea from.

PS: Saw the Vulcan low over Cambridgeshire last Sunday. Also heard but did not see the two Lancs currently doing the rounds as they flew over Old Warden airfield – eight Merlin engines, awesome!

## GOING UP (AND DOWN?)

Take a browse through the classified adverts for cars for sale in both this mag and our classic sister, and you can't fail to notice the way that asking prices for both the g11SC and the Carrera 3.2 seem to be heading northwards. Which looks like good news for current owners of these models, but means that two of the last of the 'real' g11s may soon slip off the average person's affordable list.

I put it down to two things. The relentless climb of Carrera 2.7 RS prices, dragging overall values of pre-impact bumper g11s upwards, resulting in a knock-on effect for pre-water-cooled cars, and that – despite the fact they are good drives – most modern, that is to say post '96, Porsches are depreciating like (dare I say) ordinary cars. This latter trend is causing people who want to buy into the Porsche legend to look at investment potential as well as the fun factor.

The 993 already has a special place as the last 'production' air-cooled g11, so it's the SC and Carrera 3.2 that are now getting the attention. People are even learning to love the (much under-rated) 964.

A letter writer to *Classic Porsche* recently suggested that values would drop as surely as they had risen, because it was currently 'cool' to spend a fortune on a Carrera RS or the like, and ultimately prices would plummet as the craze died out. Just like Barbie dolls or stamp collecting, he said. Rubbish, I reckon. As more and more modern cars become soulless, demand for cars with character will increase. Which would you buy, a (depreciating) hybrid Toyota Prius or a (value rising) g11SC? Currently they're the same price.

OK some prices are too high and we'll reach a point where even the 'coolest' collectors balk at the top-end tags, but I don't see any nose dive in values, perhaps just a gentle easing for cars made in any numbers. I've just written about a 1961 RS61 (14 made) that went for \$2.75 million at auction earlier this year.

My message? Buy a g11SC or Carrera 3.2 now, it'll never be cheaper, and you'll love every minute! Here's a fine example of an appreciating Porsche. Note appropriate street name



between Suffolk and Sussex.

And the best of the rest? From the car park display, it's obvious that many motoring writers reckon the Boxster and Cayman are good value as daily drivers, but amongst my favourites – apart from a certain red Targa of course – must have been the 993 coupe of former *Porsche Post* editor, Stephen Mummery, and the g11 2.4 Targa of *Octane* correspondent Robert Coucher. Both top models in Porsche's rich heritage list.

Despite the chill wind whistling down Hangar Straight it was a great affair, and proof indeed that when a large number of the guys who get the opportunity to drive almost any car you can mention have to dip into their own pockets they turn to Porsche. Same again next year, Mike?





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# LETTERS

**GOT SOMETHING TO SAY? NEED TO EXPRESS AN OPINION ON THE PORSCHE WORLD? WELL, HERE'S YOUR CHANCE...**



## **McLAREN BEATER?**

You were kind enough to publish my letter about trying a Carrera 4S but coming away preferring to stick to my Cayman (g11 & *Porsche World*, July 2014, *Letters*) and I think it would be right to say a number of your colleagues agree that the Cayman is potentially the better 'sports' car.

It was very interesting, then, to read Steve Bennett's article in the current edition about SVP's Special Cayman. (Must get down there and have a look, as they are literally just down the road from me.) However, as complimentary as he was, I don't think Mr Bennett's gone far enough.

Without boring you with the details of how and why, I was privileged recently to take a test drive in a McLaren 650S. (Well, you're not going to turn that down are you?)

Quite honestly I was anticipating something like a mad go-kart on steroids, but was very pleasantly surprised and impressed. The 650S is very civilised at normal road speeds, with comfortable seating for two and all the comforts you

would expect from a premium brand: satnav, reversing camera, comfy seats, but with the added bonus of being able to switch the power and suspension independently between Normal, Sport and Track.

In fact the more I drove it and considered its layout – luggage in front, strict two-seater, engine in the middle, tremendous grip and road holding – the more I was struck by its similarity to another car: my Cayman. Except, of course, the McLaren had more than twice the power from its V8 turbo, but only 48 per cent more than SVP's Cayman.

So, then, here is the open letter to Porsche: give the Cayman the power it deserves and you won't just have a g11 beater but also a car capable of holding its own in the company of the best of the supercars (not that the g11 Turbo isn't a supercar, of course).

And at probably around just half the price of a McLaren, it would surely be a best seller – wouldn't it?

**John Carter, via E-mail**

**Keith Seume replies: Not quite**

**sure the Cayman has the credentials to match the McLaren, but it does deserve more power...**

## **DISAPPOINTMENT...**

The 2014 Le Mans 24-hour event was a huge disappointment for Porsche fans like myself, surely the worst result in decades.

Look at LMP1, with both cars failing to finish, the legendary reliability now questioned. GT (Pro and Am), no class win or even second place.

After looking at the class limits, I was shocked to see the unlimited engine capacity for LMP1, and 4000cc forced induction/5000cc naturally aspirated for GT.

Why use only 2000cc for the LMP1, and why a V4? A boxer flat-six is what Porsche is mostly known for, so why not use a 956 turbo motor as a base for the new project, or even a flat-eight or 12?

**Right: Christo Stander is disappointed by Porsche's efforts at Le Mans this year, especially in LMP1...**

## **LONDON RULES**

I've just put down the latest issue of your excellent magazine after reading the *Band of brothers* story for the third time. .

I have to admit that until now I had always disregarded the g64 on the grounds of its styling, feeling it looked a little too much like a cheap mid-year g11 that had been fitted with a body kit in an effort to 'modernise' it.

However, thanks to the guys (and girls, or so I gather from their Facebook page) in the L90 group, I can now look at the g64 in a different light.

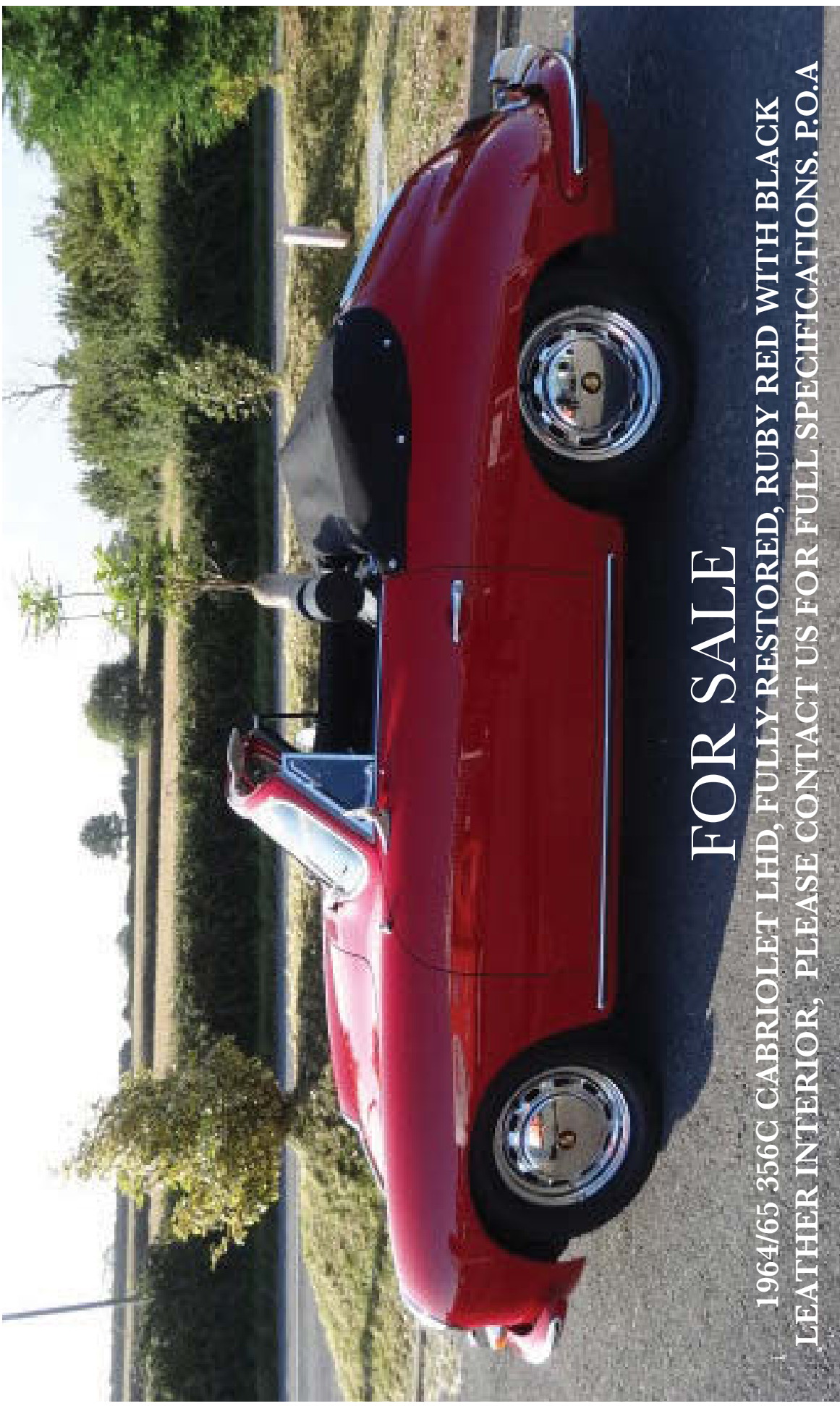
I was struck most by the red car with gold BBS wheels – it is so simple and perfectly 'stanced' that I am now having serious thoughts about chopping in my Carrera 3.2 for a g64 instead of the g93 which I had set my heart on.

The other thing that is starting to make me change my mind is the way prices are doing something of an about-turn: a while ago, the g93 was in the ascendancy, with prices heading steadily skyward. Now it looks like the g64 is the one to watch.

Perhaps I had better stop thinking and get buying before it's too late.

**Robert Parsons, via E-mail**





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# PRIME PORKERS

Since Juliette 'Jules' Easey commandeered her husband's 997 Turbo S Cabriolet, she hasn't looked back, save perhaps for the odd drive in the other Porsche in the family, a Carrera 3.2 Supersport

Words and photography: Brett Fraser

**T**here's a delicious irony to the fact that a family that has made its fortune in the pig trade should have a couple of prime Porkers sitting in the farmyard. And rare breeds at that – a 1989 911 Carrera Supersport

Cabriolet, of which just 45 right-hookers were produced, and a 997 Turbo S Cabriolet from a 2010 litter, of which a mere 117 were sold in the UK.

We're here today to see the latter, owned by Juliette "Jules" Easey, and it comes as a bit of surprise to see it in the company of the Supersport. With disarming modesty, Jules is in two minds as to whether she should have gotten the older 911 out of the garage – 'I wasn't really sure if it would be of any interest to you, and I can put it away again if you don't want it in the pictures.' Actually, Jules, we're quite excited to see it on the driveway, and are more than happy for you to leave it where it is...

The Supersport belongs to Jules' husband, Malcolm, whose agricultural company, Easey Pigs, is well known throughout East Anglia and beyond. The drop-top Carrera appears in spectacular condition and when we comment on that fact, Jules explains that the car has only done 17,900 miles. And then when we opine that Malcolm did well to find a car in such brilliant condition and with so few miles, Jules puts us straight: 'Actually Malcolm has had the Supersport since new! He's always had a special fondness for Porsches despite not ever owning very many of them, and the Supersport really only gets used on high days and holidays, hence the low mileage. He's utterly fastidious in its care

though, and whatever needs doing gets done.'

As you might expect, the Supersport's bodywork is flawless and the interior looks like new. Jules can't remember if the black-spoked BBS alloys were ordered new with the car or whether they were an optional afterthought, but they give the Supersport an "of the era" appearance and set it apart from all its Fuchs-shod contemporaries.

As it's obviously a treasured possession, does Jules ever get to drive the Supersport? 'I drove it only last week,' she says. 'I am absolutely the world's worst passenger – just ask Malcolm – so I tend to drive everywhere as it keeps the peace. Besides which, Malcolm is always on the phone doing business. Compared with my Turbo S the Supersport is a completely different kettle of fish. Obviously it contains far less technology, yet it's superbly trustworthy: you always know where you're going with it.'

Jules is clearly a keen driver and while her Turbo S Cab is a real gleamer, the paint around the inner lips of the wheel-arches is chipped and a few little bits of under-body trim have fallen victim to hard road miles. And then there's the fact that with a fairly meagre 11,000 miles on the odometer, Jules' car is on its second set of tyres.

'I really love speed,' she confesses, 'and I use the Turbo whenever I can. It's not quite an everyday car, though, because I have a dog and as much as I adore him, he's not going in the Porsche! I have a Smart for dog carrying duties, and while its semi-automatic



*The 3.2 Supersport Cab has a mere 17,900-miles on the clock. In white, with BBS split rim wheels, it really is a piece of the '80s*

gearbox is pretty dreadful, the car fulfils its purpose.'

Jules' interest in cars started at a very early age. 'I started driving aged eight. A friend of mine, Beverley Fiske, her father Derek Fiske was a Hot Rod champion, and she had access to various cars that we could storm around the fields behind her house. I used to invest all my pocket money in petrol. A bit later on my father, who was a haulier, let me drive his pool cars

then a Triumph Spitfire 1500 that was the biggest pile of trouble I ever bought. Afterwards came a VW Scirocco, a white one that kicked off my fondness for white cars, and a bit later on an XR3i, also in white.

'The first car that Malcolm bought for me was a Mercedes SL500, which was quite old but didn't have many miles on it. I enjoyed it and everyone smiled and waved when I drove by, but it was somewhat roly-poly

“After that came a yellow Mk1 Ford Capri. It was known as Fyffe after the banana company”

*Juliette and her 997 Turbo Cabriolet S. It was her husband, Malcom's, but when something else turned his head, she sold her AMG Merc and kept the Porsche for herself. "I simply adore driving the Porsche," she says*

around the yard, and it was strange how some of those cars ended up minus wing mirrors or with broken headlights...

'I passed my driving test a week after my 17th birthday – I took one of those intensive weeklong courses and it worked. My first car was a Mini 850 that was later replaced by a Mini 1100. After that came a Mk1 Ford Capri, a yellow 1600 that was affectionately known as Fyffe, as in the banana company. I had a Citroën 2CV when I lived in London for a while, and

on challenging roads, not as tight as I would like. It eventually made way for an Audi TT 225 quattro: when he sees the value of those old Mercs now, Malcolm still wonders if that was such a great decision! But another Merc, a CLK, replaced the TT, and after that came a more modern SL350.

'And then there was the SL55 AMG... It was outrageously good, stupendously fast, I thought I'd never tire of it. I got into more trouble in it than I've ever done in the Porsche: it didn't stick to the road with





as much tenacity as the Turbo S does, and had a frisky bottom. Still, I had the AMG for three years, was very happy with it and had no intention of changing it.

'But then Malcolm tempted me with the Turbo S [seemingly ordered with just about every option including carbon interior package, Sport Chrono, PDK transmission and PCCB discs]. It was his car originally. He'd hankered after one for a while but they were extremely rare; when one finally did materialise he felt compelled to buy it. A while later something else caught his eye, but he didn't want the Porsche to leave the family and so suggested that I took it and he sold the AMG.

'At first the idea didn't really appeal, but then I drove the Porsche... I never thought for one moment that he'd really give it to me – he still loves to drive it and I occasionally let him if he pays me enough.

'Living on a farm in the heart of rural countryside, the

– Malcolm has since stolen the commemorative sticker given to participants and put it on the Supersport. But I've never been to a trackday: I would like to go around a circuit in it, though, and be shown by a professional precisely what my car is capable of.'

And what about long journeys, epic adventures? 'Do you know, we haven't been very far in the Turbo at all,' confesses Jules. 'It's only been about as far as London – isn't that sad? The trouble is, when we go away we don't travel light – not in the slightest – and the Porsche doesn't have a big enough boot. We're very lucky, too, in that Malcolm also owns a Bentley GTC that will not only accommodate our luggage, but is supremely comfortable, too.

'But if I'm heading the 100 miles south to stay with friends in London I will always take the Turbo S and I never worry about parking it in the street: there's no point in having a car if you don't use it. And while I do

## “I seldom use the Sport or Sport Plus buttons, either, as the Turbo never feels short of speed”

four-wheel drive makes a world of difference: it also gives the Turbo more composure and a greater sense of driver confidence than I got with the SL. The sheer speed of the thing and the way it accelerates is utterly sensational. The noise it makes is fabulous, too, especially roof down through long tunnels.

'I have to confess that I never use the flappy paddles of the PDK gearbox – I don't see the need as the 'box seems to know what it's doing without my intervention. I seldom use the Sport or Sport Plus buttons, either, as the Turbo never feels short of speed, but I occasionally make an exception when there's a boy racer up my bum.'

Talking of racers, has Jules ever taken the Turbo S onto the track? 'In a manner of speaking. Last year (2013) as part of the 911's 50th anniversary celebrations in the UK, we joined the 911-strong convoy setting a world record on the Silverstone circuit

garage it at home, the Porsche is a year-round car in our household.'

Not that you'd really expect any serious issues with an 11,000-mile Porsche, but to date the Turbo S has been largely problem-free, except for the Road Angel speed camera detector interfering with radio reception. And with such low mileage there's not been much contact with the dealer network. 'We have had it serviced with Porsche Colchester,' reveals Jules, 'and they seemed pretty good. They even came up here to collect the car, which is about an 80-mile round trip, and I was grateful for that fact.'

Jules is grateful to Malcolm, too. 'I have my very generous husband to thank for this car and I see myself hanging on to it for a very long time – to be honest, I've yet to see anything else that would be a worthy replacement. I simply adore driving the Porsche and it certainly satisfies my craving for speed.' **PW**

*This is one fully loaded machine. Not only is it S specced, but it features the full carbon pack, those lovely centre-lock wheels and carbon ceramic brakes. There can't be many quicker ways of getting around the countryside*





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# Porsche v Peloton

Bennett chases down the Tour of Britain in a bid to reconnect with the new generation of 911 and challenge the pros over the course of the Tour's 'Queen' stage. Porsche v Peloton. Bring it on

Words: Steve Bennett Photography: Antony Fraser





# 991 C4S ON THE TOUR OF BRITAIN





Apparently there's going to be a Rumble on The Tumble. "A what on the where?" Well, you may well ask. The Tumble, you see, is a big lump of land that rises 1600 feet above sea level, casting a shadow over Abergavenny, Monmouthshire. You don't need mountaineering gear to ascend it – wheels will do, but at 6km and a steady gradient of 10%, you'll be glad of an engine, Porsche or otherwise. You certainly wouldn't want to cycle up it and certainly not as the final 6km of a 190km day in the saddle. No, that would be foolish.

The Tumble is the final climb on the Tour of Britain's 'Queen Stage.' Here we go again, talking all funny. 'Queen' denotes the toughest, most gruelling, leg busting stage of the seven day round Britain (well most of Britain) cycle race starring Sir Wiggo, Cav, his German nemesis, Marcel Kittel and many more top riders and pro teams from the UK and continental Europe. The Tumble is a Category One climb, which in bike race parlance means Complete B\*\*\*\*\*d.

Starting in Newtown, Powys and finishing on The Tumble, stage three of the ToB is predicted to be the one that will smash the field apart and could decide the Yellow Jersey. It's unusually early to have such a potentially decisive stage in a one-week race, but this year's event is especially gruelling, with more of the same to come later, including Ditchling Beacon on the South Downs on the penultimate day.

Of course you don't need *g11&PW* to tell you that cycling is big news in the UK right now. The Wiggo effect, Froome, Team Sky, Olympic Gold's on track and road, two

Tour de France wins and of course that small matter of the TdF Grande Depart on our green and pleasant land and our best roads in the summer, in front of simply mind-boggling crowds.

But it's more than that. Our European friends have been bike racing mad for years. In France, Belgium, Holland, Spain and Italy, it is a near religion. We're just catching up, albeit fast. We're getting it. Bike racing UK style was 10-mile time trials on dreary stretches of dual carriageway, followed by a cup of tea in the club hut or dusty village hall. Now it's fast paced road racing, Criterium racing in city centres, bike mad wannabes tackling Sportives and the tea has been ditched in favour of espresso coffee, colour, carbon fibre and titanium machines that drip with technology. Electronic 22-speed sequential-shifting? That beats your seven-speed PDK. Power meters and data-logging? Tick. GPS mapping so you can download your rides and compete against virtual foes on the same course. That will be Strava.

And we can't get enough of this stuff. More often than not the bike on the roof is worth more than the car. Bike spending is huge, golf clubs are emptying, sailing clubs are suffering, we're all velo road warriors now. And not surprisingly there is a crossover between cyclist and petrolhead. The notion of going fast on four wheels runs just as deep on two. That, after all, is what it's all about. From the pros down, the aim is to go as quickly as possible and as efficiently as possible. Bike porn is all about new kit, lighter wheels, aero frames, carbon fibre cranks, ceramic bearing hubs.

Which is kind of why we're here (you were wondering







*Above: Bennett is 'King of the Mountain' at the first summit finish. Newtown, Powys, is the stage start, while towns along the way signal their support*



how I was going to pull this round) on the third stage, the 'Queen Stage' no less of the Tour of Britain, with a 991 Carrera C4S. This is Porsche v Peloton.

What seriously? Yes, seriously. Pro bike riders move fast. In a group they can slipstream along at 40mph on an open road with nothing to slow them. Blink and you'll miss them, left with just a rush of air, colour and the faint mechanical hum of turning cranks and narrow tyres on Tarmac. If you're lucky you might get hit by a discarded bottle, but these boys shift and achieve average speeds that most four-wheeled traffic, encumbered by other road residents, can only dream about. That is of course when they're on it. There are days when they simply can't be bothered, but in a one-week race, like the ToB, there isn't the luxury of a let up or a day taking it easy.

It is, of course, the road sharing aspect that will stop this contest from being a walkover for the Porsche, and in truth I'm not expecting the Porsche to lose this. That would be a bit far-fetched, but I'm not expecting there to be a great deal in it. Seconds? Minutes and multiples of? Half an hour? Over half, but under an hour? You know I just don't know, but here's the fact of the matter: The stage is 179.9km or 111.9-miles if you prefer. The Peloton departs Newtown at 11am and with a following wind and some nifty pedalling are expected to rumble up the Tumble shortly after 3pm via a route that in terms of profile can only be described as spiky.

It's a route too that will suit the C4S and there is a reason why it's a C4S too. In fact there is a reason why it's a 911 full stop. It's been over two years now, since the launch of the 991 gen of the 911, and truth be told, I've not really gelled with the all new machine. There have

been moments of connection, but overall I'm not getting it. For me it's the 'King's new clothes' scenario, and I'm acutely aware of how out of step I am with that thought. Editor of Porsche magazine doesn't rate new 911, shock. It's a headline that I'm not entirely comfortable with.

Of course I've analysed it at some length. In the past it's been pretty easy. Basic manual Carrera 2 wins every time. It's the motoring journo's default option, but not this time round. The base 3.4-litre Carrera is just not quick enough. Ridiculous as that may sound with 350bhp, but it's the way the power is delivered, which is to say right at the top end. It's hard work, and not at all like the old 3.6-litre 997 Carrera, which is just about perfect. The manual isn't an option either on any 991. There's nothing wrong with the shift itself, in terms of physically swapping cogs, it's just the action of moving through the gate and, in particular, coming down from the dogleg seventh, when it's very easy to get lost. The loading takes the lever beyond the sixth to fifth plain and into fourth to third. Nine times out of ten you'll get it right, but when it matters, when you're driving for the thrill of it, you will at some point get into a right muddle and you'll hate it and wish, for the first time ever, that it was a PDK. It's just not intuitive.

And to make matters worse, you just know that the Gen 2 991 Carrera, which will be coming soon, will be getting a 3.6-litre engine, because that's how these things work. So, surely, the Carrera 2S or the C4S is the answer. More power, ditch the manual, go PDK, job done. Well not so far. Maybe the whole collective driving experience just hasn't aligned itself yet. Yes, the 3.8-litre engine has, as you would expect, got the get up and go.

*We'll take ours in stealth grey, please. Sometimes it's easy to take the familiar shape of the 911 for granted, but the high waist and low roofline of the 991 gives the 911 a sleeker look 51 years into its life*





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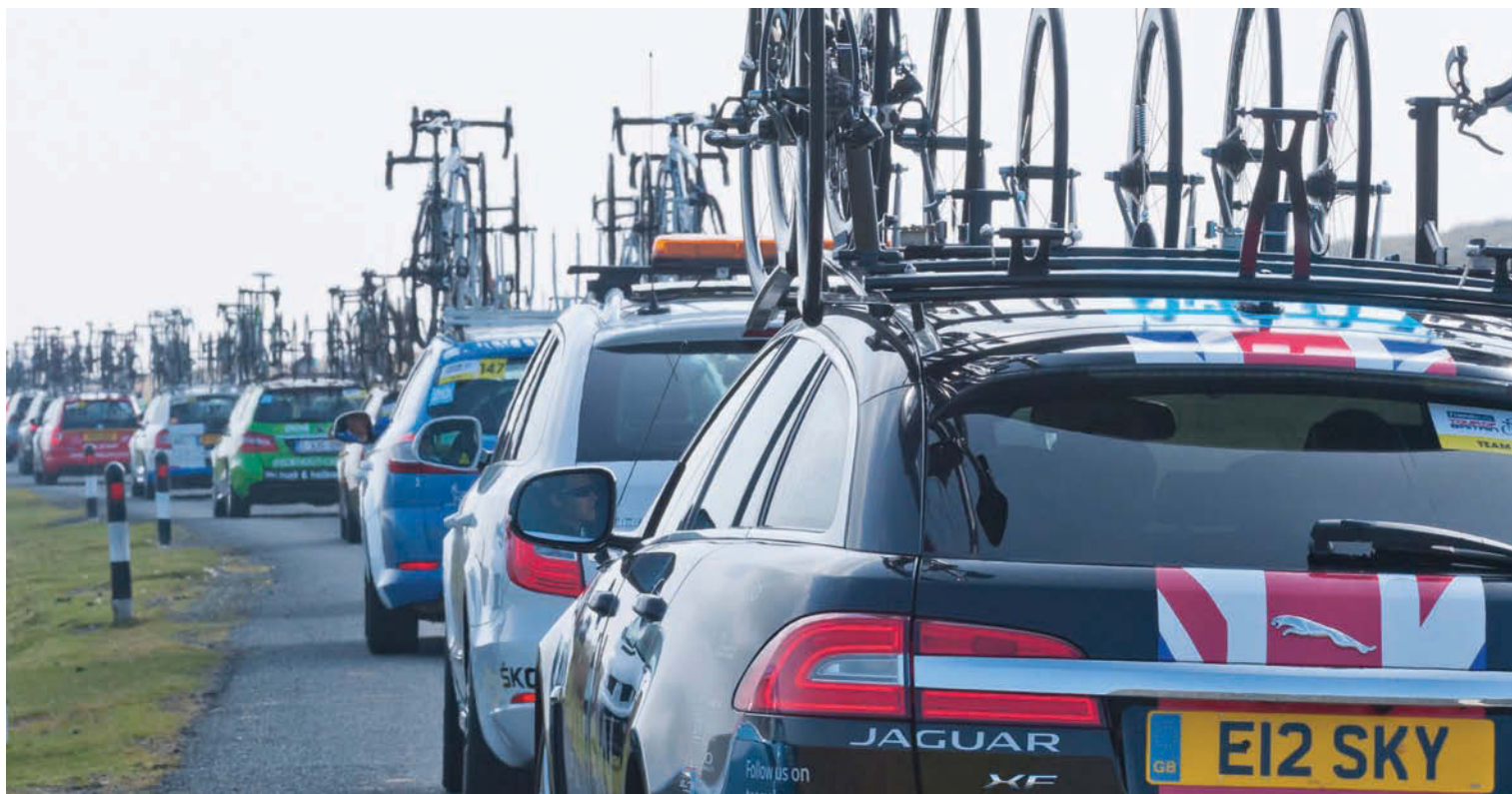
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The PDK beats the manual, but it's not just about the powertrain and how it changes gear. There's the small matter of handling and steering and some confusing messages therein.

A week with the retro inspired g11@50 Anniversary model, with wide body and rear drive, should have been 991 nirvana, but frankly it was awful, thanks to PASM suspension with zero tolerance to body roll, but at the expense of any sort of ride quality. Remember the 997 GTS, again rear drive and wide-bodied and derived from the limited edition Sport Classic? That was just 911 heaven in the way it dealt with our broken roads. And the steering? Don't get me started.

And then there was a recent dalliance with a 991 Targa, which significantly had passive rather than active suspension. All of a sudden ride quality restored, perhaps helped further by 19in wheels. But that had a manual 'box too and once again shift confusion crept in just when you didn't need it.

And so here we are giving the 991 another go. The C4S is the everyman choice, the one that ticks the most boxes for customers, and in the right spec too, although I'm not sure about PASM given recent experiences. Chasing down the cyclists is an added frisson, and I won't

deny that it taps into a personal passion of mine. I am no stranger to lycra, carbon fibre and the obsession that comes with cycling.

Of course we didn't come all this way and not see a bit of the stage ourselves. After a bit of Google Earth research we set up seven miles out of Newtown to watch the riders come through and contest the first King of the Mountains (first rider across the line scores points towards the KoM jersey) segment. The riders are expected at around 11.30am, which is pretty impressive given that it's a constant climb all the way, but then they're not pros for nothing I guess.

There wasn't quite the fever that surrounded the Tour de France Grand Depart, but you can't help but get caught up in the buzz and the anticipation as the course cars and Police outriders come zooming though and then the event helicopter rises from the horizon, nose pitched to the ground, seemingly scanning the landscape. And then the Peloton crests the hill and sweeps through, cutting a perfect apex and moving in one fluid arc. Gone in sixty seconds or less as they whirr out of sight. A couple of days later, when I get home, I watch the recorded highlights of the show, and there we are clearly visible from the helicopter, standing next to the C4S!

*It takes a lot of vehicles to keep the Tour on the road. Team Sky can claim to have the best team cars running, as they do, a fleet of Jaguar estates. All the teams run estate cars, which tells you everything you need to know about SUVs and the like!*

*Left: Camera helicopter caught Bennett and Fraser on film and put them on the telly! At the start of the 512 metre climb to the summit of The Tumble Right: At the top!*





So time to give chase. Well not quite. We need to give the race time to get ahead for obvious reasons. A chance to study the route and get back down into Newtown to make a proper start and get some fuel. The route? Well it's a mix of hilltop moorland B roads and fast valley-level A roads taking in villages and a couple of major towns on the way, notably Crickhowell and Abergavenny. Some of the roads are known to us already as we've used them for testing over the years, South Wales being a popular proving ground for motoring 'mags looking for quiet driving roads.

A final word on our Peloton Pusher. Fuelled up and sitting on the forecourt it looks, quite simply, the business. That is certainly one thing that the 991 has in its favour. It's colour sensitive too, but in dark metallic grey, with matt grey 19in wheels, it really does work, the 911 profile accentuated by its deep waistline and low roofline that, compared to the 996 and the 997, makes the 991 look as if it's been chopped.

Newtown centre is solid with the aftermath of the tour depart and it takes some time to grind and climb out of town on the uphill switchbacks. The PDK transmission is

switched to Sports mode in anticipation of any gap to get past the meandering, late summer dawdlers. At slow speeds the C4S seems disinterested and slightly wrong-footed, but soon we're off the main road and up, up onto the moors and the first King of the Mountains segment. How are we doing? Well, shockingly, with the congestion in Newtown and the grind out, we're barely ahead of our leg and lung powered bike heroes!

This is a cracking, testing wiggle of Tarmac now though. To the left are the Black Mountains and to the right expansive views over the valley and we're high enough to be sharing air space with the buzzards surfing the thermals. Then the road starts to drop down and the going gets tight and twisty making the C4S really start to work. It's too much for the PDK to keep up with and a switch to the paddles is called for. No hardship. The damped click of each up or down change might lack the tactile quality of manual interaction, but there's no disputing the speed of the shifts, and to make this sort of seamless, stable progress in a manual 991, you'd have to be very deft on the pedals.

Periods of rapid progress are hindered and halted out of

“How are we doing? Shockingly, we're barely ahead of our leg powered heroes”







respect to 30mph limits through villages and the odd dawdling tractor/tourist. Frustratingly, given the twists and turns, it takes a bit of luck rather than judgement to get through on occasion, not helped by the C4S's extra size. The 991 is borderline as a B road contender these days, but that said it's still more at home than its Italian rivals. You just find yourself breathing in more often, particularly with oncoming traffic.

Maybe it's because we're on the ToB route, but so far the road surfaces have been excellent, and some stretches have been absolutely top quality black top, the sort that in most parts of our sceptic isle have become just a distant memory, replaced instead by molten tar sprinkled with loose chippings. Road surface aside I'm overdriving this new fangled 911. My direction changes are snappy, braking scruffy and I'm just hanging on. It's partly because the straights are short and the bends are coming thick and fast and it's impossible to build up a rhythm, and it's partly because I'm going too fast to be neat and the C4 is just understeering in response to my inputs. Ah, that four-wheel drive understeer thing? Hmm, not so sure about that. It's just the default setting these days and I doubt that the C2S would be any different. It's the safe option.

Strangely, perhaps, after all these years of refining the rear engine layout, tweaking the suspension and lengthening the wheelbase, the 911 still responds best to slow in, fast out. It's all relative though. The 991's slow in is rather faster, than even a 997's slow in. You just don't appreciate it.

I don't know about Wiggo and co, but even behind the wheel, this is exhausting. Quite where I am time wise I've

no idea, but there's a welcome stretch of A road now for a good few miles. With space and well-sighted corners, we can get a wiggle on. The 991 is more at home here. It can settle into a bend and use its massive traction to slingshot out, not to mention power. It's fast, effortlessly fast with a never-ending powerband.

Back on the B roads now for another lengthy stretch. This is the sort of terrain that gets the Peloton all twitchy. Narrow enclosed roads are a nightmare and increase the chance of a Peloton pile up. One thing that the 991 is not, though, is twitchy. That really has been all but eliminated from the 911's repertoire of tricks. That constant movement from the rear, and the unsettling of the front wheels as the front-to-rear weight transfer moves down the relatively short wheelbase has been checked by the longer, more stable platform of the 991. It's kind of still there, but it's slightly slower, and lazier. And that in turn has affected the steering. It's not so much the electronic steering rack that's robbed the 991 of steering feel. It's more the longer wheelbase that stops the front wheels from weighting and un-weighting. Modern cars have so much damping in their steering, to combat the potential kick back from massive wheels and tyres, that steering feel disappeared long ago. What the 911 had wasn't steering feel in the traditional sense, but steering feel induced by its weight distribution. It was an anomaly, one that's now been dialled out.

Fast A roads again through Crickhowell and into Abergavenny and Monmouthshire. We're not far geographically from the finish, but in miles there's still another 25 to go. The going has been tough or 'draggy' in cycling parlance. Apart from the A road stretches it's

*The 991 C4S covers ground at a rate that takes serious concentration to keep up with. It is hugely capable, carrying speed in a way that would have been unthinkable a few years ago*

*Left: The Peloton rolls though, completing the 110-mile stage in 4hrs 35mins, which is actually pretty slow in bike race terms, and is an indication as to just how tough Stage 3 was*

*Middle: Bennett grabs the headlines. There's gonna be a Rumble on The Tumble!*





“With space and well-sighted corners,  
we can get a wiggle on”







been a relentless, leg busting up and down, with little chance for a rhythm or to get the pack moving en masse. It feels the same where I am too. Every blind turn and crest is treated with caution and I don't mind admitting that I'm knackered from the concentration.

The pros blast through the middle of Abergavenny town centre, while we crawl round the one-way system, hampered by road works. It takes a good half an hour and we trundle to the foot of The Tumble, where we're met with a roadblock. The stage is, of course, over but the barriers and stage furniture are being packed away. Stop the clock, we'll have to wait, and wait. Still gives us a chance to catch up on the result, the 'Rumble up The Tumble.' Italian Edoardo Zardini takes the stage win, Wiggo is back in fifth and eventual overall winner, Dutchman Dylan Van Baarle is 12th. Apparently The Tumble has had the desired effect and hit the riders hard, with only the overall favourites emerging to fight it out at the summit.

And so what was Zardini's overall time? Four hours, 35 mins and 2 secs. Is that fast? In terms of the terrain, and the distance, yes, that's fast. Had that been a flat stage, you could knock over an hour off that time, easily.

And so finally we make it up The Tumble and to the aftermath of the stage. I've done a few long distance



events, hell I've cycled up Box Hill, but The Tumble is a relentless low gear grind that even has the C4S dropping cogs to second on its fiercest inclines. And so we stop our own clock at 3hrs 15mins 47secs. Porsche thrashes Peloton on the Queen Stage? Well that's what it looks like, but think about it? Despite having 400bhp on tap and the ability to carry prodigious speed, that's not much of a margin compared to human athletes on two wheels powered by fresh air and energy gels.

And the 991 C4S? Is the relationship restored? Partly. This is easily the most convincing 991 that I've driven. After the 50th birthday edition, the PASM enhanced suspension is much more compliant, although I still prefer the passive set up and that experience is shared with passive v PASM Boxsters and Caymans too.

The C4S is a hugely capable car and still easily the best of its type. I guess what I miss is the interactivity of the 997 and the 996. In the constant evolution of the 911, the imperfections that were/are part of its character are being engineered out. It seems wrong to hanker after something that wasn't as good, but that's just the way I feel. But then my next road bike will probably have electronic shifters and in time I'll forget about the less effective friction shifters. Progress eh? **PW**



*Top left: At the wheel of any 991 is a fine place to be. Cabin quality is second to none. Below: The C4S is hugely stable on the road. Body control is of the 'iron fist' variety with roll kept in constant check*







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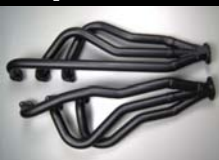
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# 911 RALLYING RETURN

Been yearning for the return of the 911 in international rallying? Well yearn no more. Tuthill Porsche has taken matters into its own hands and homologated a 997 GT3

Words: Martin Sharp Photography: McKlein







**T**hirty-nine year-old driver's self-developed-and-built 'prototype' GT-based rally car gets its first-blood in competition on a World Championship rally. Brave, some might posit.

Yet the facts are worth a ponder. The car started 99th out of 127 (actually as Car 132 because of a 31-car gap in the entry list to cater for no-shows and the vagaries of the WRC rules). Despite running on Tarmac made dirty by the front-running four wheel-drive competitors cutting corners and pulling dirt and stones onto the roads, Richard Tuthill's new Porsche 997 R-GT jumped a massive 72 places to finish 27th overall after 326.02 stage kilometres and a total distance of 1305.79km on this year's Rally Germany.

It was the first time a Porsche 911 has finished a WRC event since 1986: 28 years since Saeed Al Hajri came fourth in the Acropolis in his 911 SC RS.

'Prototype' is a misnomer; for sure the car is Tuthill Porsche's first example of its R-GT category rally car and as such is very much a development vehicle. It is, however, a fully FIA-approved rally car which has been 'homologated' using the FIA's latest 'Technical Passport' rules for GT cars for rallying.

The Technical Passport regulations appeared first this year and enable a car which is not homologated into rallying by its manufacturer to contest FIA-sanctioned events up to world level. The passport must be sanctioned by the owner's, or preparer's, ASN [national motor sport authority]; which in the case of the UK is the Motorsports Association [MSA]. The passport is applied to each individual car, by VIN, costs just shy of €8,000 and is valid for two years, with extension options.

Tuthill Porsche went to Rally Germany full of positive expectations. The laborious Technical Passport procedure (a 50-page documentation and photography effort akin to a full manufacturer competition homologation process) had been through the required processes.

Experienced MSA technical people had inspected the car's mechanicals, its unique roll cage; everything including the agreement that a 65mm diameter inlet restrictor would mean the car exceeded the minimum 3.4kg/bhp weight-to-power ratio demanded by the R-GT rules.

Initially, no restrictor 'plate', or venturi size confirmation was forthcoming from the FIA.

Then, while the car was on the trailer en route to Rally Germany host city Trier an FIA email announced on the Friday before the event started on the following Thursday, simply; 'Your restrictor is 36mm diameter'.

Tuthill Porsche's highly experienced rally engineer Graham Moore, formerly with Prodrive, faced a situation in which his project car would be lacking some 100bhp, and 1500rpm fewer, than planned – approximately 325bhp instead of the expected 425bhp. And the car was on the road to Trier. He found himself in a Trier machine shop, lathe at the ready, to fashion a 36mm restrictor. Dutifully the 36mm restrictor was installed in the car for the German rally. How it might have fared with a further 100-odd bhp is pure conjecture, but as this event was effectively a development test the results are – to say the least – encouraging.

Tuthill Porsche is a cohesive team; renowned for Historic 911 victories – and a bountiful sense of joi de vivre, much of which rubs off from its now-Principal, Richard, and his dad Francis, who started the company and still keeps his hand in with engines, gearboxes and event support. It seems nothing fazes this team: even the fact that a press presentation of the new car had to take place without the car in situ in the rally service park as Rally Germany's scrutineering schedule became delayed... and that the Technical Passport decal (effectively, approval to run) for the 997 R-GT was applied to its roll cage well into dinner time on the eve of the first day of the event.

At least the team's resourceful PR Anthony Peacock had



“Based on a Generation Two 2012 Carrera Cup racer, this 997 is the best the team could get”

*Despite being 100bhp down on the standard GT3's 425bhp, thanks to the FIA's mandatory restrictor, the Tuthill developed rally 911 did pretty well on its maiden competition outing, finishing 27th overall on Rally Germany*

ensured sufficient supplies of Hook Norton ale to keep the banter flowing...

The R-GT regulations cater for road-legal series production GT cars with two doors, two, or two-plus-two seats, and one or more luggage compartments which are available for sale through a manufacturer dealer network. Four-wheel drive GT cars can be used as the basis but a kit must be available to make them two-wheel drive to comply with the R-GT category.

At least 200 identical examples must have been produced in 12 consecutive months, but cars derived from a production model which are built specifically for a Manufacturer's Cup are allowed, so long as at least 30 of such cars have been produced.

The latter option was chosen

by Tuthill Porsche for its first R-GT. Based on a Generation Two 2012 Carrera Cup racer this 997 is the best the team could get. As a Cup car it was, of course, equipped with many desirable competition components for R-GT use. Tuthill engineer Graham Moore has extensive experience of dealing with the FIA on homologation matters and saw the individual homologation of the car via Technical Passport through to its final approval on the eve of Rally Germany:

“Once we got the all-clear for homologating or using a Cup car we used that as our base because you get a lot of really good bits with it – engine, gearbox, brakes; all the sort-of nice stuff you want – carbon doors, all the lightweight stuff; all the air intake system for the

engine, so it's a good base for the car. You could do one from a standard road car and come at it from a different direction, but we thought at the time the Cup car gave us the best option for performance and good components. Obviously we weren't expecting such a drastic restrictor size, so we need to review that and it may be that a standard engine with that restrictor might be reliable.”

With their competition conrods and pistons, Carrera Cup engines are renowned for their reliability. Available in 3.6-litre and 3.8-litre capacities the general feeling among Cup preparation specialists is the 3.8-litre engine is a good step forwards and, as Moore points out, seems to provide the best characteristics, particularly when restricted by

36mm (911s running to national rally rules, such as those in France, Belgium and Spain generally tend to be fitted with 75mm diameter inlet restrictors).

The team ran Carrera Cup gear ratios and final drive on Rally Germany. Moore: “They actually weren't too bad. Obviously we didn't use sixth gear but the engine did have a reasonable amount of torque. We looked at ratios but we didn't bother to make new ones because we thought if the restrictor's going to change or whatever we'll end up having a load of ratios that don't match the engine power.

“It's good to get some data: we've never had any data on the correct sized tyres, because the Michelin tyres are 650mm diameter so the stuff we've been running for testing wasn't the





the existing world rallying regulations which, together with the inclusion of other safety requirements, complies fully with the admirable side impact provisions laid down by the FIA, as he explains:

“There was a problem with Porsches in the old days when you had the door bars right next to where the driver’s sitting; there was going to be intrusion into the driver’s pelvic area if you have any [side impact] accident. But with this you’ve got 200mm between the seat and door bars and you’ve got all the [mandatory door-filling] foam so it’s inherently a lot safer. Effectively it’s the same as a World Rally Car in that respect.”

R-GT rules mandate the fitment of one spare wheel as described and illustrated in the Technical Passport, two spares are also allowed (on gravel rallies, for example) and Tuthill Porsche modifications to its Historic 911s for the East African Classic Safari Rally enable two spares to nestle by the front-mounted fuel tank. However, with a different fuel tank, this is not possible in a

contemporary 911.

Even so, when derived from a – non-spare-equipped – Carrera Cup car some chopping of the surrounding architecture is necessary to engineer a spare wheel and tyre into the front of the R-GT derivative: “You are allowed modifications to fit a spare wheel, and that’s it; just for fitting a spare wheel, not for, ‘Oh it would be nice if we could move X, Y and Z’. It’s in the Technical Passport and the photos are in there to show that it’s just for spare wheel fitment and not to get a bit of clearance here, or strengthening or whatever, so that’s quite clear.”

The Tuthill R-GT has nine-inch-wide front wheels with 11in-wide at the rear. A nine-inch rim with inflated tyre will just fit into Tuthill’s homologated spare wheel space. Fitting an 11in-wide rear wheel in the front wheel space would require not only a punctured tyre, but one which had been reduced to significantly lesser volume. Then, that is just about possible. Moore: “We’re looking at it – you’re allowed to have a removable rear window,

*Above and below: The 997 GT3 in rally trim has no problem getting airborne, although we should point out that the below pic was taken on the Trackrod Rally in the UK, where Tuthill Porsche were running as course car in a pre German Rally shakedown*

so we can just chuck it [a rear] in the back if we have a puncture. Just so you can carry it.”

The team has already tested running a nine-inches-wide wheel at the rear: “Yeah it’ll run, we tested it,” confirms Moore. “For gravel you would probably want to run two spares, just because of tyre wear because we’ve seen that it [the car] does have an appetite for rear tyres – funnily enough!”

The Cup 997 has MacPherson struts up front and multi-link rear suspension; effectively an upper and lower wishbone, Moore: “It does all sorts of crazy things at full droop; it changes the toe and, so we’ve had to look at all of that and have messed around with all of that for here [Rally Germany]. So, we have different rear toe-steer characteristics for

right diameter tyres anyway, so now we’ve got a good base set of data we can go back and look at it and just get the absolute optimum ratios.”

Although based closely on the road versions, 997 GT3 Cup cars are, of course, built and designed for circuit racing. They don’t have to be road legal. And, of course, an R-GT ‘derivative’ designed for use in rallies must comply with the road legislation in the areas where it competes. Unlike its racing cousin two people must fit in it, and it has to carry spare tyre[s].

Accommodating just the driver, Cup cars have asymmetric roll cages so the need to fit a co-driver in a Cup-derived R-GT car makes the Cup cage ineligible. Tuthill’s Graham Moore has therefore designed a roll cage to







race to rally; and front as well, because the racers' requirements are different over the suspension travel they use to what we need."

The team did "quite a bit" of work before Rally Germany to get the suspension to work with the wheel displacement: "It wasn't just a case of bolting on a set of dampers and crossing our fingers, so we have looked at it sensibly: if you're going through a bumpy Tarmac stage it needs not to be rear-wheel steering and all the rest of it, so yeah we've had a look at it."

Moore has long been an advocate of XTC dampers; those fitted to the R-GT he describes as; "Quite trick". Wheel travel for the Tarmac specification rally car is about 180mm all round ("about

the limit you can get with the suspension links and stuff"), much more than a racer; and damper travel has been extended accordingly. Triple-rate progressive coil springs surround each damper, with rates selected to cater for end-travel protection when landing from jumps; and provide ride quality on bumpy surfaces. Typically, spring rates are half of what is run on a race car and similar front and rear. With a spare wheel and tyre in the front, and underbody protection at the front the front rates cannot be too soft.

The team submitted a dossier to the FIA on May 1st detailing a gravel suspension option which has already been passed by the homologation committee; although more bureaucracy is to

## PORSCHE PASSION

In 2011, when the R-GT regulations first appeared, Richard Tuthill was keen to drive a 996 in the Swedish Rally. That didn't happen, but: "The principal reason was I just think that to drive these cars is great fun and something that I believe the spectators will enjoy and that the drivers will enjoy."

"So my main motivation was more about passion for decent cars and proper driving. I mean it's always very closely linked to business; it has to be, but these projects are driven by passion, not business; and then the business follows," reasons the Tuthill Porsche boss.

Additionally, there is a rumour of a six-round R-GT Cup, beginning next year and comprising asphalt rallies on three European Rally Championship rounds and three World Rally Championship rounds.

Apart from a front-right puncture, Tuthill's Rally Germany was without problem. There was a self-induced two-minute delay when Richard opted to believe the left-hander direction chevron after a crest in the Panzerplatte Lang 2 stage instead of his very experienced co-driver Stephane Prevot's right-hander call. Prevot immediately identified where they were off-stage. Richard recalls: "We came round in the spectator park - they must have loved it; 'Oh, look, here comes the 911 again, having some fun!'"

"But to be honest as soon as we had the puncture I knew a top 20 result was not possible and so it just reinforced even more that I was there to get a finish."

Tuthill is the first to admit that he likes to drive a car when it is 'moving around', in the wet for example. It did rain in Germany and in the wet on a test stage set up by rally organiser ADAC for some 15 cars on the Monday before the event Richard's Tuthill 997 R-GT eclipsed the times of - rated Estonian - Ott Tanak's four-wheel drive 1.6-litre turbocharged Drive DMack Ford Fiesta R5; which netted 10th overall on the rally.

Although settling for a, nevertheless impressive, finish Richard's German experience has convinced him: "In the right hands it will be a top 20 car without a doubt, and I think that on the right stages it will definitely beat the R5s. The car can be quick; the problem in Germany was a rusty driver and a need just to deliver a finish. So it's cool."

Tuthill Porsche has evidently invested much time and money into the R-GT 997: "My piggy bank's more than empty after this little project," but the team has a driving will to continue. While dealing with the FIA on gravel specification and weight-to-power ratios the immediate next target at press time was a proper go on the French WRC round at the beginning of October.

If budget can be found the French event promises to be a corking Porsche challenge. Of course, the man to drive the Tuthill R-GT in France is François Delecour, who is in the loop and currently trying to help with budget. Richard has: "Rolled the dice and fired €1,000 on the table for the entry." The tasty challenge is that works Porsche sportscar racer Romain Dumas is also very likely to enter his own, RD Limited-developed 997 R-GT on the same event.

Dumas' new car is based on the special edition 4-litre RS 997, which was never a Cup car, so his project starts with a road car, unlike the Tuthill Cup-based R-GT. Apparently the FIA has slapped a 34mm inlet restriction on the Dumas 4-litre car; yet time will tell over the press-time weight-to-power deliberations.

Again at press time, November's Wales Rally GB, the final round in the 2014 WRC, is pretty much fixed in Richard Tuthill's plans for his R-GT: "I do have a bit of an ambition to drive it on gravel, it would be great fun. But; subject to funding and subject to finding some excellent hero to drive it then we'll see. From my point of view the reason I like to drive - the reason I drove on the first rally and perhaps the reason why I would like to drive on the first gravel rally is because as a company we have a massive amount of knowledge internally. Yes, I'm a crap test driver and there's a load of brilliant test drivers out there, but if you've actually got real experience yourself a) it's easier to sell and b) you've got that information - and, of course there's a whole file [of data]."

"The idea of doing Rally GB really appeals, so that's what we're aiming for."





“The idea of doing Rally GB really appeals, so that’s what we’re aiming for”

*No surprise that the fans love the GT3 R-GT rally car. Take note Porsche. Perhaps a factory effort should be considered? Actually, no. That would take away from the hard work that privateers like Tuthill have been putting in*

follow. Tuthill Porsche is renowned for the quality – and successes – of its Historic rallying 911s and already has a gravel damper, developed with XTC, which can be used straight away. But the suspension of the contemporary car complicates matters, as Moore explains: “The issue really is the travel and inherently with a GT car you don’t have the travel there anyway. So with the regulations at the moment, which are Group N, you’re not really allowed to move anything to get the extra travel.”

With their swinging arms and torsion bars the team’s gravel rally specification Historic 911s run with about 250mm of suspension displacement.

“You can raise the [R-GT] car up but that doesn’t really give you enough packaging room, so we have asked, or sought permission and suggested what could be done with a best-cost solution; because it’s all about keeping the costs down: you don’t want to be modifying the bodyshell and lifting spring mounts and all that stuff.

“You could probably get

200mm/220mm of travel, which obviously isn’t to the scale of modern rally cars but would be safe enough. I’d be happy with 210mm/220mm of travel. We’ve got a solution; absolutely no sheet metal work involved; just modifications to the components around the damper we are seeking permission from the FIA to create.”

Kevlar guards are fitted for underfloor protection, connected via metal mounting points to the existing plastic floor, with which the team identifies potential durability issues; hence an

investigation into this is in progress: “Guards are free; you are obviously allowed to protect the underside of the car, so we’ll be looking at what else we can do to improve the fixings, because the difficulty of the fixings on the standard stuff is that there are a lot of screws; which in a service park in 30 minutes you don’t want to be taking 20 torque screws out of the bottom of it, so we’re looking at things like that,” explains the Tuthill Porsche engineer. All work in progress, but what progress. **PW**







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# WRC 911 ON THE LOOSE

You wait years for a WRC rallying 911 and then two come along at the same time. Meet the Finnish Rally Team's gravel spec 997 GT3 and its debut on the Rally Finland

Words: Robb Pritchard Photography: Arctic Media

*While Tuthill Porsche is still pondering a gravel spec for its GT3 rally machine, this lot have already done it, albeit in a rather last minute fashion. Note serious ride height and 15in wheels*





Porsche motorsport history is indelibly written on the Tarmac of iconic places like Le Mans and the

Nürburgring, but its rallying days, when Walter Röhrl won the Monte Carlo and Rene Metge twice took Paris Dakar honours in the Rothmans 959, seemed to be consigned to history. It's been a long, long time since the top flight of the WRC heard the bark of a 911 through the forest, a generation ago in fact, but on the Rally Finland, Porsche was brought back to sideways action on the gravel.

For *g11&PWI* braved the wilds of Lapland to find out what the Finnish Rally Team had to do to

turn a 997 GT3 Cup race car into the world's only gravel spec WRC Porsche to compete on one of the world's most iconic rallies: The Rally Finland.

The workshop is in the grounds of the Porsche Winter Driving Centre, where customers learn how to drift on ice. It's also a normal rally school so straight away I see that mixing the two and making the WRC car actually makes great business sense. For the project to succeed there probably isn't a more qualified team for building rally spec Porsches.

The hospitality suite is a welcome haven of luxury away from the inclement autumn Finnish weather. I ask team

manager Pekka Savela what is different on the R-GT car compared to the original GT3 Cup car. The way that he sighs tells me that this is not an easy question to answer. "We changed everything that can be imagined," he smiled. "For Tarmac the suspension has to be stiff to keep the car stable but for the forest roads and jumps of Rally Finland it needs to have as much flex as possible, as it literally needs to fly, as well as going through corners sideways. As you know, if you are sideways or in the air in a track car you are doing something very wrong, but in Rally Finland if you are not in the air 20 times during the stage you are doing something wrong! That is why

everything had to be changed.

"So the biggest difference is that we have a completely bespoke wishbone/control arm system made for us by Bigem (the go-to Finnish company for rally suspension). The shape is different of course and because the design is totally original we had to go through a couple of evolutions to get it perfect. We also have special uniballs at the end of the arms which are much stronger than the original parts and with these we can change the camber of the wheels. This makes a big difference with grip in the corners. And it is very easy to adjust so it allows us to fine tune the camber for different types of gravel. The shocks are 3-way







*Above: Tense moments in scrutineering as gravel spec GT3 prepares for its rally shakedown*

adjustable, tailor-made ones for this project by Bigem but they fit into more or less original mountings. The upper mounts are aluminium.

The transmission is all standard GT3 Cup parts but for the WRC we need to run on 15in tyres so the massive GT3 discs and calipers are far too big. We had to 'downgrade', if that is the right word, to much smaller ones from a 911 Carrera, so went down from 355mm front discs to 298mm. It's a really big difference, even

compared to a road car, never mind a GT3.

Another important element for rallying are the guards underneath. They are heavy but the engine, gearbox and exhaust system all need to be really well protected on the rough. The car stands at 1351kg and 70kg are just from the guards. The rest of the extra weight is in the roll cage. The factory mounted one is not enough for the WRC and R-GT cars need the new homologated 2014 cage, which has more protection around the co-driver, additional crossings behind the crew and tubes that go through the firewall to attach to the front



suspension mountings. The tubes are also much thicker. When we started this project there was no one making one for a 997 but we eventually found Custom Cages in the UK who were able to do it and get it homologated, although that was just two weeks before the rally. We got it installed and fitted on the Sunday, with two guys who flew over to do it... and the crew started the recce on the Monday. 'Cutting it fine' I think you say in English....

We needed to carry two spare tyres and knew that there was going to be some trouble getting them to fit in. In the front there is space of course but the rally



wheel is much taller than a Tarmac racing one so we had to 'manipulate' the area available. This was possible when we changed to a smaller 65-litre FT3 type safety fuel tank that had the right shape. The second wheel fitted easily on the rear roll cage but we had to replace the rear window with a plastic one with four fast sockets so we could get to it easily.

Of course we think we did a pretty amazing job to get a completely new car ready for the WRC, but all that time spent engineering solutions to the problems that came up meant that we didn't have time for any testing at all. We all know that this is not the way it should be done, especially for such a unique car, but unfortunately there was no alternative. So the first time the driver, Jani Ylipahkala, drove the car was off the start line of



*Left: Team driver, Jani Ylipahkala (easy for no one to say!), was shoved in at the deep end, getting his first experience of the car on the event itself*





the first stage. At the end we were all laughing because he told us he'd never been so scared in his life driving a rally car. He had no idea how it would react in corners and the reaction of the suspension after jumps. He didn't know the power of the engine, the braking capabilities and also he'd never competed with a car equipped with a sequential gearbox before... But actually maybe there is no better driver

OK. We were still going and learning, until the second day. Normally, when a team manager asks the driver if anything happened he always says, 'no, I didn't touch anything, I didn't hit anything, I don't know what happened,' but we think he hit a stone or something at the side of the road which broke the suspension arm and that in turn punctured an oil pipe. The oil went over the engine, ignited and

But it was a great event and great to know that the car was a success. Everyone absolutely loved seeing and hearing it and we have lots of videos where spectators were shouting out when we came by. Also at the service park there were always a lot of people wanting to see us. We already have the stronger suspension arms and obviously we'll need some more protection around the rear, which we'll

*On the loose! Kicking up the dust on Rally Finland. This is the first time a modern 911 has competed on gravel in a long, long time. Sadly the adventure ended prematurely with an oil fire, but they'll be back!*

decide to do it.

But in the winter things will be more straight-forward for us. The car will be at the winter rally school for people to come and

“Everyone absolutely loved seeing and hearing it, and we have lots of videos”

than Jani for this as he is a professional stunt driver and holds the Guinness World Record for going the fastest on two wheels!

We also had a bit of bad luck. After a hard jump the car landed on its nose and we think some stones went through the middle radiator. That slowed us quite a lot but luckily everything else was

caused a serious fire that took three extinguishers to put out. We got it back to the service area and were thinking about trying to get it ready for Rally 2 the next day, but the harness, ignition coils, ECU and sensors were all burned and we didn't want to rush and do half the job and have it fail the next day, so unfortunately that's how it ended.

design and fit so the same thing doesn't happen again.

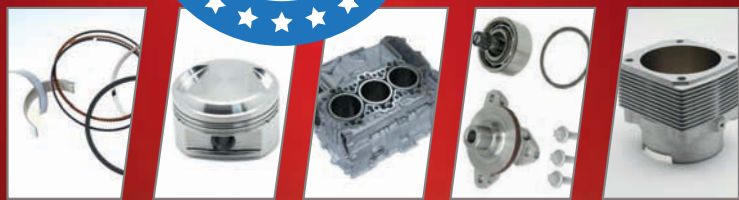
In the near future there will be a couple of local Finnish Championship rallies soon, but the next big one for us will be whether or not we do the Rally Wales. The conditions are similar to Finland, but much slipperier, so we need to be very confident in how the car handles before we

drive for themselves. We have a 996 already prepared and plan another couple of 997s for teams to rent. Now we have a FIA passport and the parts already designed so, in comparison to the first build, it's easy to make the cars.”

So two WRC 911s on the Rally Wales? What better reason to get into the forests to spectate? **PW**



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# VANISHING POINT

A silver arrow with a vengeance, the FVD 996 GT2 is a 730bhp monster, propelling us towards the horizon faster than a howitzer shell

Words: Johnny Tipler Photographer: Antony Fraser





**S**trewth! This is quick. The landscape flashes by, edges of the autobahn a grey-green blur. Bridges zoom into view and zap overhead as we whizz beneath them. I look as far into the distance as possible, gauging gaps between vehicles to see who's likely to pull into the overtaking lane on this unrestricted section of blacktop. Thank god, they check their mirrors in Germany. A glimpse at the speedo says 300kph as we streak from one 'kreuz' intersection to another. That's 186mph. All too soon it's over, but it's a taster of just how mental this GT2 can be when 730bhp is unleashed. Now, relax.

We've come to Freiburg in the picturesque Black Forest region of southwest Germany to pay our annual visit to Willy Brombacher, genial giant of components, tuning and restoration specialists FVD. He and I are close rivals in the titorial department, and he always looks after us very well, and that includes a project car for us to have a go in. This time it's a customer's 996 GT2, fruits of FVD's techies and backroom electronics wizards' tinkering over the last twelve months. Always questing for the ultimate in performance gains, or some other esoteric goal, Willy is

more than happy to tweak any top-line Porsche that's to hand as FVD's test bed. Cue the GT2.

Historically, the turbocharged 2wd 996 GT2 was announced in 1999, primarily as a road car, unlike the competition-focused 993 GT2; the 996 GT3 would do duty in the racing department. Just 1,300 GT2 996s were built during a five year production run till the unveiling of the 997 GT2. As befits its flagship power status, the GT2 has the widest version of the 996 bodyshell with modified nose and fixed rear wing, plus those giveaway NACA ducts in the leading edge of the rear wheelarches serving the intercoolers. The suspension is set-up with a ride height 10mm lower than the four-wheel drive 996 Turbo. Developing 462bhp, later 483bhp, from its 3.6-litre flat-six, the normal 996 GT2 derives its speed from two KKK turbochargers. It's rear-drive only, with six-speed manual gearbox. So much for the standard car. After its technical makeover, the FVD GT2 tops even the 997 GT2 RS's 610bhp by more than 100bhp. How about that?!

Willy will reveal all in a moment, but first let's set the scene. It's all go here. The compact FVD workshop is a hive of activity. There's a 964 Targa having its camber set





“It’s most fun when it’s 650bhp max, then the handling is nice. You still have control over the car, not the car over you”







*Above: To achieve its capacity increase to 4.1 litres, FVD uses bigger pistons and barrels*

*Below: FVD's Willy Brombacher tells it how it is, which is usually fast and loud!*

### DYNO SOARS

Want to find out how powerful your Porsche is without revving its guts out on a dyno? FVD have taken on the franchise for a small sensor the size of an ashtray that bonds with double-sided tape onto one of your car's driven wheel-hubs. Then you go for a spin. Made in Switzerland and originally developed for tyre manufacturers, the Inisoric "Dyno-System" comes in a box the size of a laptop case, with a Windows programme for Mac and PC, barometer and thermometer, plus a slide-rule to measure the diameter of your wheel. The sensor becomes active once the car is in motion, recording up to 88 minutes of your driving cycle. Basically, you accelerate in 2nd gear from 30kph until you reach maximum revs and then back off, and while coasting it measures the drag, best of two ways. Then off comes the module, having recorded the curve as you accelerate and coast. You hook it up to your computer with a USB cable and read off the data checklist, telling you how it's been performing in every gear. Crucial settings are barometric pressure, air temperature and weight of car, in order to evaluate the logged data. It can be presented as PS or BHP. It's been cross-checked with regular dynamometers and comes up with identical figures. Come to think of it, such a portable device would be a useful tool for magazine road testers, now able to stifle bullshit horsepower claims! Check it out on FVD's website.

at each corner, another 964 coupe on the ramp with its engine missing, in the throes of a complete overhaul, and a short-wheelbase 2.0-litre 911 also with its engine out. They've got a 997 having Ohlins shock absorbers fitted, the subject of FVD's latest venture in the damper department. There's a Volkswagen camper still here that was being restored on our last visit, and half a dozen engines and gearboxes in various states of disassembly. Our GT2 test car has been at FVD longer than expected because the owner had a slight accident bringing it over, which required a new front end, though the technical aspect then took priority, beefing up engine and brakes. Evidently it had previously received mechanical work in its home country that needed rectification. 'I tried my hardest to convince him that it will have enough power with normal sport cams and not race cams, but he wouldn't listen. And we don't need to have an exhaust system that exceeds the legal noise level, because noise doesn't mean it's powerful, but if I was his age maybe I would do the same. The customer is king!'

I'd been expecting something a little more ostentatious,

but then this is a customer car. Apart from the FVD graphics that identify the car for our shoot, there are no modifications to the regular bodywork, nor the wild striping that bedecks other FVD specials. Anyway, silver is still understated cool. Compared with some GT2 rear wing excesses, this one is not excessive. There are four exhaust pipes, paired in different diameters. 'The sports exhaust system is a little bit noisy,' Willy acknowledges, 'but he demanded that. Maybe in Malaysia there's no law against it like there is in Germany.'

Willy explains the methodology of extracting 730bhp from the GT2's Mezger motor. First off they fit bigger bores, taking it up to 4.1-litres. That in itself has become an area of FVD expertise. Then it's down to more subtle adjustments. 'We control it by adjusting the turbo boost and the timing, and it is easy to do that now with electronics, but actually it's most fun when it's 650bhp max, then the handling is nice, you still have control over the car not the car over you. It's actually sport mode, what you'd normally use in a racecar, so that's fundamentally the secret, but we were able to







programme it so it's working perfectly at 2,000rpm, even though it's a turbo, so you don't need to change gear because it's very torquey – 980Nm at 4,500rpm. Nothing novel in the transmission department: the gear ratios are standard GT2. 'It's really a racecar for the street,' avers Willy, noting that it will actually do 343kph at 7,300rpm – 213mph. Some racecar; some street!

All well and good, but you need big stoppers to match. Accordingly, the brakes are six-piston Brembo calipers on 380mm ventilated discs. 'That is the best combination for street use,' says Willy. 'Eight piston calipers are ok for racetracks but six pistons are fine for the street. That's the system that we've been selling for almost 10 years without any changes, for all cars, and it works really well. That's the system we get from Brembo, it's black and grey so there is not much to do, it's that easy to install when you change the original brake discs during routine maintenance.' The split-rim BBS wheels are shod with Michelin Sport Pilot Cup tyres, which work well when they're on a dry track but are said to be less grippy on a wet road. On the backs they are 325/30ZR19s and on the front they are 255/55ZR19s. 'When it's dry on a warm road it's like a go-kart, but you need to be very respectful

with the tyres when there are wet spots because it's a little bit nervous, but you get used to it.' Sure! Chance would be a fine thing, getting used to 700bhp on a damp road on trackday tyres.

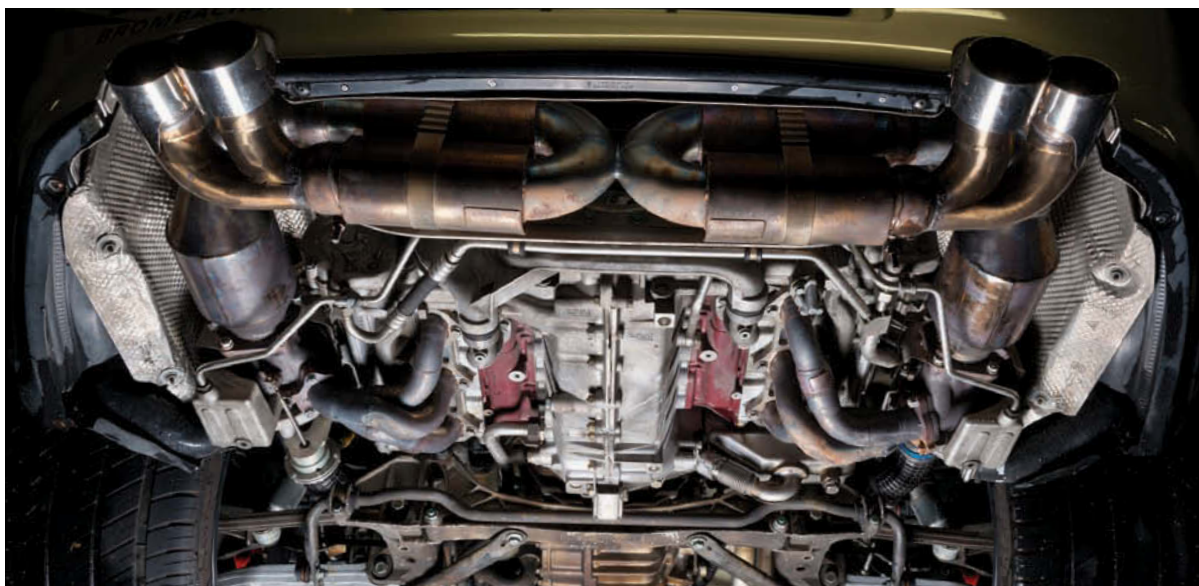
The cabin is seductively purposeful. Odd, though, that I'm in Germany and it's a right-hooker; transpires it belongs to a customer from Malaysia and it's bound for Singapore, a slice of Old England where they drive on the left. Though there are decent roads in the south of Malaysia there are no derestricted sections so the power-hungry owner will be hard-pressed to perform a legal max-out. Guarding against a worst-case scenario, FVD installed a Porsche original equipment Eisenmann roll cage. 'If you have a car like this I always highly recommend fitting a roll-over cage, because it's better you have it as a safety feature than not.' There's also an FVD-supplied Momo steering wheel, specially tailored in Alcantara and exquisite to the touch.

Let's have a go, then. Nestle into the all-embracing Recaro seat and embrace the controls. Fire up the 996 GT2 flat-six and it plunges into a colossal booming cacophony. The noise of the lightweight flywheel in concert with the gearbox is also quite noticeable. There's

*Above: Better hang on to your hat! Interior is largely standard, but FVD have installed a custom Eisenmann roll cage.*

*Adjustable Bilstein coilovers add to handling composure*

*Below: Custom exhaust system is an essential part of the FVD tuning mix*



## PARTY ON

A couple of months ago, FVD held an open day at its Umkirch premises to celebrate the firm's 30 years in business. Guests included customers and suppliers who were treated to BBQ and refreshments, workshop tours, racecar simulator, and able to check out a selection of FVD prepared Porsches and a variety of highly desirable tuning components, moving on to a local hostelry and nightclub to party in style into the small hours. Here's to the next 30 years!



a slight tremolo to the throttle at low revs because of the special cams, hinting at the tremendous power available when it comes on song. To begin with, the roads are damp after a shower, and Willy urges caution on account of the Sport Cup tyres, imperious on a warm, dry track but like slicks in the wet. 'It goes absolutely crazy when you have damp roads, and if you accelerate at all hard you would just lose it.' No problem, it's perfectly happy to burble along at a low-velocity 1,500rpm, a docile kitten easing through dignified downtown Freiburg on our way up through the forest to our photoshoot.

New Bilstein PSS10 coil-over dampers are fitted, and the handling is peerless, irrespective of Willy's new enthusiasm for Ohlins shocks and Eibach springs. 'The customer demands Bilsteins, so that's what we've fitted, because he wants to have it a little bit stiffer, and you can actually feel that on the road.' Turn-in is very sharp and assured on the incessant twists and turns and 2nd gear hairpins of the Schauinsland hillclimb, and in a lot of corners I'm giving the wheel a little bit of an old-school jink to assist the grip. We pause at the halfway house chalet-style restaurant and wooden timing booth before motoring over the top and westward towards the balmy vineyard terraces. Circulating repeatedly round our loop through the backroad vines for the benefit of Cameraboy, I sense the wonderfully compliant chassis, the vast grip in the turns and the bottomless resource of power. An awesome machine.

Now comes our autobahn alacrity. Floor the throttle, see what happens. It's like being in a catapult, firing you forward relentlessly in every gear, no matter how tight

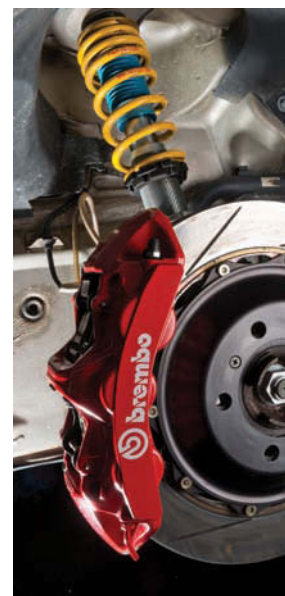
the belts; your body's tight but your head nods helplessly. It feels like being on a plane taking off without leaving the ground. Splendid backfiring on the over-run, popping and banging like a good 'un. We've been in fifth gear all the time on the unrestricted autobahn. 'Normally you wouldn't need to do that because the engine is so elastic, so even in sixth gear you know you have power to accelerate, that's how torquey it is.' And, happily, it stops pretty thoroughly as well. It's just that you can be maxed out on an unrestricted section and all of a sudden there's a 130kph sign, likely as not followed by a 120, and without exception everyone anchors up dramatically and falls into line, no matter if they're in the overtaking lane. That's what governs maximum speed in Germany: rigid adherence to the limits. 'Now you understand why we need the big brakes,' declares Willy.

So, what would be Le Patron's wheels of choice? Proud as he is of this GT2 masterpiece, Willy would run a 996 Turbo Cabriolet for his own enjoyment. 'I love the cabriolets now, because it's an ideal driver's car; if you want to enjoy the car and the scenery as well as be street-wise, then you would definitely take a cabriolet. If you go for sport and you go to race tracks, then of course you'd go with a coupe, but right now to have fun, a 996 Turbo Cabriolet or even a 997 Turbo Cabriolet is the way to go. Nobody can do anything on the 991 really, tuning-wise, as there is still a big issue with programme control units.' Top down it is, then.

We're familiar with FVD's extensive on-line parts and components business, and we've seen the busy inbound and dispatch departments, but less so with the







specialised tuning and bodywork restoration side, so Willy takes us on a guided tour. Pure gems sit in lockups, a 964 Turbo 2, a 964 RS and 2.7 RS, all newly restored in the hands of an ex-Zuffenhausen painter, while a very special project is under construction in the bodyshop. It's embargoed for now, but we'll be revealing that in a forthcoming issue of *g11&PW*. 'We also do normal maintenance stuff, small things like suspension and brake system changing, the regular tuning, and that is not a big deal, but when it comes to restoration that means actually building a complete car, and that takes a lot more time.' The activities roster goes on: 'We are also involved in the Supercup series through our Swiss company FVD Switzerland, and we have two Supercup cars – we won the Belgian GP support race at Spa for the first time ever! We started a couple of years ago in GT Masters, and now we have customers who bring their cars to us, but it's a totally different kind of business, it's pure racing, nothing else.'

But in terms of FVD's core components business, the particular trends that Willy's noticed are that more people from the air-cooled segment are queuing up to buy parts than the water-cooled. 'Yeah, we can see actually it's more the air-cooled than the water-cooled market, though that's still good, but in the last 12 months we saw a significant increase for original spare parts for the air cooled cars, especially for the 964s and the 993s. So we

have more and more dealers buying parts from us because in the old days a lot of cars got transformed, facelifted with fancy bodykits by Strosek, Gemballa and so on, or updated to 964s and 993s, and now the people who buy these cars – the collectors – of course they want to make them original again, so they need fenders, front bumpers, everything original to give the car back its original look.' It's no surprise that FVD is abreast of, and indeed catering to, the zeitgeist. 'And then the cars get driven so they need maintenance, and you need the parts to repair them because they drive them more, so it has really been an increase in the last 12 months for spares for the air-cooled cars; but then we always did specialise in the air-cooled cars a little bit more than water-cooled.' Willy also has an eye on the future: the 996 GT2? 'I told him we need to get this car in nice shape,' he says, 'because in 10 years it will be worth a lot of money, collectable, definitely, because they didn't make that many 996 GT2s.'

And this one is different again, goalposts widened in a typically logical FVD manner. It's no different externally to a factory GT2, yet it operates in an even more hard-core fashion. There can be few cars capable of delivering such performance, transporting you across continents in such a robust way. Put into perspective, the vanishing point may be an unobtainable goal, but FVD's GT2 will have a darned good stab at getting you there. **PW**

*Above and below: BBS cross spoke wheels in black offset the silver, while big Brembo six pot calipers do an efficient job of killing speed*

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# REACH FOR THE STARS

Burning across the firmament, the 959 was like no other Porsche. Conceived in response to 1982 Group B rally regs, the flagship model showcased the company's high-tech resources during the '80s supercar boom. We zoomed three in North Yorkshire, each unique in its own way

Words: Johnny Tipler Photography: Antony Fraser





## A TRIO OF 959S





**L**ike a spaceship darting warp-factor through the spiralling galaxy of moorland moonscape, the 959 seems like an extra-terrestrial visitor. Nearly thirty years on, this sublime stellar module still looks like no other Porsche. That's largely down to the bulbous flanks shrouding specially made wheels, vents and scoops, gutterless roof and full width basket-handle rear wing. Open the engine lid and the powerplant barely looks like a 911 flat-six either, given all the additional space-shuttle tubing and compressors. But isn't there something familiar about those headlights though? Of course, they also appear on the 993, thanks to Porsche in-house stylist Richard Soderberg's original 959 renderings, though they were certainly precocious in 1983 when first pencilled, because the 959 predated the 993 by a decade. Spaceship design cues were an obvious inspiration in 1983, just as they'd been in Detroit styling departments in the 1950s. Space travel was in the wind: it's no coincidence that 1981 saw the first launch of NASA's Columbia Space Shuttle, with Challenger launched in '83, while on the silver screen we also anticipated the Return of the Jedi.

The prospect of sampling three of these amazing missiles brings us to Specialist Cars of Malton, North Yorkshire. Proprietor John Hawkins gives us the lowdown. 'It's a complicated car,' says John. 'Thirty years on, there are certain parts you can't get, so you have to have them made. We've looked after the white car for probably the last 15 years, and we made all the bushes for it, and when we put a new clutch in it last year we couldn't get a centre plate so we had to have one made. The parts are quite scarce, generally. The tyres took a bit of getting; we had to source them from Spain because they're an unusual size and they've got the pressure sensors.' The

tyres are Bridgestone RE71s, labelled 255/40 ZR17 on the rear and 235/45 ZR17 on the front. The only variation between the three cars is that on the red car they are Bridgestone Potenza S-02 but the sizes are the same. Like all Porsches, 959s fare better if they are used regularly, but regrettably their exquisite and exotic nature dooms most of them to be shut away in private collections. 'They're better driven rather than shut away,' says John. 'The moving parts deteriorate without use.'

Here's the model history. The 959 debuted as a design exercise at the 1983 Frankfurt Show, a white car dubbed the 'Gruppe B' study. It was Soderberg's futuristic design exercise under the aegis of Porsche styling boss Toni Lapine. Porsche had gone out of its way to create a masterpiece. Mechanically it was the brainchild of chief engineer Helmuth Bott and incoming managing director Peter Schutz who were convinced that the company's future lay with the tried and tested 911, provided it could continue to evolve. Back in 1980, the FIA's impending regulations for the hyper-quick Group B category provided Porsche with the focus to build a supercar that would showcase its engineering expertise on road and track. The rules called for a minimum of 200 units, which suited the company's aspirations, and it was clear that successful international rally cars needed to be all-wheel drive, so that was another element of the 959's spec.

Like a projectile from Kennedy Space Centre, the 959 is a technical tour de force: nothing so sophisticated had ever been available before, and it steals the show on its Frankfurt '83 unveiling. It flaunts a staggering array of sophisticated componentry. The roof, front and rear wings, integral sills, rear bodywork and aerofoil wing are all in Kevlar, a medium not so well known in the early '80s (when the 956 was an aluminium tub), while the front panel is polyurethane and the bonnet and doors are







*Left: Now there's something that you don't see every day!*

*Above: The 959 retained the 911's functional interior. Centre console and transmission tunnel would later turn up on the 964*

*Below: 'Komfort' version features adjustable ride height for uneven terrain*

aluminium. The bodywork beneath A- and C-pillars reveals slight rippling, indicating bonding and strengthening zones, racecar raw rather than limo-luxe. The aerodynamic effect is a zero-lift body shape, where the same downforce applies at any speed, while drag coefficient is down at 0.32 – the same as a modern 991 coupé – from the contemporary 3.2 Carrera's 0.34cd. As John says, indicating the red car, 'the Sport is a really cool piece of kit. It's beautifully built, because they're all Kevlar, and you can just make out the ripple down the sides where they've got strengthening bars in the doors, and how the roof is stitched where it joins the rear wing, it's like a thick bar of carbon fibre bonding it together. Especially when you think how old it is, when you look inside it's all the same 3.2 Carrera stuff from 1988, isn't it.'

The 959 is powered by a 2,848cc flat-six, derived from the racing unit that powered the 935-inspired 'Moby Dick' Group 5 Le Mans car, with air-cooled block and water-cooled cylinder heads, four-valves-per-cylinder, twin sequential KKK turbochargers with intercoolers, developing 450bhp. Two sequential turbos ensure power delivery is relatively smooth across the rev range, rather than the on-off character of the 930, though it is obvious when the first and then the second turbo becomes effective; at 5,000rpm I brace myself for the second one to kick in. It was prodigiously fast in its day. In a 1987 test at Volkswagen's Ehra-Lessien test track by *Auto Motor und Sport*, the 959 Sport clocked 0-100kph in 3.7s blasting on to 200kph in 13s, and maxing out at 317kph, new world records for production cars at the time.

The Komfort transmission consists of five forward gears plus 'G' for off-road, with permanent all-wheel drive

and electronic torque monitoring that applies power to front and rear axles according to driving conditions, ranging from wet and dry to ice and off-road. Suspension consists of double transverse links front and rear – wishbones in other words – with coil springs and four pairs of Bilstein dampers, two at each corner, and anti-roll bars. It also has three settings for stiffness and automatic damping management. Brakes are ventilated four-piston discs, working in conjunction with a sophisticated ABS that controls each wheel individually. On the Komfort version the car's ride height can be adjusted electrically for negotiating speed humps, a feature omitted from the track-orientated Sport variant.

The 959 is a rare beast in the Zuffenhausen hagiography, with 292 cars assembled by Baur between 1986 and 1988, and eight cars made five years later from leftover spare parts. There were five works rally cars – the Rothmans liveried Paris-Dakar machines – and one racing car, the 961. Thirty-seven prototypes were created between 1983 and 1986 during three pre-production episodes identified as F-, N- and V-series, becoming increasingly sophisticated as the model's gestation progressed. Price at launch was £142,667 (\$225,000 or Dm 420,000), rising to £326,767 (\$515,345 or Dm 747,500) for examples from the final batch. Pundits reckon the actual cost of producing the 959 was double that. During the early '90s recession 959s changed hands for a 'bargain' £100K, and although some of its genuine value was recouped subsequently, it never really regained its true worth, relative to icons like the 2.7 Carrera RS. Until now. Wait for it: benchmark price for a 959 Komfort is now £750,000. 'A white one sold recently for \$1.12m,







which sort of set the standard,' says John. 'I think the Sport will be £1m in a year or so, especially because it comes from the era of when McLarens first came out, and they are £5- or £6m now. A RHD lightweight 2.7 RS is now a million quid, so it's not far fetched in that context.'

The majority of production 959s are fully kitted out Komfort models, while the Sport version is lighter by 125kg, lacking the suspension-raising kit, air-con, electric windows, passenger door mirror, central locking and rear seats, while manually-adjustable cloth-trimmed Recaro sports seats are substituted for the Komfort's electrically adjustable leather seats. The Sport makes up for that with its four-point Autoflug harnesses and, in some cases, a factory roll-cage, though perversely if the cage is fitted it is necessary to revert to electric windows since the door bar impedes the manual window winder. Why there were many more Komforts built than Sports – 265 units to 35 – seems to have been down to literally that, the comfort factor: customers desired high-tech mile munchers rather than trackday pranksters.

I asked erstwhile Porsche (and Ruf) stylist Richard Soderberg what were the main considerations when designing the 959. 'We went into the wind tunnel to find out the optimum parameters to get the aerodynamics to the state where we had enough downforce, and we played with various wings, and that bread-basket handle was the one we decided was the most functional and efficient, and so that became the styling theme for the rear.' Restricted development costs meant that the core of the traditional 911 bodyshell's styling was retained. 'We

were still limited as to how far we could go; we couldn't do a completely new body shape, we were stuck with the original. The only things we could change were the front and rear wings; we couldn't change the cabin and the doors – the doors are one of the most expensive items when you make a new body – and the  $\frac{3}{4}$  panel is also expensive to do. There's a carry over to the next generation of the 911 in the fenders, the wings, and the headlights, which are evident on the 993. The 959 was really one of the first supercars, and Porsche were very sceptical they could find customers who would pay the astronomical sum of DM 250,000 at that time, but they were sold out in a matter of weeks because it was such an interesting vehicle.' Its place in Porsche's flagship roster is almost unique, with only the Carrera GT its equal, incorporating cutting edge technical innovations and a modicum of production parts.

So what are these intergalactic rockets like in practice? The first one I drive is the red Sport. The roll cage means it's more of a leg-elevating contest to get into, and the bulging front wings (US = fenders) mean that neither of the doors opens as wide as a normal 911's. Nevertheless, once installed, the Recaro seats are agreeably supportive, and I fasten up the neat inertia-reel Autoflug harness, anchored off the back shelf. The cabin interior is bounded by leather-covered roll cage bars, though the central pole which goes directly behind the seats prevents the driver's from going far enough back. Facing me, the instruments are familiar 3.2 Carrera dials, augmented by the turbo boost gauge that goes right round to 2.5-bar, and the

*Much as Porsche designers and engineers would have liked to have created an all new bodyshape/style for the 959, they were stuck with the basic architecture of the 911. A good thing we reckon as some of the design cues were used on later cars, such as the headlamps for the 993*

*Below left: With the rear deck open it's easy to appreciate just how much wider the 959 was over the 911. Engine is dominated by turbo plumbing. Below: Extensive tool roll includes a pair of leather gloves!*





right-hand dial is more about the four-wheel drive sensors, advising about sun, rain and snow, and whichever the conditions are appropriate for it, via a schematic of the four wheels with warning lights that flash when there's a problem.

There's more weight behind the rear axle (not that you feel it) on account of the additional pump for the suspension levitation, plus associated pulleys, and pipes that feed the water-cooled heads, as well as intercoolers housed in the front of the rear wheel arches. On the Komfort cars the oil tank filler is on the right hand side and the level checker for the hydraulic fluid is on the left hand side, while the Sport only has the oil checker, which are accessed by little yellow flippers at the trailing edge of the engine bay. The hydraulic pump for the suspension raising and lowering system is obviously absent in the engine bay of the Sport.

The fuel cell is accessed by pulling the cable to open the cap in the bonnet that's directly above the neck of the fuel tank. Three neat soft leather bags are stowed in a shallow luggage tray under the front lid of the black car. Paradoxically these high-class satchels contain all the workman's hardware, the tools, the jack and the compressor for pumping up the spare tyre, lending more credence to the proposition that this is an expensive luxury car. There's more equipment in here than most

people have in their regular toolbox. But the *piece de resistance* in the wrench bag is a pair of leather gloves so you don't get your hands dirty doing any work on it. Which begs the question, why would you need to be spanning yourself if you can afford to buy such an expensive car, and could you cope with the higher-tech spec equipment in any case? Ah, the chauffeur's job, perhaps.

I try the white car, a Komfort version, and use the electronic seat adjustment to find a suitable driving position in the maroon seats. The additional switchgear on the centre console allows me to adjust the damper stiffness if I want (I don't), and raise and lower the ride height, a legacy of the Paris-Dakar all-terrain combat zone, which comes in useful when we're shunting the cars around for the photoshoot. As I elevate the suspension on the white car it emits all sorts of strange little creaks and groans as the body rises. It's not as smooth operating or as highly elevated as the Citroën CX of my acquaintance, but still, it's good to know it works. The left-hand switch is to firm or soften the suspension itself, so on the rough terrain when the car is all the way up I put it on the softest setting and then, when I drop it to its lowest setting, I firm it up again. Odd that the Sport lacks this facility, but one could draw a comparison between the Komfort as a Paris-Dakar derivative and the Sport being a descendant of the one-off 961 Le Mans racecar.







The off-road capability extends to the transmission on the Komfort models. First gear is actually a crawler gear, marked G on the knob-top, for off-roading, so notional 2nd is really 1st gear. The white Komfort's steering is very acute and it doesn't require much input to make it weave, so I guess it must be quite heavily power assisted. It's quite a bouncy ride, this particular car, but my qualms about that are temporarily eclipsed by the surge of power I feel as the first turbo comes in at about 2,750rpm, and then the second turbo kicks in at 5,000rpm. Sensationally fast, though there is an errant tendency for it to want to pull one way or the other going hard in a corner. In that context it's the least convincing of the three.

The Sport cockpit has grey cloth fabric, which, frankly, is singularly unappealing, while the white car with its purple-dyed trim is symptomatic of mid-'80s taste, whereas the black car with its leather upholstery exudes an altogether more timeless aura. As I become better acquainted with the Sport I revise my first opinion, and it does feel better balanced and less inclined to weave under power in the corner. Of the trio, the black Komfort is by some way the loveliest of the three to drive – and they are each subtly different to one other in terms of creature comfort, ride and handling, a reflection of their hand-crafted pedigree; the black car feels the loosest, the most compliant, most comfortable, and that's because it's got no-nonsense black leather seats and upholstery and a neater sports steering wheel than the other two with their standard 3.2 Carrera-era wheels. It's done a good 20,000 miles more than the other two, so maybe a higher mileage car means one that's a little bit

more run in. It has smooth, easy steering, it's light on the throttle, catapult acceleration, and everything feels balanced, nicely weighted, controllable. The anti-lock brakes slow it phenomenally quickly, and the run-flat tyres are further confidence inspiring. It's a fabulous drive, especially on a smooth surface, and there's a certain intimacy about it – until the second turbo kicks in and all hell breaks loose! But I could get used to that. The 959 is a superlative machine, as Porsche intended it to be, and the North York Moors are a great environment to give these cars their head.

There's a strong impression with the 959 that Porsche is asking its customers to participate in a great experiment. That's because a lot of the equipment is a combination of well-proven 3.2 Carrera augmented by the latest state-of-the-art materials, technical equipment and gizmos. For this reason, the 959 is in quite a different league from the mainstream 964 and 993. There is a lot of new kit on board, such as twin turbos as opposed to one big one, highly sophisticated transmission and suspension, and neat detailing like the teardrop mirrors and gutterless roof. Conversely, none of the cabin furniture fits very well, the glove locker is shallower because there's a box underneath the dash so there's less space, and of course the transmission tunnel for the driveline coming through to the front axle. Most of it is well finished, but here and there the quality of execution is not commensurate with Porsche's flagship, leading to the conclusion that we're dealing with a prototype, albeit a heroic one. The 959 is the Starship Enterprise, boldly going where no one has gone before. **PW**

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*Above: Red 'Sport' model looks sensational on the road. Imagine what it must have looked like in 1983? Below: Interior is rather more basic than 'Komfort' version and features a factory roll cage. Wheels were unique hollow-spoked at the time*





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### 2010 - (997 GEN II) C2S COUPE MANUAL (BASALT BLACK) 15,000 MILES

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### 2007 - 997 CARRERA 2 COUPE MANUAL (METEOR GREY) – 41,000 Miles

Black Grey Lthr Intr, PSM/PCM-Sat. Nav/Telephone, BOSE, CD Changer, Heated Seats, Cruise Control, Alcantara Headlining, Rear park Assist, 19" Carrera S Alloy wheels, Full Service History.

### 2006 - 997 CARRERA 4S COUPE MANUAL (BASALT BLACK) 39,000 Miles

Black Lthr Intr, PSM/PCM/PCM-Sat Nav, Telephone, Heated/Memory/Sports & Fully Electric Seats, Sunroof, White Dials, M/F/Steering wheel, Alcantara Headlining, Rear Wiper, Rear Park Assist, Sports Exhausts, Climate Control, Full Main Dealer Service History

### 2006 - 997 C2S COUPE TIPTRONIC (BASALT BLACK) - 55,000 Miles

Full Black Lthr Intr, PSM/PASM/PCM-Sat Nav/Telephone, M/F/S wheel, BOSE, Heated/Sports Seats, White Dials, Switchable Sports Exhaust, Alcantara Headlining, Rear Wiper, Rear Park Assist, Climate Control, 19" Splitrim Alloy wheels, Full Main Dealer Service History. (Just been carried out major service)

### 2006 - 997 C2 COUPE MANUAL (BASALT BLACK) - 56,000 Miles

Sand Beige Lthr Intr, PSM/PCM-Sat Nav, Telephone, Alcantara Headlining, BOSE, CD Changer, Climate Control, Sports Exhausts, 18" Carrera Alloys, Full main dealer Porsche Service History.

### PORSCHE 996 - GT3 / GT2 / TURBO / C4S / C2 / C4 2003 - 996 TURBO COUPE MANUAL (POLAR SILVER) – 70,000 Miles

Dark Metropole Blue Lthr Intr, PSM/PCM-Sat Nav, Telephone, BOSE, CD Changer, Fully Electric Seats, Sunroof, Rear wiper, Rear Park Assist, Alcantara Headlining, 18" Turbo Alloys, Full Service History.

### PORSCHE 993 - TURBO / C2S / C4S / C2 / C4 / TARGA 1998 – 993 TURBO "S" COUPE MANUAL (SPEED YELLOW) 60,000 Miles

Black Leather/Carbon Fibre Interior, Litronic Lights, Sports Seats, Electric Seats, Electric Mirrors, Yellow Dials, Porsche Radio & Single CD Changer, Yellow Seat Belts, Sunroof, Rear wiper, Yellow Callipers., 18" Turbo S Alloy Wheels, full Service History.

### 1996 - 993 TURBO COUPE MANUAL (MIDNIGHT BLUE) 21,000 MILES

Grey Leather Interior, Sunroof, Part Electric Seats, Electric Windows & Mirrors, Rear Wiper, 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 Electric Sunroof/Seats Sports Seats Cruise Control Upgraded Becker CD Player/Bluetooth/Speakers/Sat-Nav Compatibility Climate Control 18" Turbo Alloys (OPC Service History)

### 1997 - 993 C2S COUPE MANUAL (ARCTIC SILVER) 71,000 Miles

Varioram, Metropole Blue Lthr Intr, Sunroof, White Dials, SONY Single CD player & Radio, Electric Window & Mirror, Air Bag, Air Conditioning, Factory Fitted Alarm System, 18" Turbo Alloys, Turbo Spoiler, Fully Documented Service History

### 1997 - 993 C4 CABRIOLET MANUAL (MIDNIGHT BLUE) – 92,000 Miles

Marble Grey Lthr Intr, Air Conditioning, Radio & CD Player, Electric Window & Electric Mirror, 17" Carrera 4 Alloys, Full Service History

### 1995 - 993 C2 COUPE MANUAL (IRISH BLUE METALLIC) 109,000 Miles

Black leather Interior, Electric seats, Window, & Mirror, Sunroof, Porsche immobiliser and spare keys, Recent cosmetic paintwork carried out to remove stone chips, Porsche document wallet and manuals, Rear wiper, 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.

### 1995 - 993 C2 COUPE MANUAL (MIDNIGHT BLUE) 99,000 Miles

Sunroof, Black leather electric seats, No accident damage, Clear Lenses, Porsche immobiliser and spare keys, Recent cosmetic paintwork carried out to remove stone chips, Porsche document wallet and manuals, Rear wiper, 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 TIPTRONIC (BLACK METALLIC) – 73,000 Miles

Black Lthr Intr, Kenwood CD Player & radio, Sunroof, Rear Wiper, Electric Window/Mirror, 17" Alloy wheel, Factory Fitted Alarm System, Full Main Dealer & Porsche Specialist Service History

### 1994 - 993 C2 COUPE TIPTRONIC (BLACK) 99,000 MILES

Marble Grey Lthr Intr, Sunroof, Becker Radio, Electric Seats, Electric Windows, & Mirrors, Rear Wiper, 17" Alloy wheels, Full Porsche & Specialist Service History. (Just been Serviced)

### 1987 PORSCHE 930 TURBO COUPE MANUAL (BLACK METALLIC) 140,000 Miles

DEEP Plum Lthr Intr, 3.3L engine, KKK27 Turbo, Manual Gearbox (915), Porsche Sports Steering Wheel, Fully Electric Seats, Heated Seats, Alcantara Headliner, Full Climate Control (AC) converted to modern AC gas, Upgraded Bi-Xenon Lights, Front Suspension Strut Brace, Rear Wiper, Original 16" FUCHS Alloys with new Continental N1 tyres fitted, Upgraded High End Sound system, Full Service History with Invoices and photographs documenting the full restoration. Subject to a full and extensive restoration, just recently completed. Concours condition throughout

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126,000 Miles, Manual Gearbox (G50), Matching Numbers Example, Immaculate Blue Metallic Exterior, Full Marble Grey Interior, Matching Dark Blue Hood, Fully Electric Softtop, Electric Windows and Mirrors, Period Correct Fuchs Alloy Wheels, Comprehensive Service History, Very Original Condition, 10 Years With The Same Owner, Kept with the same specialist for a number of years

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#### 2008 - FERRARI F430 SPIDER F1 TITANIUM SILVER 20,000 MILES

F1, Titanium Silver Exterior, Rosso Leather Interior, Carbon Fibre Trim, Ferrari Stereo with a telephone module, Manettino with Sports and track settings, Climate Control, Ferrari Crested Headrests. FFSH.

#### 2003 - FERRARI 360 SPIDER F1 (GRIGIO SILVER) 28,000 miles

F1 Gear box, Grigio Silver Coachwork, Black Leather Interior, ASR, Challenge Grill, Climate control, CD changer, 19" Ferrari Alloy wheels, Full Ferrari Service History, Two previous Keepers

#### 1998 – FERRARI 550 MARANELLO COUPE MANUAL (SILVER) 53,000 Miles.

Navy Leather Interior Satellite Navigation with DVD ASR Sports Mode Electric Seats Upgraded Radio & 6 CD-Changer Climate Control (Ferrari Service History)

### 1996 - FERRARI F355 SPIDER (MANUAL) GIALLO MODENA 28,000 Miles

Giallo Modena Yellow, Full Nero Black Int. Optional Sports Mode, Electric Seats, Electric Hood, Tonnau Cover, AC, R/Parking Sensors, Electric Windows & Mirrors, 18" Ferrari 355 Alloys, Original Toolkit, FSH, Recently Serviced, This car has been known to us for a period of 5 years.

### 1973 – FERRARI 365 GTB/4 DAYTONA RHD (ROSSO RED) 38,000 Miles.

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### 1967 – FERRARI 275 GTB/4 MANUAL LHD (ARGENTO SILVER) 59,000 Miles.

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# SPECIAL 964

What is it about the 964 that makes it the 911 tuning favourite? This modded example by Specialist Components is a prime example of the art. With injection tweaks, a new custom ECU and improved breathing, it's making an impressive 283bhp. We drive it

Words: Steve Bennett Photography: Brett Fraser





In g11&PW's East Anglian outpost, there is something known as the Lotus effect, which explains the proliferation of small to medium sized automotive engineering outfits dotted around the industrial estates within a 30-mile radius of Lotus's Hethel base. It stands to reason really, Lotus has been in the area since the sixties and so a nucleus of suppliers and complementary businesses surrounds them. And then, of course, Lotus employees and engineers have their own bright ideas and leave and set up shop nearby, and so East Anglia's auto engineering zone expands. It is a haven for small vehicle manufacturing, bespoke engineering, composites, tuning and motorsport.

Why are we telling you this? Well, it explains the existence of Specialist Components, and much of what they do, which now includes the beginnings of some neat ECU/injection packages for Porsches, starting with this here 964. It also explains an underground Porsche movement within Lotus itself,

which we will come to.

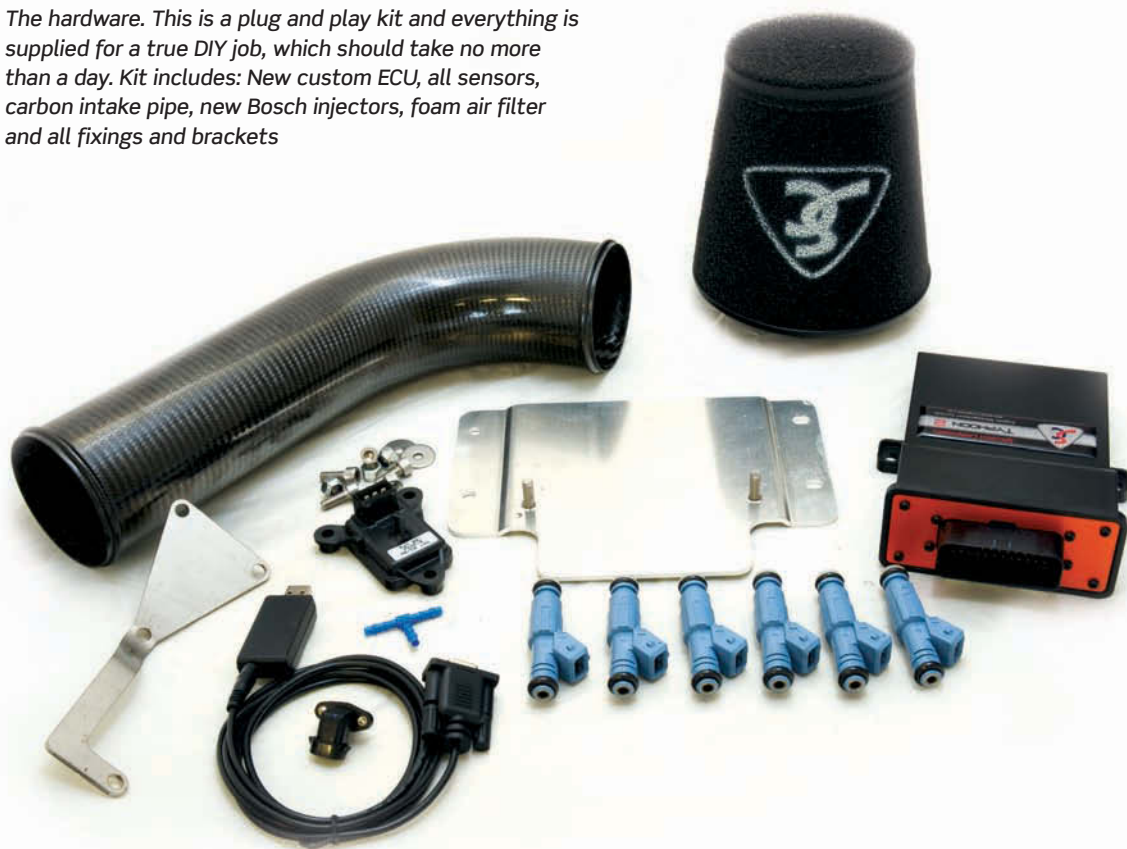
First, though, please allow a brief meander off the subject to illustrate Specialist Components' diverse engineering interests. Upon entering the Wymondham based outfit's premises my attention was caught not by the lovely white 964, but by a row of three engines on stands. Memory banks clanked and whirled and deep from the vaults the connection was made. "Hold on I blurted out, "isn't that a Mini A-Series block with a BMW K100 motorcycle 16-valve cylinder head?" Photographer Fraser looked astounded, not by such knowledge, but by the fact that anyone would know such a thing. I was slightly taken aback too, but the ice was broken and we chuntered on happily about Minis, how the discovery that a BMW bike cylinder head would fit on to a Mini block was made and how fitting a supercharger and fuel injection takes power well over 300bhp. I should add that since my future is mainly in the past, I remembered all this stuff from a dalliance with *MiniWorld* magazine in the 'gos.

So back to Porsches via the

Lotus connection. Specialist Components is headed up by Simon Hill and John Kimmins, both ex of Lotus Cars and with ten and seven years of Lotus experience respectively. Simon headed up the fuel injection and ECU side at Lotus and developed Lotus's bespoke ECU for the Toyota engines for the Elise and the Evora. John, meanwhile, was Principle Chassis Engineer, but can turn his hand to most types of engineering. Indeed the Mini/BMW engine hybrid is all John's doing as is the Mini drag race car hiding under a cover.

The bulk of SC's work is based around the company's engine management and electronics systems and 'plug and play' tuning packages, plus bespoke component manufacturing. They supply a diverse range of manufacturers including Norton and Ginetta and became one of the first specialists to develop aftermarket systems for common rail diesel and direct fuel injection petrol engines. All their systems are EU approved for road use, which is a nod to their O/E background in that it's not mandatory at this scale of

*The hardware. This is a plug and play kit and everything is supplied for a true DIY job, which should take no more than a day. Kit includes: New custom ECU, all sensors, carbon intake pipe, new Bosch injectors, foam air filter and all fixings and brackets*







manufacture, but it means that SC ECUs are stringently tested and needless to say they use top quality components and dedicated automotive processors.

Simon is the Porsche man of the duo, having owned a 993 (they will be turning their attention to the 993 next). He wasn't alone at Lotus as a Porsche enthusiast. The owner of this here white 964 development car – Stewart Taylor – is an ex Lotus employee too, who now works as an electrical engineer at Caterham nearby, although he is currently

being loaned out to McLaren, given Caterham's current shaky F1 predicament. Whilst at Lotus he ran a 964 RS as did two other Lotus employees at the time, and it wasn't uncommon to see them in a line in the car park. Oh, and Stewart also has a 996 GT3 RS. So that's the underground Lotus/Porsche connection, but there's more in this small world of ex-Lotus expertise.

Just round the corner we pop into Zenos Cars (SC supply ECUs to them) to check out their prototype track day/sportscar. It looks a bit like a KTM Crossbow, but is half the price, and is



typical of the sort of start up operation that proliferates in these parts. Most fall by the wayside, but there is a depth of talent here and it's headed up by ex Lotus and Caterham man, Ansar Ali, whose industry track record has no trouble attracting investment. Chief engineer to the project is Jeremy Witt, another ex-Lotus man, and he takes great interest in SC's 964 conversion. Why? Well he's just bought himself a Carrera 3.2. Lotus/Porsche? Enough I said.

So time to stop meandering around and get to the point. It will come as no surprise that SC's

*Above: It's a g64 engine, but with a big chunk of air box and airflow meter missing, which is kind of the whole point. Air now enters the engine uninterrupted via the foam air filter and carbon intake pipe and is measured by a MAF sensor which reports to the custom ECU*

*Below: No they're not Porsche engines, but indulge us here. In the foreground is a Mini A-Series engine with the 16-valve cylinder head from a BMW K100 motorbike. In the middle is an A-Series with a seven port head and last in line a supercharged A-Series/BMW hybrid, all made at Specialist Components*







964 conversion is based on a complete rethink and overhaul of the engine management and injection system. Central to that is the removal of the air flow meter, which most '80s/'90s fuel injected cars were saddled with. This restriction, which sits between the air filter box and the throttle body/inlet manifold consists of a flap that opens and closes with the throttle and is attached to a potentiometer which interprets the flap's 'swing'

driver's seat – location and reads from a Weber MAF sensor and throttle position sensor. It integrates with the standard 964 wiring, as do all the under bonnet components, which come complete with brackets and connectors. Now, we're no DIY gurus, but I reckon we could make a good stab at fitting this kit, and SC promote it as an easy DIY, 'plug and play' job. Also included is a rather special looking, and ultra lightweight

spent a lot of time looking for the right car, and it's not difficult to see why he wasn't frightened by the high mileage.

On the rolling road it made a spot on 238bhp (despite a couple of injectors being rather below par, plus US cars are detuned for their 91 octane fuel). With restrictions removed and new components in place SC mapped the engine up to 283bhp, with oodles of torque across the range, too. Now that's

*The 964 has always been a popular tuning option, possible because they've been very good value, so owners haven't been too precious about modifying them. Now, though, prices are on the up, but SC's kit is easily reversible*

sudden you got a much quicker connection between throttle foot and what's happening at the sharp end. Result.

Now the 964 has never felt slow. Its relatively old school 3.6-

“We're no DIY gurus, but I reckon we could make a good go at fitting this kit”

to calculate the amount of air entering the induction and so relay the info to the ECU to form a major part of the fuelling and ignition parameters. Of course it works, but it's a major blockage rather like an additional, rather big and slow throttle butterfly. Bin it and you get the massive benefit of unrestricted air flow into the induction system. However, without it the ECU can't function, which is where SC's own Typhoon 2 ECU comes in.

Rather more sophisticated than the old Bosch system, it is a direct, plug in replacement that lives in the same – under the

carbon fibre inlet pipe, attached to which is an ITG cone air filter. Fitting is easily reversible, should an owner wish to revert to the standard set up, although once driven I can't imagine this happening, unless originality is a priority.

So what about the numbers? Well this here 964 is a US import, with 190,000-miles on the clock, not that you'd believe it. Its US owner used to commute on the freeway every day and racked up the big miles, but at both home and work the car was garaged, and evidently fastidiously looked after. Certainly owner, Stewart,

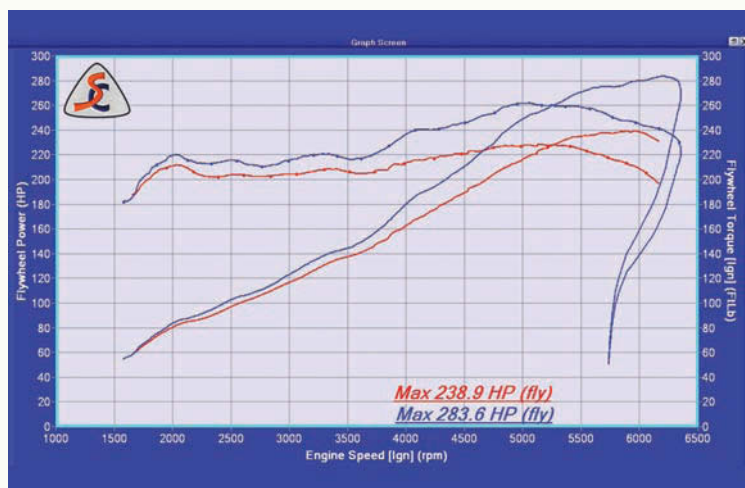
some improvement, and the ECU is easily mapped too, should a prospective owner wish to fit different cams etc. Indeed Stewart did have a 993 Varioram engine lined up to go in the 964, but feels there is probably little point now. We agree. Having said that, imagine the 993 motor devoid of air flow meter etc, and fitted with a similar kit?

So how does it drive? Well how do you think? Power aside, one of the big gains that will always come from this sort of conversion is driveability and throttle response. Bin the slow-witted air flow meter and all of a

litre, two-valves per cylinder, twin cam engine is the antithesis of the peaky screamers of today, and is well suited to road use, with torque aplenty and impressive flexibility. With SC's magic electronics it has all this and more. The power band is positively bulging, with no let up in the delivery which feels 'fat' throughout. There is no sense of it coming on cam, so to speak. It just builds and builds and you can either use the gears for the full effect, or just the torque. A 964 RS owner wouldn't see which way you went.

Stewart's car benefits from a





cat bypass which, together with the ITG filter, makes this g64 sound very rude indeed. Inside there are Recaro fixed buckets and a neat Momo suede rimmed wheel. The suspension has been slightly lowered (Stewart has some split rim BBSs to go on too) and the overall effect is of an immensely enjoyable, chuckable car to drive. Indeed we take it for a run down Lotus's own favourite piece of chassis development road, which runs past the factory, and it feels fantastic,

with a sharp turn in and a wiggle from the rear, particularly over some of the cresting switchbacks. Frankly we didn't want to give it back, and one lucky g11&PW scribbler with a rather well known g64, will be making the trip to SC for a fitting very soon. Lucky git!

So this is a well thought out conversion from a company and environment where engineering development runs deep. An extra 45bhp is a significant boost and the 'plug and play' DIY element is

a nice touch. So here's the big question: How much? Well, you don't need to sit down... This is bolt on power, not open engine surgery and so we think that £1650 is pretty reasonable. Actually, that's damning with faint praise. For the transformation that it gives, it's actually a complete bargain and, given g64 owners' enthusiasm for a spot of tuning, I reckon SC need to get a few kits ready and on the shelf, because they'll soon be flying off it. **PW**

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*Above left: The power graph of truth. From 238bhp to 283bhp, that's a pretty impressive result for a bolt on kit. The standard figure reflects the ignition detuned spec of the US market engine*

“An extra 45bhp is a significant boost and the ‘plug and play’ element a bonus”





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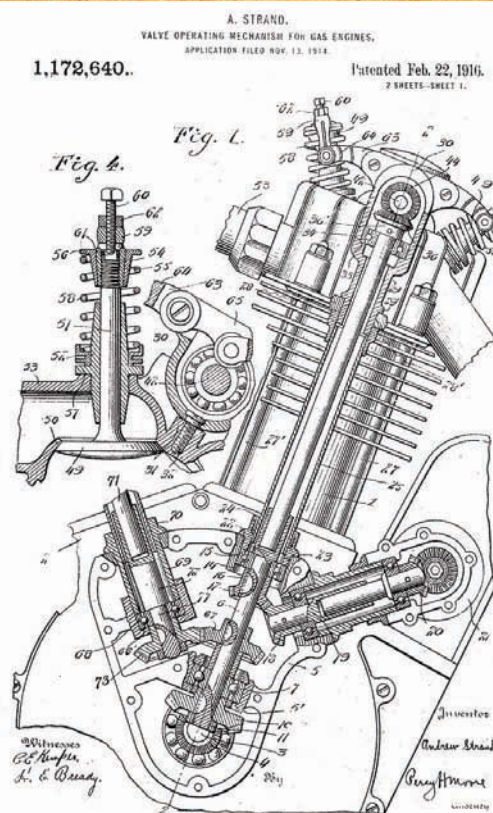
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# BACK TO ROOTS

Today we take overhead camshaft technology very much for granted, but when Porsche launched the Fuhrmann-designed bevel-drive 'four-cam' engines in the 1950s, it was big news. As we trace the story of these amazing engines, we discover they have their origins in a design that is 100 years old...

Words: Keith Seume Photos: Porsche Archiv, Michael Ward and author



**W**hen you look under the bonnet of even the most prosaic of family hatchbacks, it's rare today to discover an engine which doesn't feature an overhead-cam layout, many even sporting double-overhead camshafts – usually belt- or chain-driven. As far as Porsches were concerned, the DOHC – or four-cam – saga began back in 1938, with bevel-drive rather than belt or chain, but for others, the story began even earlier.

As far back as 1914, the American Cyclone company had built a motorcycle with an overhead-camshaft, 45 degree vee-twin engine for use on the wooden board tracks that were so popular at the time.

Designed by Swedish-born engineer Andrew Strand, the 996cc engine featured bevel-driven camshafts and powered

the bike to a record-breaking 101mph speed at the Omaha 'motordrome'. Later, the machine would hit a speed of 111mph. Not bad for 100 years ago. Strand was granted a patent for his bevel-drive camshaft design in 1916.

Moving forward, the father and son team of Ferdinand and Ferry had long held a desire to build a sportscar of their own design. The closest they came to this was the development of the Type 64 Berlin-Rome cars, built using *KdF-Wagen* (ie, People's Car) components and readied for competition in the never-to-be-run road race between the two capital cities. Looking back,

therefore, it would be easy to assume that there would be a ready supply of parts for them to construct a car of their own, but as the *KdF-Wagen* programme was state-funded, that was out of the question.

Not to be put off, in 1938 the two Porsches began work on a new sports car referred to as the *F-Wagen*, aka project Type 114. Karl Fröhlich was the engineer behind its design, but it had to take second place to 'official' work – work which actually paid money. Sadly, the Type 114 never reached fruition – sadly, because it would

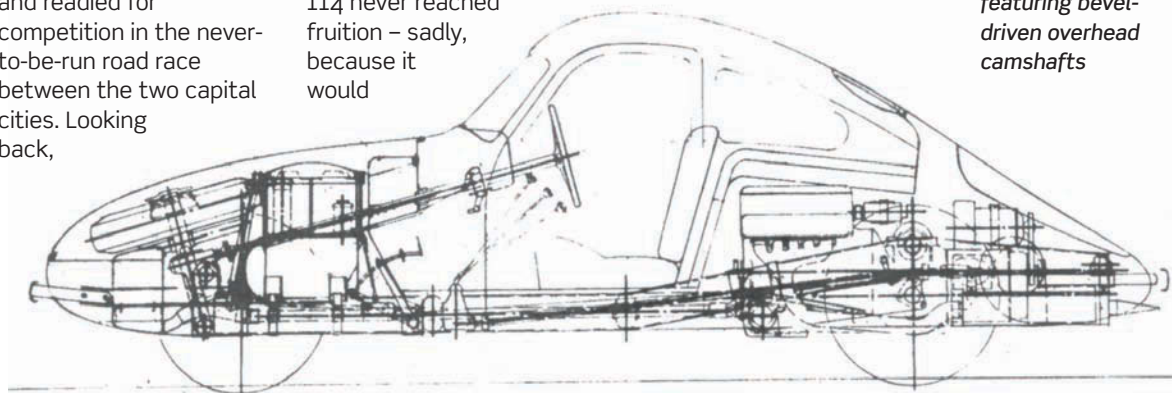
have been a truly incredible vehicle.

It was to have been a mid-engined coupé, powered by a water-cooled 1500cc engine. OK, so that's interesting in itself (water-cooling, mid-mounted engine, etc), but what makes the Type 114 particularly noteworthy is the fact that the engine was to be a complex V10 with double-overhead camshafts! Yes, you read that right: 10 cylinders, each of just 149cc each, with a bore and stroke of 58mm x 56.5mm.

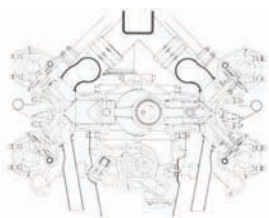
The engine was a 72-degree 'vee', with

Above: Patent awarded to Andrew Strand in 1916 for his bevel-drive overhead camshaft design

Below: Amazing Type 114 would have been powered by a 1.5-litre V10 featuring bevel-driven overhead camshafts







Above: Cisitalia flat-12 engine was designed by Ernsy Fuhrmann. The basic layout was very similar to the air-cooled Type 547 Carrera engine shown right. In both instances, bevel-driven shafts were used to rotate dual overhead camshafts

Below: Strand's design was taken up by the Cyclone motorcycle company for use in its board-track racing bikes. 45 degree twin was a real jewel

Below right: Winner of the 1937 Senior TT was Jock West on his BMW Rennsport, which featured a flat-twin engine with bevel-drive overhead cams

aluminium cylinder heads and 'wet' liners in an aluminium engine block.

The crankshaft featured roller main bearings, with large roller-bearing big-ends that required the crank to be built up of separate sections, which were then pressed together – a design pioneered by Hirth, who would go on to make the roller-bearing crankshafts for Porsche's post-war 356 Carreras.

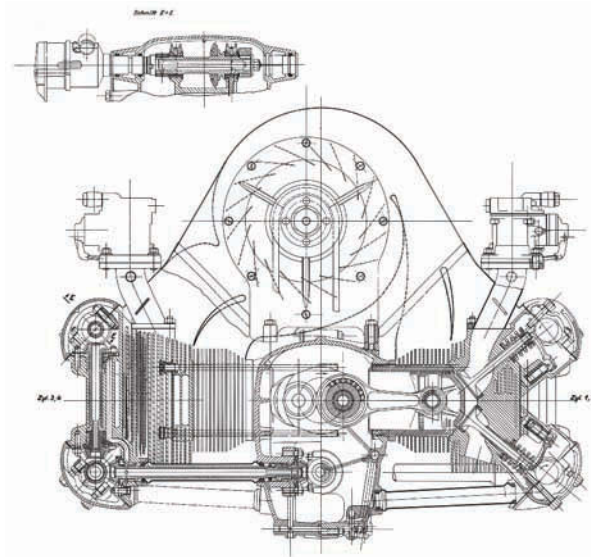
The pistons were domed, designed to work with the hemispherical combustion chambers, with the valves installed, according to Karl Ludvigsen, at an included angle of 88 degrees.

The most interesting aspect of the cylinder head design, though, was the use of dual overhead camshafts – the inlet cams were rotated via bevel gears off a crank-driven shaft, with a shorter shaft then used to turn the exhaust camshafts. Dual magnetos were to be fitted, each driven off the end of the inlet camshafts.

The Type 114 never got off the drawing board, and the whole project had been entirely financed out of Porsche's own pockets. Ferdinand and Ferry hoped that the political situation in Europe would calm down, allowing them to pursue the idea further, but it was not to be. However, in a rather odd turn of affairs, the basic drivetrain (the V10 engine and matching transaxle) were considered for use in the Type 116, a racing car project which was to have been funded by the Volkswagen programme.

At first sight, it seems strange that money should have been diverted from the People's Car project for something as fanciful as a small-capacity racing car. But we mustn't forget the importance placed on motorsport by the Nazi party hierarchy, who saw it as a way to promote Germany's strengths.

Numerous rallies and hillclimb meetings were held across the country in the late 1930s, and motorsport became



something of a national obsession – witness the battles royal between the Auto-Unions and Mercedes 'silver arrows'.

The ultimate road race, of course, never took place. It was to be the now legendary Berlin-Rome event, intended to both promote German engineering and also show off the new *Autobahn* system. The gathering clouds of war stifled that idea, but not before Porsche had built the three Type 60K10 sports cars based on the *KdF-Wagen*.

Porsche wasn't alone in

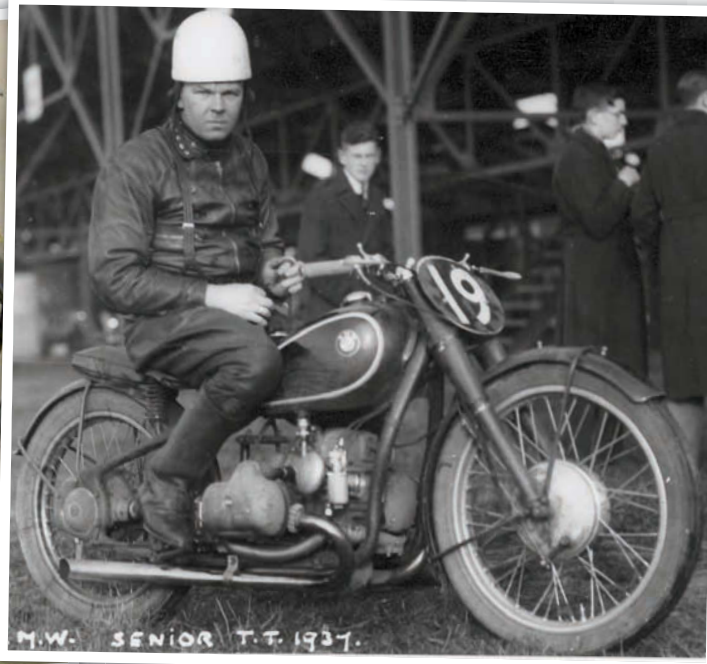
appreciating the benefits of bevel-driven overhead camshafts, for in 1937 BMW developed the first of its *Rennsport* motorcycles powered by a 500cc flat-twin with shaft-driven single overhead cams.

The ultimate development of this design could be seen in the post-war *Rennsport* engine, which went on to power TT-winning solos and world-beating sidocar machinery. The BMW engines became legendary but were too costly to build on a large scale, so all production models relied on pushrods – in much the same way as Porsche and VW.

For Porsche, the onset of hostilities brought plans for a self-built sports car to a premature (albeit temporary) end, and with it the chance to build a complex high-revving multi-cam engine.

But in 1947 Porsche signed a deal with Piero Dusio, an Italian industrialist with a vision to build a new Grand Prix car, the seeds of which grew into the Type 360 Cisitalia project.

The design of the engine of this ultimately ill-fated single-seater was heavily influenced by the pre-war Type 114 but,

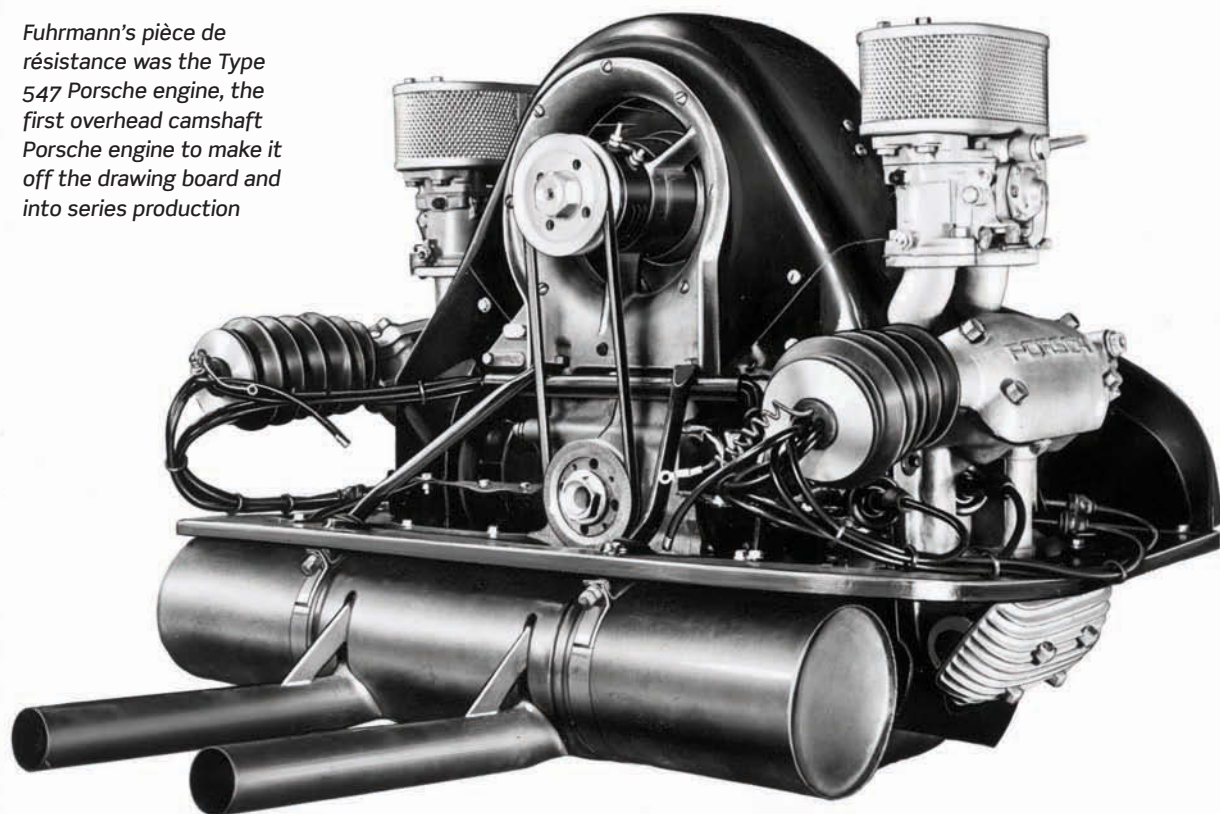






Above: Ernst Fuhrmann was the man behind the wonderful Carrera four-cam motors. Austrian-born, the engineer leapt at the chance to develop an engine entirely of his own design

*Fuhrmann's pièce de résistance was the Type 547 Porsche engine, the first overhead camshaft Porsche engine to make it off the drawing board and into series production*



Below: Seen here in an early Type 550 Spyder, the Fuhrmann-designed engine relied on dry-sump oiling - the oil reservoir can be seen to the right of the engine. Note the rear-facing distributors in this mid-engined installation. Large cooling fan pulled in air from both sides of the shrouding

instead of being a 1.5-litre V10, it was decided that an even more complex Porsche-designed flat-12 of similar capacity would be used. This, too, featured bevel-driven double-overhead camshafts and had a capacity of a 1492cc (with a bore and stroke of 56mm x 50.5mm), producing an estimated 300bhp at 8500rpm, sufficient for a top speed

of almost 190mph.

While the Cisitalia project failed to achieve the success it so promised, the concept of bevel-driven overhead camshafts was explored still further when, in 1952, Ernst Fuhrmann began work on a new project, Type 547. Fuhrmann was the engineer behind the Cisitalia's flat-12 engine and had worked on all of Porsche's previous

performance-related projects, but he longed to see an outright design of his own reach fruition.

The new engine was yet another flat-four, this time displacing 1498cc so that it would fall in line with the 1.5-litre racing classes. While Porsche's pushrod '1500' engines achieved their capacity with a bore and stroke of 80mm x 74mm, the Type 547 was an 'oversquare' design, with a bore and stroke of 85mm x 66mm.

This meant that the original VW-derived crankcase could no longer be used as a base, the distance between the centreline of each adjoining pair of cylinders being increased by some 20mm to accommodate their larger diameter. The oversquare nature of the engine meant reduced piston speeds and higher potential power output for a given capacity.

Fuhrmann's design, and the thinking that lay behind it, was inspired. For example, by shortening the crank

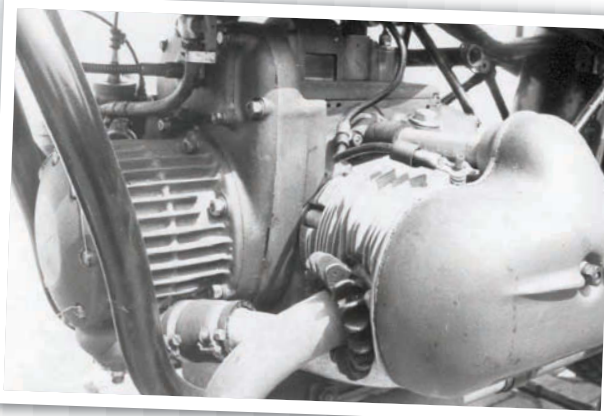
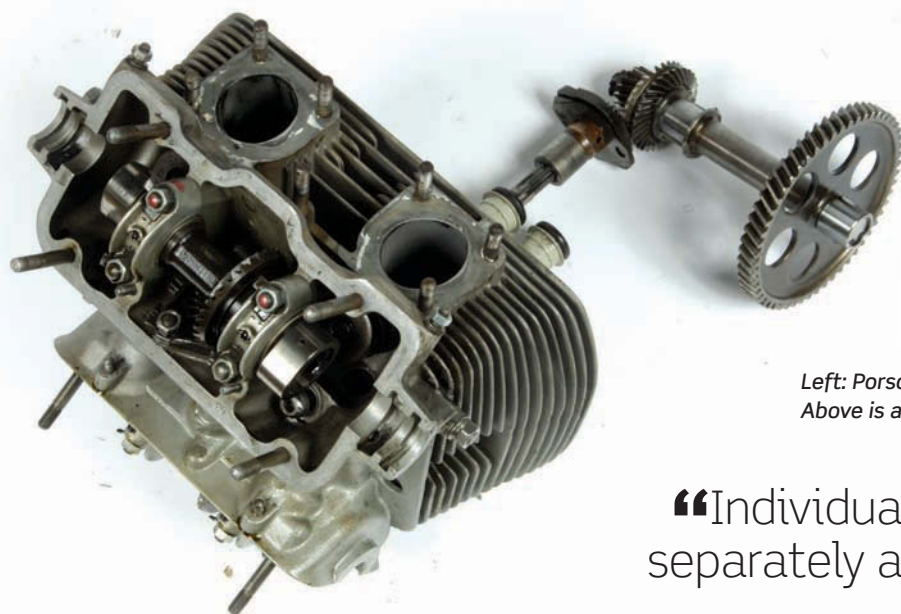
throw, the main bearing journals and those of the connecting rods overlapped more than those of the pushrod engine, making the crankshaft stronger. This was important, for the 356 crank had already begun to display its fragility when pushed to high rpm.

The cylinder heads were hemispherical in design with an included angle between the valves of 102 degrees. This allowed relatively large valves to be used: 48mm inlet and 41mm exhaust. Dual spark plugs were fitted, too, leading to a more efficient 'burn'.

The *pièce de résistance*, though, was the manner in which these valves were operated. Fuhrmann chose to install overhead camshafts but then to operate them using bevel-driven shafts, as had been used in the Cisitalia and the final incarnation of Porsche's pre-war Auto-Union engines. Drive to the camshafts was







Left: Porsche four-cam cylinder head, bevel-drive taken off the layshaft. Above is a close-up of the BMW Rennsport cylinder head – note the cam drive is above the cylinders on the BMW engine

“Individual cam lobes were machined separately and pressed on to the shaft”

taken indirectly from the flywheel end of the crankshaft. This was chosen as Fuhrmann believed it was the most ‘stable’ part of the crank – other OHC engines frequently took the drive from the front end, or ‘nose’ of the crankshaft, but this is often more prone to run-out, especially at higher rpm when the crank may have a tendency to flex.

Helically-cut gears on the crankshaft drove a lay-shaft running in the bottom of the crankcase which terminated in bevel gears below the centre-main bearing.

These gears then drove a pair of small-diameter shafts which passed, one on each side of the engine, through a steel tube underneath the cylinders to the cylinder heads. There, another pair of bevel gears rotated the lower (exhaust) camshafts, with drive taken to the upper (inlet) camshafts via a second shorter shaft. Again, this used a pair of bevel gears to rotate the cams.

Another noteworthy feature is that the individual cam lobes were machined separately and then pressed into position on the camshaft itself.

The advantage of this, it was claimed, was that it allowed the lobes to be made of the most suitable material to resist wear. Later versions of the engine had camshafts with lobes that were keyed into position.

Fuhrmann further demonstrated his design skills when it came to the matter of how to open the valves. Rather than positioning each cam lobe directly above the valve, as one might expect, the lobes were offset by 10mm from the centreline of each valve. A series of ‘fingers’ were then used to open each valve, these being pivoted at one end and held in place by a small coil spring. By adjusting the height of the pivot point (by way of a threaded stud on which the pivot was located), the valve clearance could be adjusted.

The crankshaft was made by Hirth and was a built-up roller-bearing design (both main and big-end) which thrived on high rpm. This helped give the engines a distinctive almost rattly sound at idle, especially when cold. Main journals were 50mm in diameter, with the nose journal 40mm and rod journals 52mm. The

crankshafts featured hefty counterweights to offset the weight of the pistons/rods. However, due to the relatively small amount of space within the crankcases, these needed to be fairly compact so, to increase their mass, pellets of heavier metal were

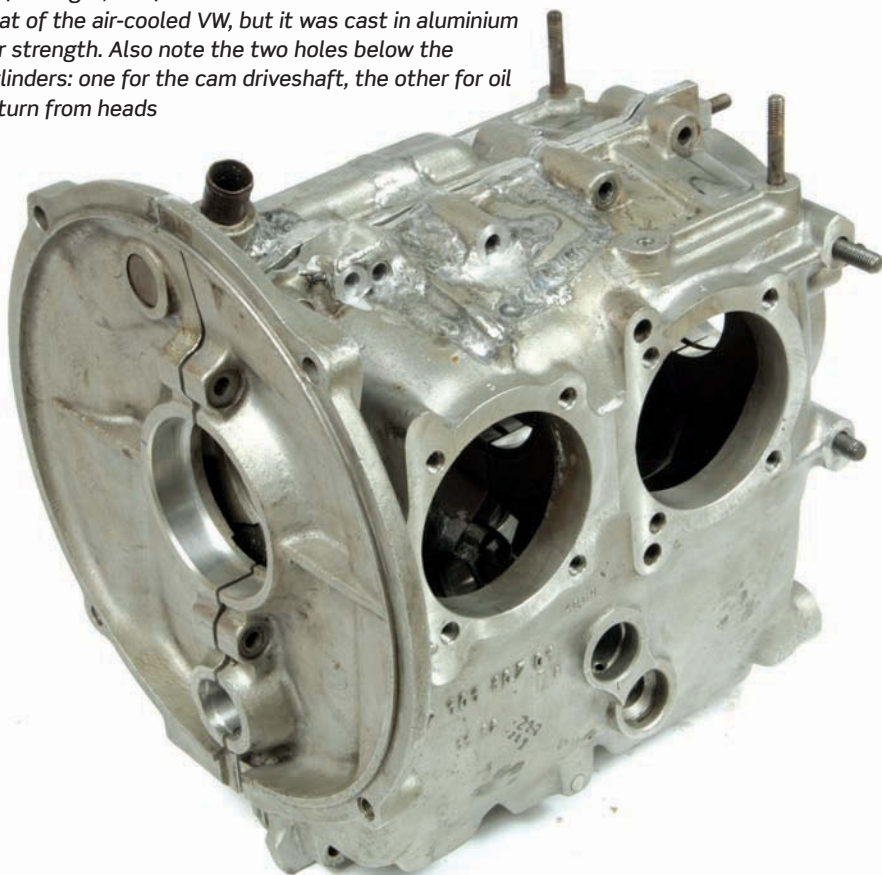
inserted into each counterweight.

Fully-floating gudgeon (wrist) pins were used, with the cast aluminium Mahle pistons featuring three compression rings and one oil-control ring. The latter was located below the gudgeon pin to help keep the pistons

stable. To match the hemispherical combustion chambers, the piston crowns were domed, with large cut-outs machined each side to allow adequate valve clearance.

As was the case with the Cisitalia engine which preceded it, the Type 547 unit relied on dry-sump

*At first sight, the four-cam's crankcase looks similar to that of the air-cooled VW, but it was cast in aluminium for strength. Also note the two holes below the cylinders: one for the cam driveshaft, the other for oil return from heads*







*Left: Viewed from above, with the cooling shroud and fan assembly removed, it's possible to see how substantial the four-cam's engine case is. Cylinders are cast in aluminium with plated bores*

*Below: Type 547 engines had distributors driven off camshafts, while Types 692 and 587 had them mounted in a 'vee', driven off the nose of the crankshaft*

**“The Type 547 engine, which first appeared in April 1952, developed into the Type 692...”**

oil, with a scavenge pump pulling oil out of the sump and returning it to a remote oil tank. The layshaft, which drove the camshaft drive, also rotated the oil-pump. There was no separate oil

sump, the main case consisting of two halves, split vertically.

The ignition system featured dual distributors, each driven from the end of the inlet camshafts, providing sparks to both

sets of plugs on each cylinder head. The distributors could be located at either end of the cam depending upon the installation – in a mid-engined configuration (Type 550 Spyder, for example), the distributors were fitted at the flywheel end, while on the rear-engined 356s they were fitted at the other end of the cam housings.

The induction system was typically Porsche, with dual Solex 40 P-II twin-choke carburetors

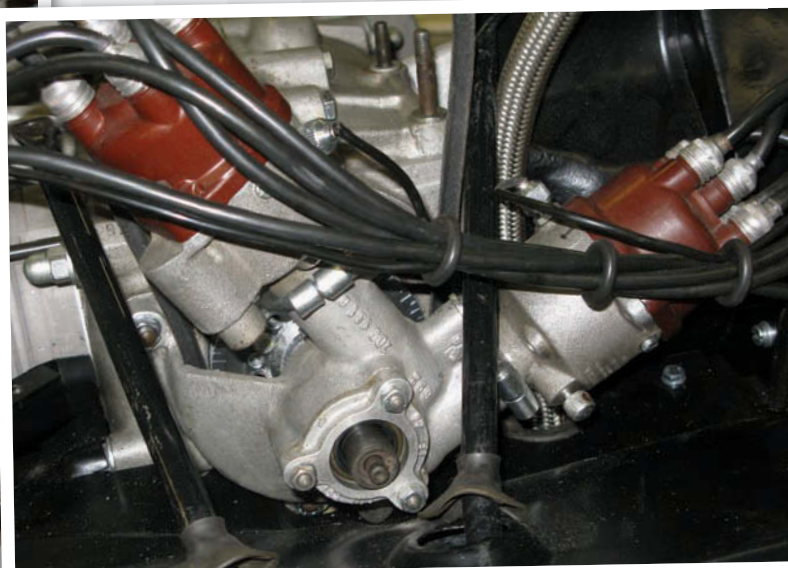
on cast aluminium manifolds, each venturi serving an individual cylinder. As an alternative, Weber carburetors were also used on some competition variants.

The Type 547 engine, which first appeared in April 1952, developed into the Type 692, which featured a new crankcase and a plain-bearing crank with larger-diameter crankshaft bearings (60mm mains, with 55mm big-ends). With larger

cylinders installed, a capacity of 1588cc was achieved. A new oil pump allowed the distributors to be moved to the front of the engine, run in a 'vee' pattern off the end of the crankshaft.

The ultimate version of the Carrera engine was the Type 587, which featured a bore of 92mm combined with a stroke of 74mm, to give a swept volume of 1966cc. The increased stroke of the crankshaft necessitated a reduction in the main bearing diameter to 52mm, along with modifications to the inside of the crankcase.

Further design changes allowed the installation of longer, larger-diameter cylinders. These in turn required modification to







the otherwise essentially similar cylinder heads.

One of the trademarks of the Carrera 'four-cam' engines of all types was the shape of the cooling shrouds. The centrally-mounted cooling fan was, effectively, two fans mounted back to back, drawing air from both the front and rear of the engine – the VW-derived 356 fan only drew air from the rear.

This resulted in a massively increased volume of cooling air: the Type 547's fan delivered 2750cfm (cubic feet of air per minute) at 7300rpm, compared to 1610cfm at 5500rpm for the regular pushrod 1500 engine. Power

consumption of the fans at maximum delivery was roughly similar at 8.8bhp for the Carrera engine, 8.6bhp for the pushrod motor, a clear indication of the efficiency of the Type 547 design.

So why did the concept of bevel-driven camshafts not survive past the early 1960s? There were two main problems. The first was that such engines were costly to build compared to a simple pushrod design. The complexity of the valve-train, with the

numerous bevel gears, shafts and bearings meant that the four-cams were simply never going to be money makers for Porsche.

The other problem – and one which caused Porsche a certain degree of embarrassment – was that the engines didn't prove as reliable as they had hoped.

The problem here was that these engines needed careful setting up – they were race engines, first and foremost – and

while they were in the care of factory-trained mechanics, or skilled race teams, there was no problem. But when the road-going Carreras fell into the hands of unskilled (or, perhaps more accurately, untrained) mechanics, things started to go wrong. Simple maintenance such as valve adjustment was a lengthy process, while a complete tear-down and rebuild was far beyond the scope of the average

garage mechanic.

What were once carefully-built four-cam engines turned into poorly-maintained grenades waiting to let the owner down. They needed to be looked after with tender loving care, warmed up properly from cold before extended use, never lugged around in a high gear at low rpm...

Compare that to the almost unburstable pushrod engines and it's easy to see why several 356 Carreras were returned to the factory to have their four-cam motors swapped for the more conventional, and less troublesome, 'Super' pushrod engines.

This, of course, was not the fault of Fuhrmann's crown jewel, but arguably the fault of Porsche's marketing department, which seemed keen to sell the Carreras to a wider audience than had first been anticipated. But all that aside, Porsche's four-cam remains one of the most intriguing engines ever built. **PW**

*Above: It's easy to tell the later Type 587 Carrera engines from the earlier Type 547 by looking at the rocker covers – later design featured rectangular covers. Air cleaners (right) were far larger, too. This is a 2.0-litre engine as shown in the back of a Carrera 2, originally owned by legendary racing driver John Surtees and restored by Roger Bray Restorations*





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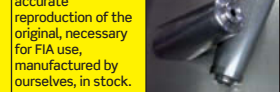


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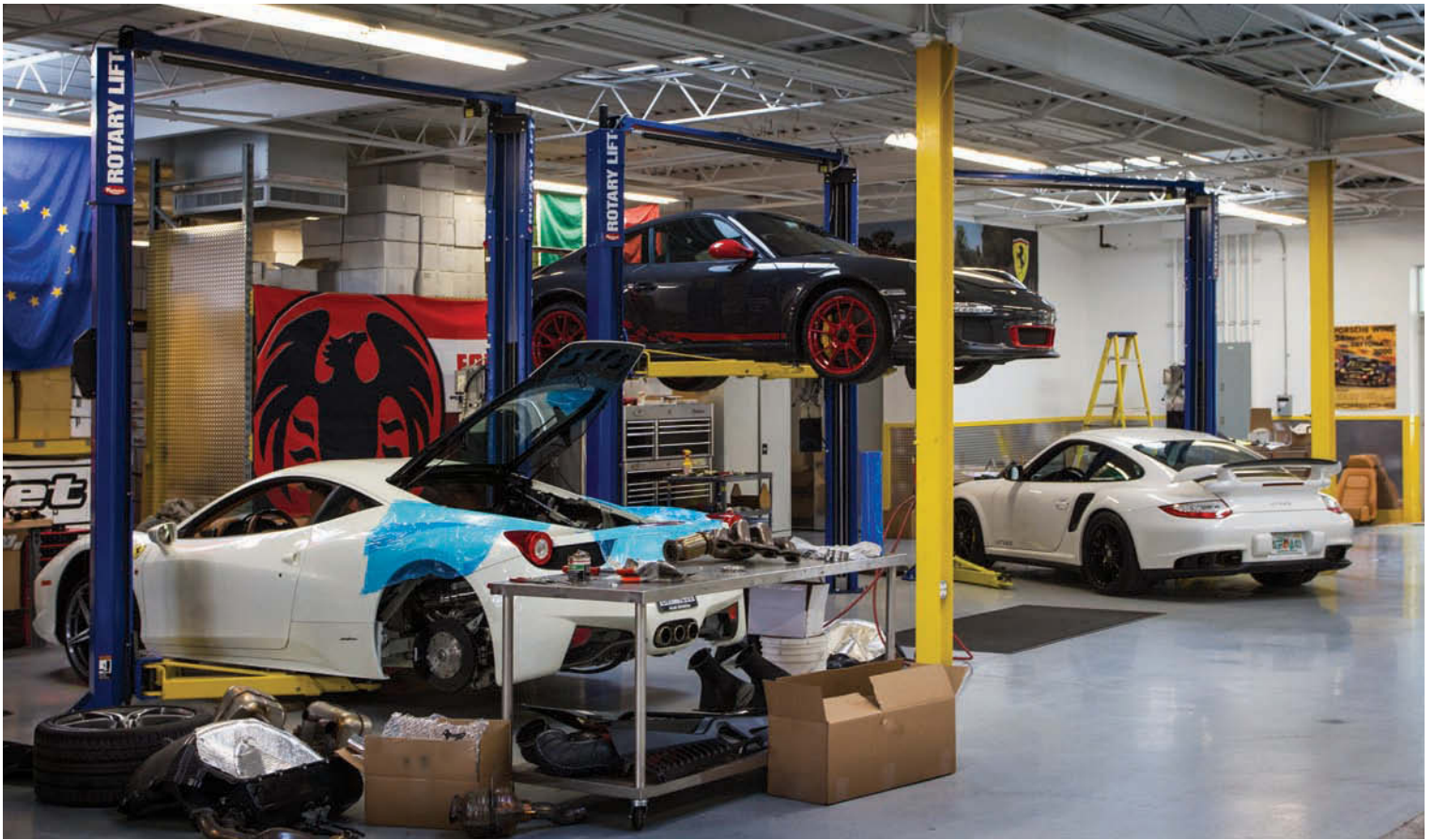
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# FABSPEED

## EXHAUST SYSTEMS AND MORE, MANUFACTURED IN THE HEART OF PENNSYLVANIA, USA

Words: Matt Stone,  
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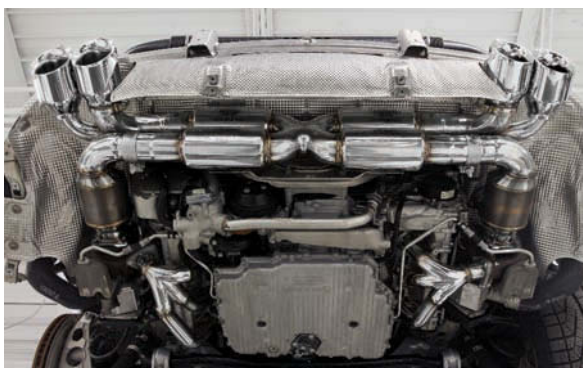
Ft. Washington, Pennsylvania's Fabspeed Motorsport was born much the same as many businesses. There was a guy (investment banker Joseph Fabiani) with a car, a need (for a better exhaust system) and an idea (for a better exhaust system). That was in 1992 and Fabiani was heavy into club racing Porsches, and had what he felt was an idea for a better performing and higher quality exhaust system than he could buy commercially at the time. He connected with a friend who owned a small muffler shop, and they executed his plan. The system performed as he felt it would, and then other clubby types showed interest. Thus was born what is now Fabspeed. Their first shop was Joe's garage, then he expanded, and now, two decades later, Fabspeed occupies an immaculate, well organised and super safety and emissions-compliant purpose built 22,000 sq ft showroom, office, customer lounge, manufacturing facility and install shop that does a lot of things but is still dedicated primarily to the design and in house production of high performance exhaust and intake systems.

The business began as a Porsche-only venture, but since has expanded to encompass all of the premium European brands including Maserati, McLaren, Bentley, Aston Martin, Audi and BMW; Fabspeed is also now heavy into Lamborghini and Ferrari. 60-70% of the business is still Porsche; about 90% of its sales are mail order, even though local clients often bring their cars in to be fitted and tuned on site, and certain clients ship their cars in from other areas of the country and Fabspeed has customers all over the world.

Virtually all of the product design work is done in house using very high tech computer aided design and



## THE SPECIALISTS: FABSPEED



*It seems a shame to hide this sort of craftsmanship and shiny tubing, but that is the lot of the performance exhaust. Still, at least bereft of rear apron and off the the deck, we can appreciate the quality of Fabspeed's work*

digital scanning equipment. Of equal importance is that Fabspeed produces nearly all of its exhaust and air intake system products between its four walls as well. About the only items not produced in house are air filter elements, and catalytic converters, for which the company has found a supplier that meets their quality and performance objectives. This place is so much more than a fancy exhaust shop, which you must see to fully comprehend and appreciate.

The exhaust systems begin life as raw unfinished stainless steel tubing stock of varying lengths and diameter. The factory floor combines an interesting array of millions and millions of dollars of computerised benders, welders and cutters, plus a skilled staff of welders, benders and polishers. Fabspeed's German made mandrel bender is capable of 'U-bending' a piece of pipe nearly completely back on itself, while maintaining the tubing's diameter and structural integrity; this piece of equipment is the same one used by the US Military.

The "handwork vs. computerised" process decision is easy. Fabiani insists that "we do it whichever way yields the best result." The finish and structural properties of the best automated welding machines are spectacular, but that equipment is somewhat limited in the places and shapes it can weld. So then "we go old school" and skilled, space programme level welders do the job by hand using the very best gas/electric welding rigs.

Most of Fabspeed's exhaust systems are modular in the sense that they are tailored to the car and the customer's needs and requests; a system can be spec'd out to replace everything from the headers to the exhaust tips, and in between. Others may be only from the headers back. Customers have many choices between high performance "sport" catalytic converters, sport muffler, cats only with no mufflers, or for the race track, mufflers only with no cats, etc. There's a wide choice of tip designs available, too. Fabspeed's "X-pipe" or crossover is a thing of industrial beauty in and of itself: instead of being welded up of an assembly of pipe pieces, this X-pipe is a cast piece, designed for maximum internal flow, with no rough spots or welds where individual pipes would ordinarily connect. One process that remains decidedly old school is polishing; there is computerised, automated polishing equipment available in the industrial marketplace, but it's not yet able to handle the complexities, twists and bends of an exhaust system, so Fabspeed dedicates a special room and team of technicians who, using a variety of rouges and polishing equipment, make all the pipes sparkle by hand. It's not a fast or inexpensive proposition, but the finish quality cannot be bettered by other means. Along those lines, Fabspeed maintains its own quality assurance staff and process.

A few exhaust and intake system customers are

*Fabspeed has yet to find a machine that can handle polishing the intricate pipework, so they do it by hand. The X-pipe is a cast piece, designed for maximum internal flow*







*The Fabspeed working environment is huge and spotlessly clean, dedicated to the art of pipe bending and creating top quality exhaust systems*

likely happy with zoomier looks and better engine sounds, but not most; the primary reason to upgrade those components is performance gain. "We don't trust anybody's 'butt dyno' around here" says Fabspeed general manager Alex Kononchuk, so the company has installed an OEM level four-wheel drive chassis dyno so they can test and verify results and incremental power gains or losses as the case may be. This piece can handle well over 1000 horsepower and is accurate to

produce suspension systems or wheels, it can facilitate their acquisition and installation.

To that end, Joe and his team made available to us a smacking new, customer owned 991 Turbo S, which had just been given a complete "Power pack" exhaust makeover, and treated to a pair of high performance air filter elements. Kononchuk comments that Porsche's factory intake system is already efficient, and they were not sure they could better the intake plumbing

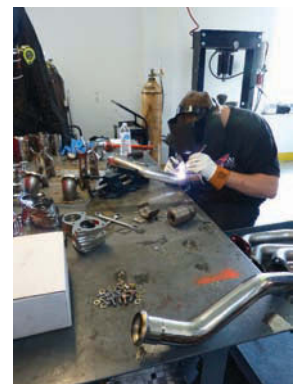
“Twist the key on this Fabspeedified Turbo S and it speaks volumes, literally and figuratively”

*Fabspeed systems are, by and large, hand made and finished. The German made mandrel bending machine is capable of 'U-bending' a length of pipe fully 180 degrees, while still maintaining consistent wall thickness*

the most minute output readings. Virtually every car that comes in the door for performance upgrade work is run on the dyno for "baseline," pre-mod numbers. It can be run again after each small change, or when the job is completed in order to ascertain the total effect of the mods. This is particularly beneficial when developing new products, or for cars the development team is not familiar with. They can measure the benefit of each individual component change as they go along, and determine if a design is optimised, or needs further development work. Although Fabspeed doesn't

hardware, other than to test out freer flowing air cleaners. This car is resplendent in black over an upgraded cashmere tan leather interior, heavily and beautifully optioned, including centre lock wheels and all the fancy alloy and carbon trim bits. Luvrly.

If you've heard the exhaust note of the new Turbo, you're likely underwhelmed a bit. It sounds nice enough, but somewhat pedestrian, highly subdued and not very racy. Twist the key on this Fabspeedified Turbo S and it speaks volumes, literally and figuratively. It fires with a bassy bark, and at idle, softly rattles the





## THE SPECIALISTS: FABSPEED



Left: It's not just Porsches, Fabspeed cater for most high-end sportscar makes. Below: New 991 Turbo S with Fabspeed exhaust, intake and tuning mods makes 500+bhp and 626 lb ft of torque

Fabspeed building's floor to ceiling glass windows. Flicking the PDK into Sport mode, yet letting it shift itself, brings a throaty, but not over the top, roar from the four big stainless pipes, and a satisfying spit-pop on each upshift. Better yet are the snaps and pops off throttle and during downshifts; we found ourselves running up some speed just prior to cresting hills, then downshifting a gear and letting it burble and spit its way down the hill, off throttle. The FAB pipes aren't over the top, never intruding on the Turbo's mission as a super performance luxury grand tourer with obviously sporting pretensions, but now sounding like an exotic Porsche instead of a hot rod Hoover.

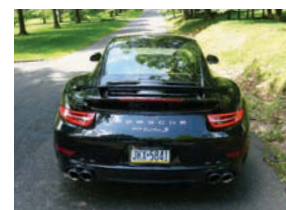
And besides all the good motor music, there's definitely measurable performance on hand. This particular car "baselined" at 468.09 rear wheel horsepower and 572.04 lb ft torque at the rear wheels. After the exhaust, intake, and tune mods, power shot to 501.30 and torque to an oceanliner like 626 lb ft of

torque. And yes, the "butt dyno" could feel it.

If you're ever near the Philadelphia area, Fabspeed welcomes your visit and is happy to give you the tour. The showroom houses a large, leather conversation couch, and the big screen TV always has something car related playing; often the site of company open houses and customer days. Some customers drop in and have coffee and buy nothing; others walk out with a bootload of parts, while others still drop off their cars and say "call us when it's done." Fabiani and his team open their doors to you either way, and their large parking area will easily hold a club meet or drive gathering. If nothing else, make sure to pick up a copy of the company's marketing DVD, which contains lots of production information, and videos of some wicked dyno runs.

In the meantime we won't be forgetting the Fabspeed 991 Turbo S in a hurry. It shows what a good exhaust can do. **PW**

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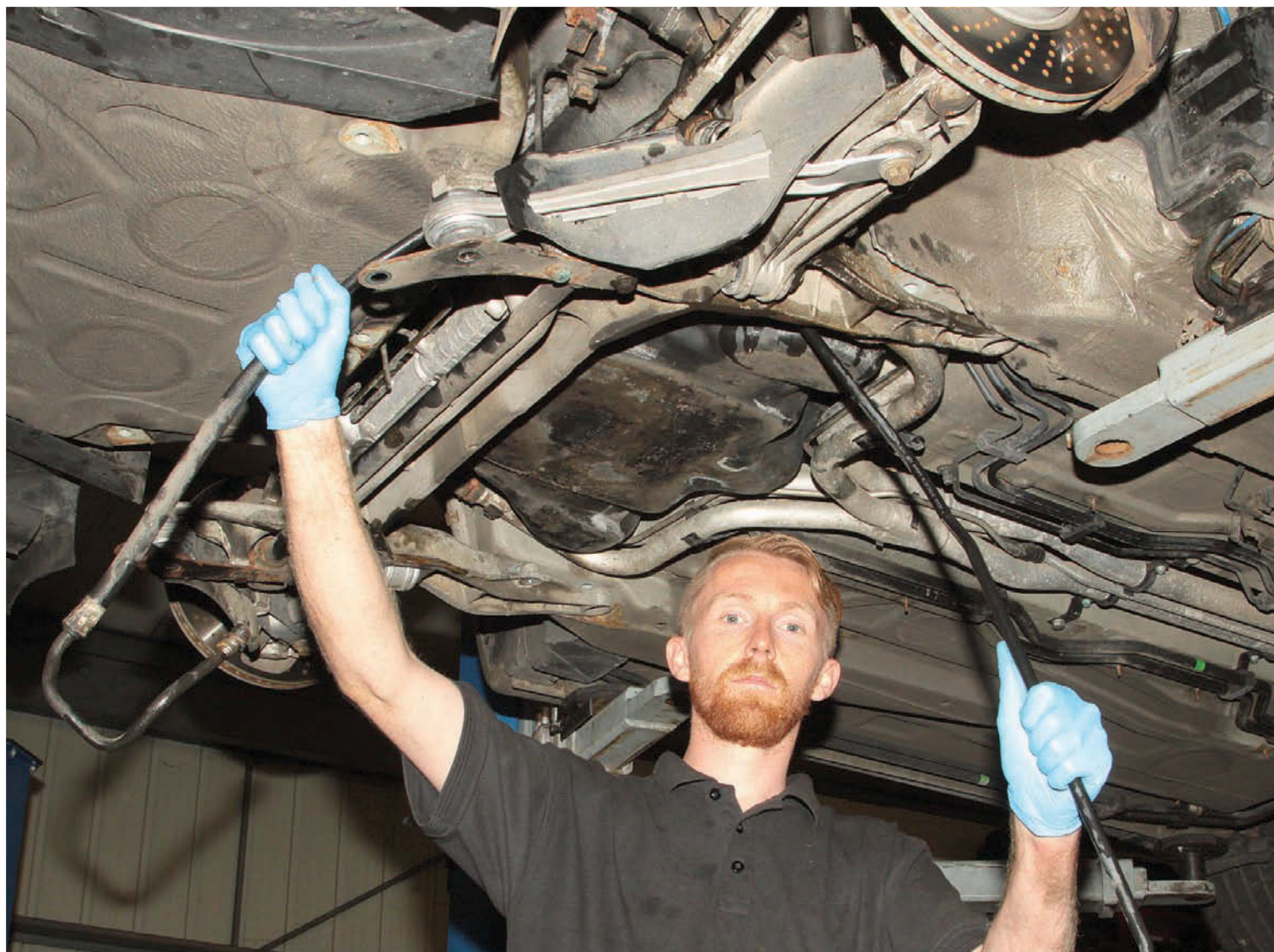


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# THE EYE OF THE NEEDLE

It may not be quite as awkward – or as potentially dangerous – a problem as rusty brake pipes, but both the 996 Carrera and the 986 Boxster are now routinely failing their annual MOT tests because of corroded hydraulic unions in their power-steering supply and return lines. Here's how the professionals tackle it – and how you might even avoid the need for the work



If last month's *g11 & Porsche World* how-to, detailing the replacement of a 997 Carrera's brake-servo pump, was positioned toward the edge of what might be termed the DIY feasibility 'envelope', then this story will surely be way outside it for all but the most determined and well equipped – or the just plain desperate.

Why, then, devote four pages of words and photographs to it? Because it is yet another seemingly ordinary but actually quite awkward technical issue that will surely afflict a growing

number of 996 Carreras and 986-model Boxsters – if not all of them, in time. Knowing how difficult – and thus how relatively expensive – it can be to rectify might well encourage you to inspect your own car and, unless it is already too late, to carry out the appropriate preventive maintenance. It might even soften the blow of having to pay someone else to do the job for you. Forewarned is forearmed, and all that – and you will know what they have to deal with.

What's more, that aforementioned preventive

maintenance could easily consist of nothing more complicated – or costly – than periodically taking off the car's right-hand front wheel, and spraying a short length of pipework with some suitable wax-based preservative. We reckon, then, that it's well worth passing on the required knowledge – even if you cannot necessarily use it directly.

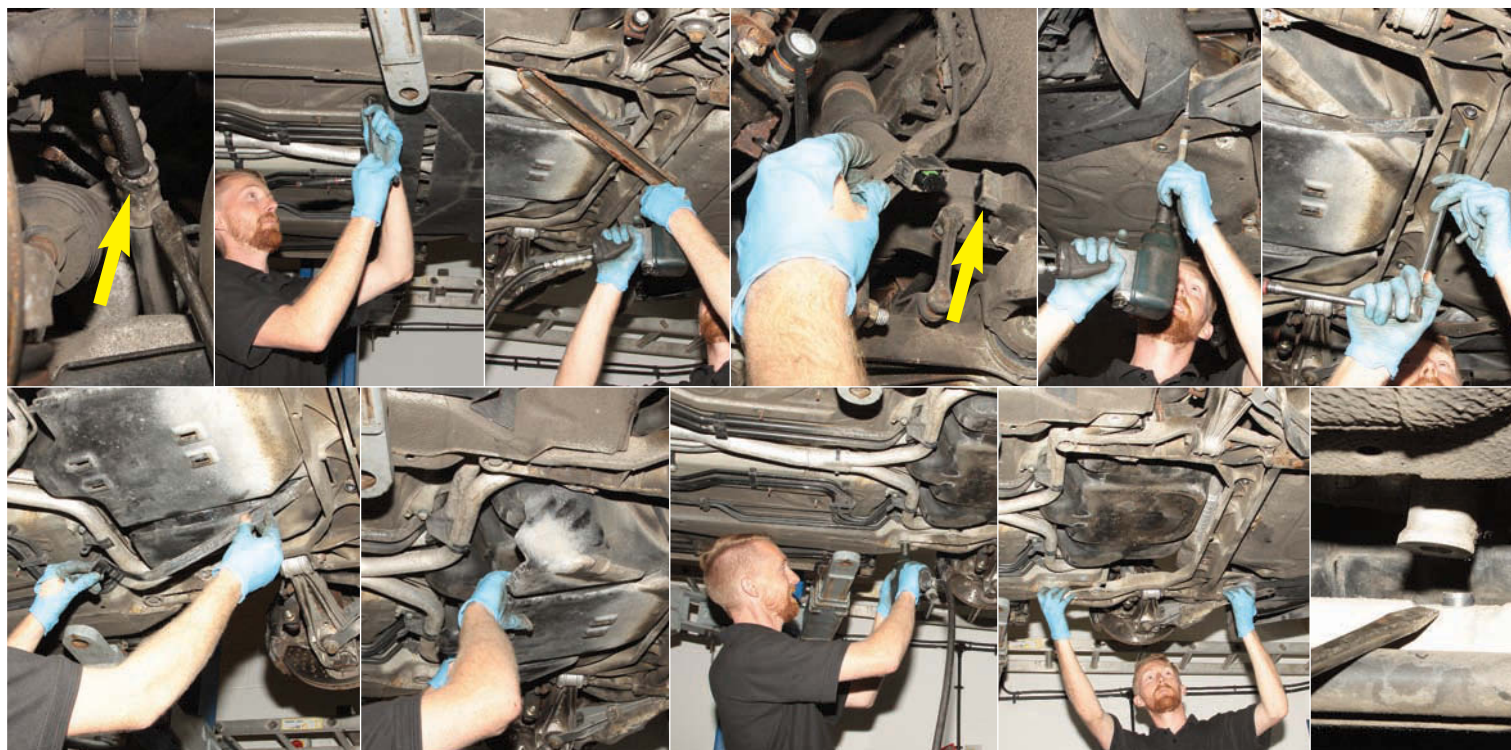
At the centre of the problem, in the proverbial nutshell, is nothing more complicated or sinister than good, old-fashioned corrosion. Sound familiar? Connected to the right-hand side

of the steering rack's pinion housing (and please note that all of what follows is aimed specifically at right-hand-drive cars) are four pipes. Two high-pressure lines, secured with conventional hexagonal unions, and the two lower-pressure lines via which the system's special hydraulic fluid (more on this a little bit later) is brought from and subsequently returned to the engine-driven pump.

Both of the latter lines exit the rack as rigid metal pipes, secured to the housing by a special steel plate and a single M10 screw, but



# REPLACE 996/986 STEERING-RACK PIPES



Easy to tell if steering-rack lines are in good condition: take off right-hand front wheel and look at crimped ferrule (arrowed, above). If it's like this the car will fail its MOT – and connection might burst in service. Larger-diameter line shown here is the return; smaller pipe behind it (and whose ferrule doesn't suffer as badly from corrosion) is the feed. Lowering subframe for access to rack is fairly straightforward, but don't forget to disconnect plug and socket for headlight-beam adjuster (also arrowed). Undo rack securing screws, and carefully lever it up and away from crossmember (far right)

as each one curves around and over the concertina-style gaiter protecting the inner end of the right-hand track rod it meets a short length of flexible rubber hose. (The remaining section of each pipe reverts to shaped metal; this will later bring its own difficulties.) The two dissimilar sections are permanently crimped together during manufacture with a special aluminium ferrule, but eventually that corrodes and later splits, allowing them to separate. (It is almost invariably only the outermost of the two ferrules, closest to the road wheel, that deteriorates, but the procedure for the smaller – ie feed – pipe would be more or less identical.)

Feed and return lines are secured to the side of the rack's pinion housing with a single M10 socket-head screw, passing through a specially shaped plate that bears against a flange on the end of each pipe. Make sure your hex key is a good, tight fit to prevent rounding out the socket; use extensions as necessary for best access. Already the corrosion is obvious. Unclip lines over track rod, as shown

Fortunately it's not quite such a critical safety issue as the corroded brake lines we looked at back in the April 2011 issue (PDFs available), but naturally the kind of scenario best avoided if at all possible. In the event of a burst you will quickly lose power assistance to the steering – which is always a rather disquieting experience – and the resulting leak will, of course, immediately make one heck of a mess. In fact, it's most likely that the first you will know about the situation is an MOT failure – but even that, too, is generally more than a little inconvenient. Which of us ever puts our cars in for the annual test with time to fix any unforeseen problems?

## THE KNOWLEDGE

The correct torque figure for the single M10 socket-head screw securing the supply and return lines to the steering rack is 20Nm, and those for the subframe securing screws range between 100Nm and 160Nm. The two screws retaining the steering rack to the subframe should be tightened to 65Nm, but it is imperative that both are fully 'started' in their threaded holes before you tighten either, never mind finally torque them. Neglect that simple precaution and, such are the tight tolerances, you risk cross-threading the screws, and all the pain and grief that will inevitably bring.

At the beginning of the job don't forget to disconnect – and eventually to reconnect – the electrical lead for the headlight-beam adjuster (see photos). As for physically extracting the offending pipe from the steering rack, you may be lucky and find that it slides out without any difficulty at all; otherwise you will have to improvise as best you can with a self-grip Mole wrench, plenty of penetrating fluid, and/or an air chisel to shock the two apart (again see the photos). Either way, don't be tempted to use heat; you will almost certainly seriously damage the steering rack.

Note, too, the technique for disconnecting the rear end of the return pipe from the union beneath the sill, and later fitting the new one. Essentially you have to counter-rotate, through several turns, the two hexagonal parts of the union with a pair of 19mm open-ended wrenches; this will enable the assembly to be pulled away from the 'male' end of the next section of pipe. To fit the new front pipe, make sure that the fixed male end is free from any grit or dirt, and simply slide the former on again until it clicks; no further tightening of those built-in hexagonal sections is necessary. (This design was presumably intended to speed initial assembly at the Porsche factory.) You will, of course, need to top up the steering pump's fluid reservoir, mounted in the engine compartment. Use only Pentosin CHF12 or the equivalent, as necessary, to bring the level up to or at least close to the maximum mark.

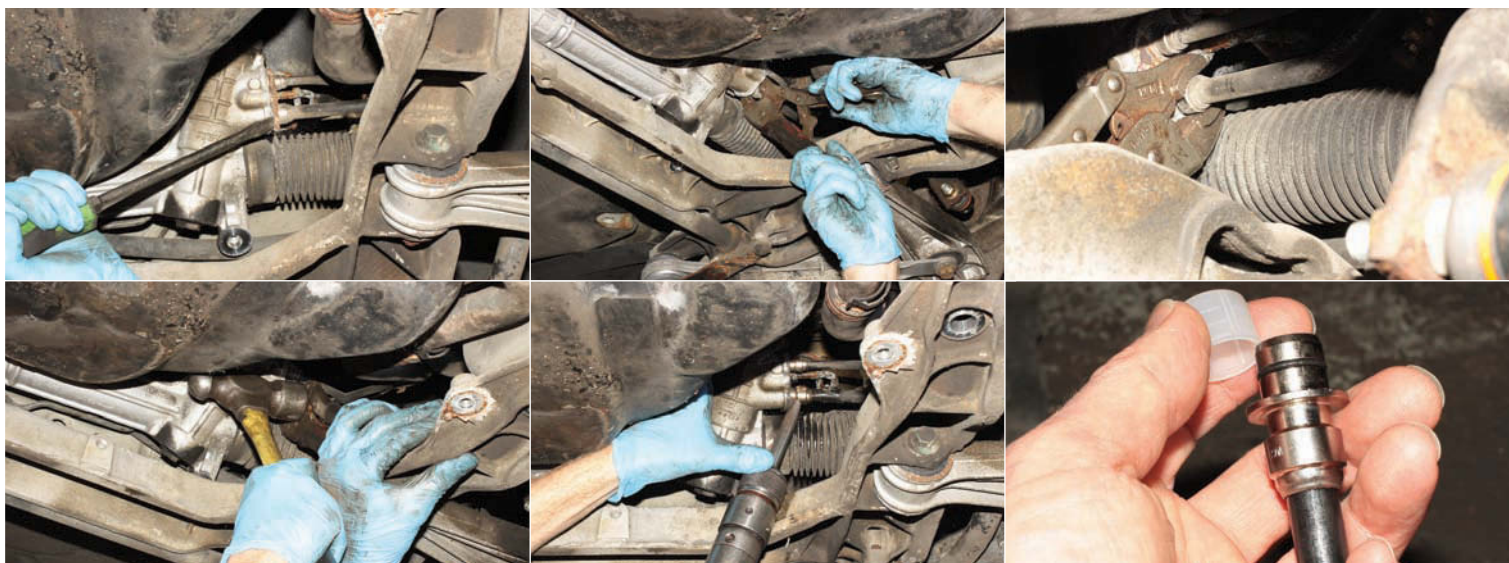
Protect all of your handiwork with a wax-based preservative spray, as well as any other items that look like they could do with it. Prime candidates for that are the brake lines you will expose in accessing the under-sill union, but by the same token they may already be in such a poor state that you end up replacing those, as well. (For more on that see the April 2011 edition of *911 & Porsche World*.) Likewise the large-diameter coolant pipes that you will probably need at least to loosen off and lower away from the floorpan to allow you to fit the new steering-rack pipe. Why not have them all off so that you can not only replace their now failure-prone quick-fit connections, but also drain the entire system and refill with Evans Waterless Coolant? (More on that in our June 2013 edition.) Just a helpful suggestion, you understand...

Cavendish Porsche is at Unit 7, Gainsborough Close, Long Eaton, Nottinghamshire NG10 1PX; tel: 0115 972 2001; [www.cavendishporsche.co.uk](http://www.cavendishporsche.co.uk).





## REPLACE 996/986 STEERING-RACK PIPES



*If you are lucky the plate will pull cleanly away from the rack, but it will probably need persuasion with a screwdriver blade. The hydraulic lines, too, should slide out as easily as they must have gone in, but corrosion – which is why you're changing the pipe(s) in the first place, remember – will most likely put a stop to that. Cavendish's Ashley White first tried a Mole wrench alone, then a Mole wrench tapped sideways with a hammer, and finally an air chisel (carefully!) to vibrate the pipe, and so break up the particles of rust and dirt. New return line (far right) shows what you are dealing with*

So far, then, so relatively simple. How hard can it possibly be to replace a single hydraulic pipe? Two of the things, at the very worst? Well, the first complication is that in order to access the side of the steering-rack housing you need not only to raise the car on a garage lift, but also to lower the entire front-suspension subframe a few inches. (You could arguably do the job with the car raised safely

on axle-stands alone, but it would almost certainly double or even treble the effort required.) The second is that even after you have done so, and then undone that M10 screw and removed the securing plate, the pipe will most likely remain stuck fast – our friend corrosion again.

Next comes the small matter of separating the union at the other end of the pipe, below and roughly midway along the left-

hand sill member – at which juncture you will no doubt realise how worryingly corroded your brake lines are, too. And after that you have to extricate the entire pipe from around the many other components mounted under the car's floorpan – not least the coolant pipes. Finally, you must correctly thread the new pipe – currently all £223 worth, including VAT – back in to the same extremely restricted

space, and obviously without bending and thus damaging any part of the rigid steel section, as you most likely did to get the old one out. You get the picture.

Thanks, then, to the team at Cavendish Porsche in Long Eaton, near Nottingham – proprietors Simon Petty and Adam Caulfield – and specifically to technician Ashley White, who confidently and quickly dealt with the seized-in pipe union that would have

*Leaving a generous dose of penetrating fluid to do its work, Ashley next turned his attention to the connection at the rear end of the return line, midway along the underside of the left-hand sill, and normally hidden above a moulded plastic tray. Intermediate pipe mounts are easy enough to unclip. To break connection with next section, counter-rotate the two hex sections through a few turns (19mm spanners), until pipe to be discarded can be pulled forward. No need to dismantle connection fully, as shown bottom right; you will be binning the entire thing. Be ready to catch leaking fluid*





# REPLACE 996/986 STEERING-RACK PIPES



Loosen coolant-pipe mounts and other connections to give yourself enough room to extract return line (and fit new one, of course); installations vary depending on car's specification. Might be a good opportunity to fit new pipes – and coolant, too (see text). Return line's securing flange eventually cracked, allowing oil to work its way in, and subsequent rotation with Mole wrench finally persuaded it to come loose. Make sure hole(s) in rack housing is/are undamaged and spotlessly clean before fitting new pipe(s). Ashley pulled old pipe down and forward; it doesn't matter if it gets damaged

had most of us roundly cursing Porsche's miserly resistance to assembling its cars with any thought for the poor people who might one day have to take them apart. No less impressive was the practised ease with which he

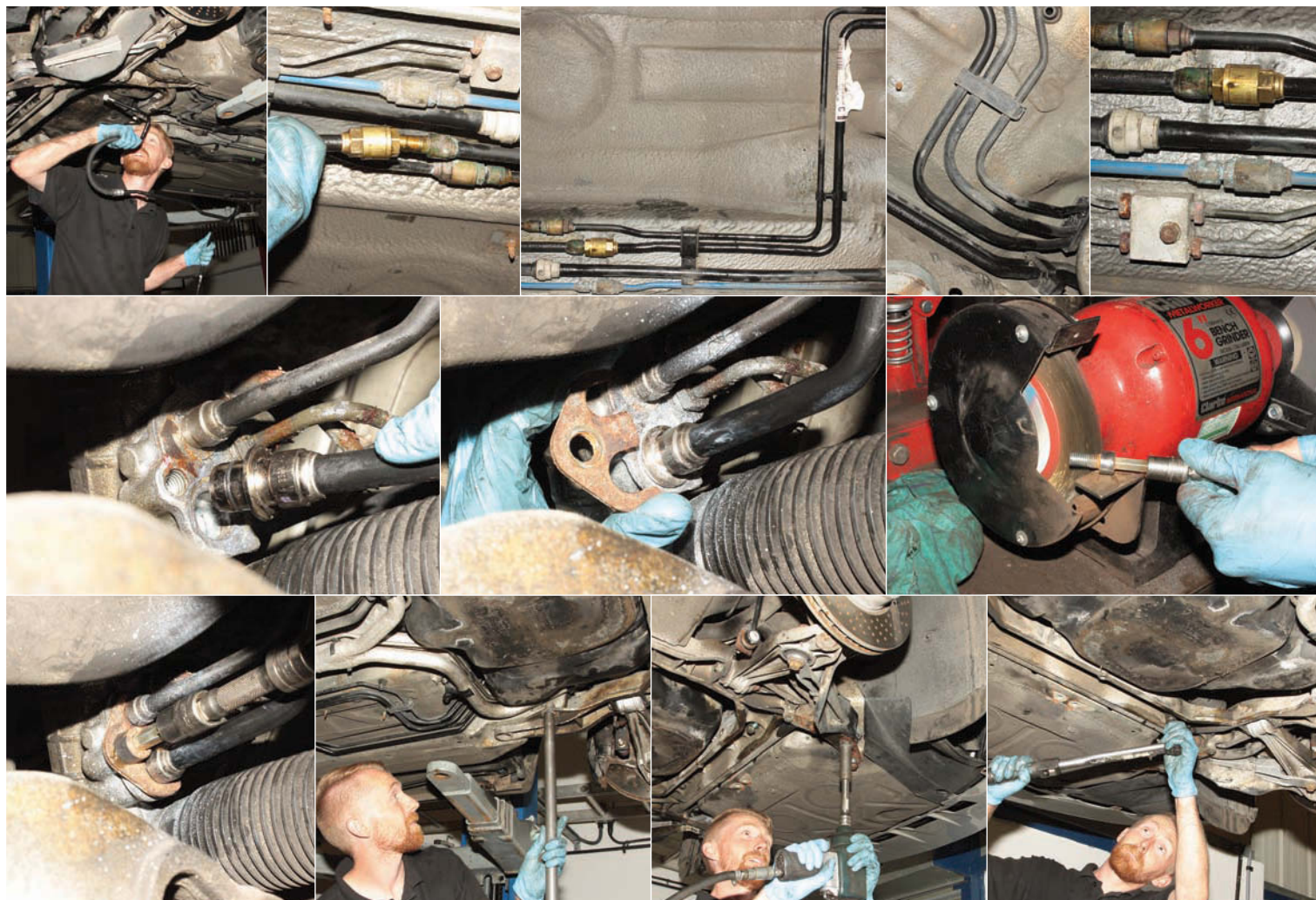
threaded the new pipe into place in such a way that it was immediately perfectly aligned with the under-sill union.

Total cost, including that frankly outrageously expensive pipe, and around three-and-a-half

hours' labour at their standard £65/hour plus VAT, would have been in the region of £500. That other steering-pump line, had it needed replacement, costs another £223 including VAT from Porsche, and obviously with only

a marginal extra labour charge – and so on that basis alone falls very firmly into the While You Are In There category. You really don't want to have to do – or to pay for – this job more than once per car. And ideally never. **PW**

*After some deliberation we concluded that best way to fit new pipe was to feed the transverse front end in from behind the rack, and then lift rear section up between the various other pipes and hoses beneath the floorpan. Rear end simply pushes over male end of the next pipe until it clicks and locks; no tightening is needed. No bending necessary, either: pipe clipped neatly into all the original fixings. (Shame about the state of the brake lines, though.) Final stage is to refit the front end of the pipe into the rack, secure with plate and screw, and then lift subframe back into position. Job done*







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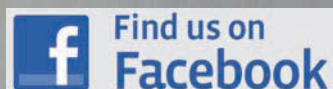
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# PROJECTS

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## THE TEAM

KEITH SEUME

### 912/6 EL CHUCHO

Well, El Chucho is almost there! We made it to Classics at the Castle last month - on a trailer - and the response from visitors seemed pretty positive. All that's left is the wiring, fuel lines, hydraulics, suspension geometry (so another year then? Ed)... Hmm, maybe I'd better stop writing and get back in the workshop.



PETER SIMPSON

### CARRERA 3.4 TARGA

Project Targa is moving forward slowly, which is frustrating, but having more than one project on the go uses up a lot of time. Plus the fact I've just found out I'm going to be a dad for the first time is making my present time very important and I need to make the most of it. Get out the tools, it's gonna go fast. I've been told!



CHRIS HORTON

### 944, 924S

Fortune favours the brave. Or maybe I was just taking an unnecessary gamble. Either way, the 924S not only made it to Silverstone and back for a Porsche Cars GB media event in August, but also managed several laps of the Experience Centre circuit without a single significant fault. And I hadn't even checked the tyre pressures...



STEVE BENNETT

### 944 LUX

Not sure I've got anything to add to the saga opposite, save perhaps to say that in the space of three days after picking the 944 up from Augment Automotive, I went on a 1000+mile trip taking in various family events and culminating with the 911&PWPicnic. Despite the usual traffic issues, the car ran pretty much faultlessly.



BRETT FRASER

### BOXSTER 3.2S

Awoke one morning recently to find the boot lid of my previously sparkling Boxster besmirched with moss and mud - clearly the pigeons had been knocking the stuff off the roof of the house. But no... The grime was deposited by a falling roof tile; it didn't hit metalwork, but did gouge paint off the bumper. Bugger.



## PROJECT 944

It's been quite a few months for Bennett's 944 and, after what seems like a full rebuild, it's back on the road. Worth it? Well he seems to think so!

Project cars, eh? Don't you just love 'em? We start off with best

intentions but inevitably life gets in the way and that tight schedule of work starts to slip and before you know it the whole thing is on hold. Well in the case of my 944, that's not strictly true, but there has certainly been a severe case of 'mission creep.' However, regardless of that, the car is now back in my garage and it's 95% sorted, mainly thanks to David and Tom Barker at Augment Automotive.

Now there are plenty of folk who would say that there was absolutely nothing wrong with my 944 in the first place, and they'd be kind of right. Aside from the normal wear and tear associated with 27-years on the road, my 944 was a lovely, low-mileage example, so why start to fiddle around with it? Well, those with long memories will recall that I was rather taken with Augment Automotive's electronic wizardry with the 944's engine management system

which, compared to modern systems, is rather primitive and relies on the rather woolly information provided by the restrictive air flow meter.

Yes, it works, and compared to carbs it's a wonder of modern science, albeit 1980s science. Things have moved on and Augment Auto's system replaces much of the electronics within the Bosch ECU, retaining just the injector driving software, and does away with the air flow meter all together. That takes out a major blockage *en route* to the inlet manifold and allows the engine to breathe more efficiently and use the air/fuel mixture to better effect. This modification on its own is worth around 15bhp at the top end and up to 15lb ft of torque across the rev range. Augment Automotive also replace the standard distributor and coil feed to the spark plugs with a wasted spark set up, which sends a consistently bigger charge to the plugs and so a better burn to the air fuel mixture. Finally, a modified air box replaces the

STEVE BENNETT

### 944 LUX

Occupation: Editor, 911 & Porsche World

Home town: Hoxne, Suffolk

Previous Porsches owned: 7

Car: 944 Lux

Year: 1986

Mileage: 98,500

Owned for: 18 months

Mods/options: Modified ECU, injection and ignition system

Contact:

porsche.world@chpltd.com

THIS MONTH IN BRIEF:

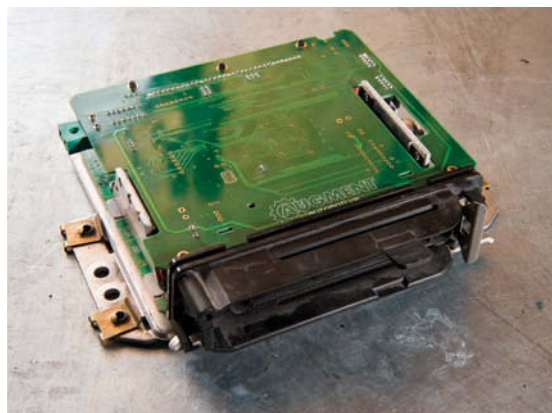
Just managed to stop short of a full rebuild! Well that's what it seems like!

restrictive square outlet with a circular one, further improving air-flow.

And so this is what my engine received around a year ago and I was mightily impressed, with not only the power and torque increase, but also the fuel economy gains, too. To recap, we started with 144bhp and ended up with 157bhp and more torque everywhere. Maybe we should have left it at that, because the next phase is where the development curve hit a spike. I was keen to further improve the efficiency of the engine and envisaged a win-win situation with ASNU's new Performance Injectors, with their improved spray patterns designed to more efficiently fill the combustion chamber. Augment were very keen







to try these too, but between all of us, we just couldn't get them to work.

In optimum conditions they worked just fine, noticeably enhancing the smooth running of the engine, which was already pretty good. However, for no apparent reason the ignition curve would throw a wobbly and all semblance of smooth running would disappear, most notably in heavy traffic, or even occasionally when cruising at steady or part throttle, when a spike would send the revs up or down.

Various theories were investigated, most notably that of a voltage spike from the ECU to the injectors, but the signal was measured and found to be nothing other than consistent, particularly after the alternator had been reconditioned. Finally Tom and David at Augment concluded that the injectors, with their very

fine atomisation, were very sensitive to under bonnet ambient temperature and significant vapourisation/condensing of the fuel in the intake, which causes a change in fuel volume, displacing a varying amount of air and so altering the mixture. This is not a fault of the injector as such, but exposes a limitation of the Augtronic ECU, which although vastly more flexible than the standard set-up, would require a volumetric or mass measurement of air flow into the engine.

For the moment we've reverted to the standard Bosch injectors, but ASNU are working on a new spray pattern that won't be quite so fine and will work with what we've got. But we still have the benefits that the Augtronic ECU brings to the party, which included the ability to tailor the fuelling and ignition to

specifics such as a camshaft change.

Yes, that's right. Ever since I'd got behind the wheel of Augment's cam enhanced demo car, I knew that this was a mod that I needed for my car. The standard 2.5, 8-valve cam is a very conservative means of opening and closing the valves, designed seemingly to neuter the top end of the rev range, which manifests itself in a general lack of interest much above 5000rpm. Augment have developed their own cam, giving more lift and so more top end bite, but not at the expense of torque and mid range. On the rolling road, and combined with Augment's ECU, the cam produces around 175bhp and, at 3000+rpm, you can really feel it.

So engine sorted my attention was turned to other problems. With just approaching 100,000-miles there are lots of bits that

are just plain wearing out. The main culprit is the suspension, or more specifically the dampers. They've never been changed and while they weren't leaking or anything, they weren't really doing much to prop the car up either. My initial thought was to just go standard, but David and Tom persuaded me that Konis were the way to go. Hmmmm, I wasn't sure. I've messed up cars before with dampers that were just too stiff, but then again I've have very positive experiences with Konis and they are what Porsche fitted to the Mo30 spec 944 Turbo and 968 Club Sport.

OK, I was convinced and so a set duly arrived. The fronts are inserts and so the standard front suspension legs have to be modified slightly to accommodate them. The rears are just straight bolt on. For the moment, and

**Above, left to right: The heart of the matter: Augment Automotive's ECU brings modern injection mapping to the party. Bosch injector (left), with ASNU. This is still work in progress. Koni dampers are a big improvement over worn, standard items**

**Below, left to right: Rare picture of Bennett's 944 not in pieces. On the rolling road for one of many mapping sessions. We'll be back on the rollers to get a final figure for the cam. Full frontal. How many D-plate cars do you see regularly on the roads these days?**







**Above: On the road, Bennett's 944 is much improved, but then it should be! Most noticeable is the extra power from the engine, closely followed by the suspension, thanks to new Koni dampers**

as recommended by Augment, we're running them fully soft and I suspect that is how they will stay.

So it's all mounting up, and that's not the half of it. I knew the clutch was on its way out. Last time the car was up on the ramps at Autowerke in Norwich, a good 18-months ago, we had a peek at the clutch through the little inspection hole in the bell housing. It was showing three quarters worn back then and more recently the biting point had been getting higher and higher. Time to bite the bullet and get it done which, as every 944 owner knows, is an expensive job, mainly because so many large and heavy parts of the car have to be removed to just get to it.

It was just in the nick of time, too. The clutch was original and the friction material was starting to break up. Well, I like to get

my money's worth – can't complain at 27-years and nearly 100,000 miles!

Of course it didn't end there. Whilst the clutch was out Augment replaced the clutch fork and the clutch fork bearings, plus the crankshaft oil seal, which was leaking slightly. Anything else? Well, it will come as no surprise that the torque tube bearings were past their best, so they were replaced too. Look out for a 'How to' on that job in the not too distant future.

So there are the complications that face 944 owners. The above procedures don't need to be done very often (every 27-years in this case), but when they do it's all major work. But then if you've driven a 944 with rattly torque tube bearings, a wheezing clutch fork bearing and a worn out clutch, you'll know it's not very pleasant. Labour for all that amounted to 19

hours! Ouch!

Anything else? Oh, yes. Finally, after months of bleating on about 944 engine mounts, I've had the O/E mounts that I've had squirreled away fitted. What's the big deal here? Well only the Porsche O/E mounts are fluid filled, and so can be legitimately called hydro mounts. This was one of the measures that Porsche took to combat the vibrations inherent from a large four-cylinder engine. The other, of course, was the use of balance shafts.

There is much mystery surrounding 944 engine mounts and even David was sceptical as to whether the O/E mounts really were fluid filled, having been told by Porsche a couple of times that they weren't (I should add that David knows a bit about rubber things, being the world's only manufacturer and supplier of rubber suspension

donuts for the original Mini). However, he recently chopped an O/E mount in half while stripping a 944 S2 and low and behold, the mount did contain a fluid filled chamber. So there you are. The O/E mounts are expensive at £300+ but they are the real deal. Anything else is effectively solid rubber and will not filter out the bad vibes as effectively.

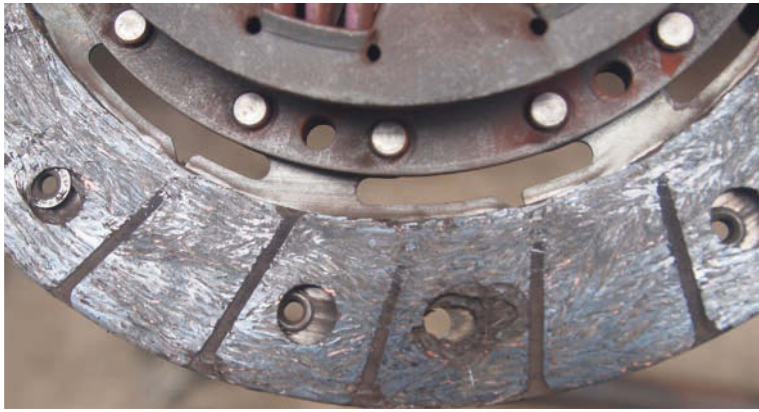
Nearly there? Yes, nearly. The brakes have been frankly a bit rubbish for some time and so it was no surprise that the front discs and pads needed changing. The rears need doing too, but they can wait for a while. Oh, and finally Augment fitted a short-shift kit, which works really well.

So now you can see why the car has been holidaying in Gloucester for so long, although most of the time was spent puzzling over the injector conundrum. So, what is it

**Below: New front discs and pads have improved the braking. Rears next. Rear Konis in situ attached to the swing arms. No springs? No, the 944 uses torsion bars at the rear like the pre '89 911s. Gearbox and everything else removed for clutch swap**







**Above, left to right: How to get the most from your clutch. After 27-years and nearly 100,000-miles, the friction material was starting to separate. This is why it's expensive to replace the clutch on a 944 - all this has to come off. Inevitably, with the torque tube off, it was sensible to change the bearings**

like to drive now? Well I have to say I couldn't wait to find out. It was, after all, going to be like a new car in many respects, with so much of the drivetrain having undergone work.

Best, then, to take one thing at a time. David picked me up from Gloucester station and so this was my first time behind the wheel. Start the engine and those engine mounts are doing their job. Even at idle they really keep the engine smooth. This is what I've been trying to replicate ever since I swapped to O/E mounts with my first ever 944 13-years ago. There is no substitute. Next, the clutch felt light and with the pedal depressed there was no bearing chatter. Excellent. On the move it's now light and bites way down the travel. Job done and, added to that, there's no spurious rattles from the torque tube bearings. Double job done. Oh, and

that short-shift gives a lovely mechanical feel to the change.

On the road now back to Augment's workshop. The suspension is firmer, but not harshly so. In fact it's a transformation because now the dampers are actually controlling the springs and torsion bars. There's less body roll and the front end, with re-set camber, really wants to point into a corner. On most surfaces the suspension is perfectly compliant with only harsh broken Tarmac or worn out surfaces creating a resonance through the body, but that is a common 944 issue, possibly accentuated by stiffer damping. Whatever, the pluses far outweigh the negatives and now the 944 wants to be driven into a corner and that certainly wasn't the case before.

So the engine? Well, first impression is it's super smooth and it really pulls.

The standard engine is all mid-range and torque, and so is this, but now it will rev strongly and smoothly too. The power band is effectively much wider, starting low and finishing high at 6500rpm. Third is now a very effective gear for the twisty stuff, fourth and fifth have an added flexibility, and with the improved handling and road holding from the upgraded suspension, you can really position and lean on it in the bends and use the power to mess around with the balance. And of course on skinny 195 profile, 15in tyres it likes to move around too.

So all good? Yes, in the main. The engine and suspension are the stars. The clutch, torque tube bearings, engine mounts etc are effectively like going back to factory settings. Certainly the car is very satisfying to drive, whether it's on the twisties or on the motorway, where the

engine feels particularly strong in fifth.

Don't ask how much it all cost please. It's rarely that so much work is carried out at the same time, and you would expect the 944 to be absolutely perfect by now. Well, it's certainly close. It certainly looks as presentable as ever and Augment haven't finished with it yet. We need to get on the rollers to get a definitive power figure. I whisked the car away to get it to the *g11&PW* Picnic, so we were unable to absolutely finish the job. There is a slight idle issue, and the world's most irritating buzz from the gear lever at certain revs, which is a perennial 944 problem as they get older. Oh, and that rear hatch is still creaking despite new catches, latches and everything else (anyone know of an effective cure?). But if it was finished, what would there be to do, and what would I have to write about?

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## OIL BE SEEN, YAH!

The Peppermint Pig's startling appetite for guzzling the amber nectar – and that'll be fully synthetic – has been muzzled, while its fellow trougher, the Silver Bullet, was recently fired at Porsche GB's convivial media evening at Silverstone. Johnny Tipler recounts the fortunes of his 964 and 986 Boxster

### JOHNNY TIPLER

#### 964 C2/BOXSTER

**Occupation:** Freelance writer/author

**Home town:** Norwich, Norfolk

**Previous Porsches owned:** 1

**Car:** 964 C2, 986 Boxster S

**Year:** 1990, 2004

**Mileage:** 147,473 miles, 25,000 miles

**Owned for:** 5 years

**Mods/options:** Cup wheels, Cup pipe, cat bypass, strut-brace, Bilstein/Eibach suspension set-up, RS style rear spoiler. Boxster is standard

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**THIS MONTH IN BRIEF:**

A trip back to 911Motorsport to fix an oil leak and the arrival of a Boxster into the fold

**D**runk! Four quarts consumed on the 600-mile run from Norfolk to Cornwall to visit Williams-Crawford in August was quite simply unacceptable. And that

was just the Peppermint Pig; me, I was in my cups down the boozier, sobbing over such wanton indulgence. I knew the Pep was thirsting for the oleaginous beverage, but this was now an addiction gotten way out of control.

So I booked a date with Doctor Mike at 911Motorsport in Kontich, Antwerp, where he'd rebuilt the engine 18 months ago. To mollify his fears over a seizure (the 964's, not mine), I took the route requiring fewest road miles, choosing Stena Line's overnight sailing aboard SS Britannica to the Hook of Holland – less a ferry, more a cruise liner. To optimise the trip my snapperbuddy Antony Fraser brought along a fab new 991 Cabriolet, graciously loaned by Porsche GB for a road trip to Nuremberg (not to be confused with Nürburg) to check out the Norising racetrack, based around

the monumental late-1930s fascist arena.

Whilst we sped off in our fleet convertible, Dr Mike beavered away beneath the rump of the Peppermint Pig. It seemed that the oil was haemorrhaging from somewhere at the rear and the left-hand side of the crankcase because that's where it was most oily. The undertray acted like a saucer, containing a slick of light orange fluid. Removing the engine's metal shrouding, exhaust system and heat exchangers, Dr Mike soon discovered the source of the seepage. 'It looked as if the leak was at the back of the car,' he said. 'But in fact we had two leaks, both to do with O-ring bearings, one in the centre of the engine, which is why it looked like it was coming from the crankcase casings; you have a cap here with an O-ring bearing behind, which for one

reason or another was crooked, so I fitted a new one, and you also had a second one leaking behind the distributor mounting so I replaced that too. Now, Mr Tipler, you must watch your oil level!' As if I wasn't!

As Fraser and I disported ourselves in southern Germany, along the way I picked up a new RS-style three-spoke Formula steering wheel from Willy Brombacher's FVD spare parts, tuning and restoration business at Freiburg, and on our return to Kontich Dr Mike duly replaced the original OEM four-spoke airbag wheel with that. My motive? A recent clean-up by NR1 Valeting in Norwich removed 340,000kms of palm-sweat patina, revealing cracked leather, hence the smart new FVD job. The hunky contours of this wheel have a lovely tactile quality, bringing out the best in trackday

twirling. The new hub brings the wheel closer to the driver, providing a more relaxed driving position as well as better control of the steering, and it also means the dip and indicator switch, wipers and computer arm are well out of the way though not inaccessible.

The Pep Pig has earned its stripes, in more ways than one. The valet job preceded a sartorial experiment involving branding of a sort. In human terms this would be like getting a tattoo, but luckily for PP it was more like a temporary henna tattoo. For a while I'd been fascinated by those 'security stripes' that bedecked certain impact bumper 2.7s around 1974 – see Johan Dirickx' car in a recent edition of *g11&PW*. Rick at HighgateHouse Graphics made up a set for me, and Wayne at Norfolk Premier Coachworks



applied them, earning mostly favourable comments on Pep Pig's Facebook page, with just a few dissenters. To them I'd just say that I simply had to see what it would look like; maybe orange wasn't the best choice; perhaps black would have been more suitable, though tonally the orange stripes worked. In view of PP's recent trip to the marketplace, a shrink might suggest I'd gone for the stripes in a subconscious bid to render it unsaleable. And I'm grateful to the g64 fraternity, especially members of the London branch featured recently at Spa and Chobham in these pages for helping to influence my decision to hang onto it. Anyway, having pedalled over to Belgium and enjoyed a Heineken with Dr Mike and Cameraboy, I decided that PP was just fine in its unadorned state, and Dr Mike surgically removed the stripes.

Daylight robbery! Living in the Cathedral Close with a direct line to him upstairs, you might imagine a degree of sanctity surrounding Pep Pig. Don't bank on it. One sunny morning a lowlife gobber broke a quarterlight window and nicked the TomTom. OK, I ought to have removed it from the screen, but after a while the satnav becomes just part of the car's furniture: for one thing the speedo's

in kph so I rely on it to give me mph. Scumbag was in such a hurry that he left behind the connector for the lighter socket and the suction pad in the windscreen, and it'll net him no more than a fiver in his local drug den. Me, it cost £100 for a secondhand pane of glass from Porscheshop, £50 to fit it and clean out the broken glass at Shawn Taylor Racing, plus £250 for a new TomTom. Say your prayers, chavner.

Insurance claim? Not worth it when they slap a £90 excess on windows. Autoglass couldn't even come up with g64 side-panes anyway. I do have a claim outstanding though. Both PP and the Silver Bullet are insured through Adrian Flux, reputable enough, you'd think. The SB, bought from Paul Stephens for Mrs T, was scraped by a myopic neighbour whilst we were away in the States in June. This oaf's Yaris is scarred on every panel through previous altercations – including knocking a wall down without realising it. Fortunately I found a witness to the Boxster scraping, so Adrian Flux's subsidiary ULR Additions should be able to proceed with the claim to repaint the front valance panel, quoted at £465 by Norfolk Premier Coachworks. You'd think. However, the broker's level of competence does

not instil confidence, and I'm still waiting.

You can't beat a trackday and barbie, especially at Silverstone, and that's what Porsche GB laid on one evening last month for journos, snappers and partners who drive Porsches as well as photographing and scribbling about them to earn a crust. *g11 & Porsche World* and *Classic Porsche* were way the best represented of the dedicated media, and my CHP colleagues included Our Glorious Leader AKA Steve Bennett (g44), Keith Seume (classic g11), Chris Horton (g24S), Brett "no coffee" Fraser (g86 Boxster), Paul Davies (3.2 Carrera), Delwyn Mallett (356 Speedster), and Antony Fraser (Porsche tractor). Yes, he'd trailered the chugger over from Suffolk, and it was the carpark conqueror, with folk queuing round the block to have a go. Mrs Fraser brought along Ant's GT3, and Mrs T and I turned up in the Silver Bullet. The entire publicity department was on hand to greet and entertain us: Mike, Nick, Rob, Natalie and Hannah, and we were handed the keys to the 50th Anniversary g91 coupe and a Cayman GTS with an instructor sitting alongside to guide us around the company's nifty test facilities alongside the main circuit. That g91 is a truly

fabulous car, and the absence of paddles and instead relying on regular automatic shifts was no bad thing as it enabled me to concentrate on throttle and steering without bothering which gear I was in, meaning I could go as fast as I dared without worrying about missed shifts; it would be impossible to operate a stick shift as fast as the auto wrings the changes. Makes you wonder about the future for manuals. The Cayman GTS was not quite as quick, but it delivered a level of performance that matched the g81 Boxsters I've recently handled. Fabulous fun! Then Mrs T took the Silver Bullet up to the water splash and skidpan, marvelling at the transition from PSM to no assistance, and the level of assurance that the PSM inspires, as opposed to spinning without it. By this time the BBQ was ready and we all sat outside for the scoff 'n' quaff, repairing to the upstairs restaurant for pud and coffee, and later to the Snoozebox bar, prior to a cosy night in the containers.

The Silver Bullet is a 2004 car, last of the fried-egg headlight g86s and a limited edition '550 Anniversary' car, number 1,602 out of 1,953 units celebrating the year the 550 Spyder racer was introduced. Silver Bullet also starred in the £50

grand 'Your first Porsche' heist, published a couple of months ago in *g11&PW* issue 246. As a special edition, with just 25K miles under its belt, it was not cheap as g86s go, but it's still an extremely high quality car for not a lot of money in the grand scheme of our notional £50K budget. With a 266bhp engine, lowered suspension, special wheels and wider track, exclusively painted Carrera GT silver, it's a cut above in the Boxster range, flaunting those wonderful swooping RSK-style haunches, and estimable as a nicer driving proposition in terms of ride and handling than the current model with its 19in wheels, low profiles and aggressive stance, which makes the g86 Boxster best value 'entry level' Porsche in my opinion.

For the next few months the Peppermint Pig and the Silver Bullet have taken up residence in zany Zummerzet, forsaking East Anglian flatlands for the hill roads with their delicious swoops, dips and crests. Thank goodness for the Bullet's serene mid-engined balance and the Pig's new Bilsteins and Eibachs! Now, what's this scrumpy I'm hearing about? Time to check out the local.

**Left to right: 'Security Stripe' graphics didn't quite work for Tipler, or anyone else! Back at g11Motorsport to cure a leak. New Boxster g86 on the handling circuit at Silverstone**





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Fennelly's Cayman basks in the Corsican sunshine next to abandoned local 928

## CAYMAN OWNERSHIP SIX MONTHS ON

Kieron Fennelly swapped his 993 for a Cayman. Six months on, it's a decision he doesn't regret

### KIERON FENNELLY

#### PORSCHE CAYMAN

**Occupation:** Motoring Writer

**Home town:** Sandhurst

**Previous Porsches owned:** 1

**Car:** Cayman 2.9

**Year:** 2009

**Mileage:** 45,000

**Owned for:** 3-months

**Mods/options:** Standard, as Porsche intended

**Contact:**

kieronfen@talktalk.net

#### THIS MONTH IN BRIEF:

The Cayman's been on its hols and seemed to enjoy itself. As a daily car it's peerless

Six months into Cayman ownership I had the chance to drive that latest 3.4S, courtesy of the Porsche press office. The additional 60bhp over the 2.9 certainly make themselves felt in terms of torque, though in 1200 miles I never grew to appreciate the PDK as I do the manual shift, which is such a pleasure to use on the Cayman. The manual's sixth could be a bit higher though – 3000rpm corresponds to a mere

73mph whereas in PDK 7th, only a little over 2000rpm equates to this speed. It certainly saves 1 or 2mpg on the motorway. The new chassis and wider front track undoubtedly make the latest Cayman even better handling than before, but the original car is so well resolved that subjectively the improvement is less marked than between the 997 and the 991. It was reassuring though that this new Cayman made exactly the same Dyson noises from cold and emitted the same hot rubbery and plasticity smells from its hidden engine as mine does.

The 2.9 gives no cause for complaint: an occasional rattle from the rear suspension is not a disintegrating roll bar, I was relieved to learn from Northway, but attributable to a link arm. No play is discernable and the arm is only worth changing if the rattle becomes intolerable.

My first air conditioned Porsche meant we could

contemplate an extended run on the continent so we headed for Corsica. The Cayman proved an excellent travelling companion easily swallowing a sizeable suitcase in the front and the rest of our luggage in the back. We drove via Germany and the Alps to take the shortest sea crossing from Italy just south of Pisa. The Cayman tracked arrow straight through rain so torrential that even the outside lane of the autobahn had slowed to a crawl; on quieter roads in southern Germany, it remained acceptably quiet at 125mph despite crank speeds around 5500rpm and it was only on the long climbs into the Alps where the 2.9 had to be wrung out to get the best from it that I thought at all about the extra oomph of the 3.4S. Switzerland is fun if you pick the right routes, but August traffic with practically the whole of Europe on holiday curtailed much of the entertainment possibilities. Corsica is

another matter. Known in French as l'île de Beauté, it is certainly pretty stunning, but much of the road network is cut into the side of the rock and in places there is insufficient space for two vehicles to pass. With endless blind corners, progress is slow, some of the locals think they are Sebastian Loeb (they aren't) and parking was usually tight and unsurfaced. I felt relieved to get back to the mainland with nothing worse than a grazed front spoiler.

Ironical then that a few days later I managed to clout the garage doorpost just hard enough to crack a mirror housing. An unscheduled visit to PC Reading resulted in a bill for £345 and entirely my fault, but Reading has evidently upped its customer service. I was offered a full inspection on the ramps and technician Paul Martin had several useful tips, in particular replacing the rusting exhaust bolts (three each side just above the drive shafts) which eventually corrode to the

point where they fracture. Reading also blew the leaves out of the front radiators. Paul pointed out these are worth removing regularly as they reduce the effectiveness of the radiator and also cause corrosion. (I'm still adjusting to this water cooling idea) There was some time to wait while the new housing's paint dried and I was treated to a tour of the extensive workshops and saw Reading's amazing fleet of more than 20 Carrera GTs which it maintains on behalf of owners.

Paul also observed that the Cayman's front brakes were 70% worn. My 993 had aftermarket Turbo calipers and I have always found my Cayman's brakes slightly less reassuring so new pads and discs will be on the schedule for the December service, which is starting to look as if it won't be quite as inexpensive as I originally envisaged. On the other hand you can't neglect a 160mph car: it is my daily driver and I still find it absolutely brilliant.



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## MEET THE TEAM

Welcome to *g11 & Porsche World's* Q&A pages, edited and assembled by the magazine's technical man and incorrigible do-it-yourselfer, Chris Horton (right). It's much the same format as you would expect – you ask, and our experts answer – but we have recently added more detail (including part numbers and typical costs, and also contact phone numbers and websites where relevant), and not least as many illustrations as we can squeeze in. Please note that all prices quoted were to the best of our knowledge correct – for the UK market – at the time of writing, and for the sake of consistency generally exclude VAT, unless otherwise stated. We naturally do our very best to make sure that the information given is both accurate and useful, but unfortunately we can accept no responsibility for any effects arising from it.



**CHRIS HORTON**  
*g11 & Porsche World*



**PAUL STACEY**  
*Northway Porsche*



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## CAYMAN MINOR COOLANT LEAKS: IGNORE THEM AT YOUR ENGINE'S PERIL

My 987-model Cayman 'S' appears to be leaking engine coolant from somewhere in the vicinity of the right-hand radiator, but by looking in through the air intake in the front apron I can see that the lower part of the radiator itself is completely dry. Do you have any suggestions as to what the problem might be? And am I likely to be able to do anything about it myself?

**David Weir**

**Chris Horton: *g11 & Porsche World*:**

My money, given your description, would be on a leaking joint where one or other – or even both – of the two longitudinal rubber coolant hoses meets each radiator. These have specially designed quickly detachable ends, secured by spring clips. They were intended to speed initial assembly of the car at the Porsche factory, and although they are normally remarkably effective their metal ferrules can eventually corrode.

This weakens the grip of the spring clip, allowing slight but obviously still unwanted movement between the two halves of the joint, and thus a leak such as the one you appear to be experiencing. In particularly bad cases one or other of the two raised tangs on the ferrule will rust away to such an extent that the clip can suddenly let go completely, allowing the rapid escape of most of the coolant, if not all of it, and obviously bringing with it the very real danger of the engine overheating.

Replacing all such hoses (and if one joint has started to weep, then it's a fair bet the

remainder won't be far behind) entails first draining the coolant, and then removing all of the relevant under-body shielding for access – which for most owners will mean putting the car in to a Porsche Centre or an independent specialist. It is relatively easy, however, to take out the lower front part of the plastic wheelarch liner, and this will at least enable you to have a closer look at the radiator connections in your car.

Cavendish Porsche in Long Eaton, Nottinghamshire (and which is where I shot the accompanying photographs), charges £630 plus VAT to change the total of eight such hoses that, in a 987 Cayman such as yours, are known to suffer from this problem. Call 0115 972 2001 for details.

You might wish to have the coolant changed at the same time, especially if it is more than two or three years old. As you may know, we are enthusiastic users of Evans Waterless Coolant, which as its name suggests – and if used correctly – should prevent the corrosion problem recurring, as well as guarding against the localised overheating within the water jacket that we believe to be one of the causes of cylinder-bore scoring in these engines. More on that in the June and October 2013 issues of *g11 & Porsche World*, or else on-line at [www.evanscoolants.co.uk](http://www.evanscoolants.co.uk).

**Front part of wheelarch liner can be removed separately from larger main section, to reveal connections between rubber hoses and radiator. Unclip those – after draining off the coolant – and you'll quite likely find this kind of corrosion on the metal ferrules. Don't take a chance: replace them!**



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## WORN 987/997 HEATER-CONTROL BUTTONS: CLEARLY ANOTHER COMMON THEME

I really enjoyed your *Tried & Tested* story on the high-mileage, 2006 Cayman 'S' in the October 2014 issue of *g11 & Porsche World*. As the owner of an exactly similar vehicle – same year, same colour, same specification – I agree with everything you said: you have there a very rapid mid-engined bargain.

Interestingly, my car has done only 46,000 miles, against the 105,000 of the one you tested, but the air-conditioning temperature and fan-speed buttons are showing exactly the same unsightly wear pattern.

The car is otherwise mint, so I suspect that there must be some sort of inherent design and/or manufacturing fault with the buttons. Perhaps they don't respond well to certain harsh cleaners – but they do look pretty bad. I have found several companies selling stickers to go over them, to make it look like they haven't faded, but they are themselves pretty horrible, in my opinion.

Has anyone else encountered this rather annoying situation? Better still, does anyone have any ideas as to how I might rectify it?

**Chris Morley, Cheshire**

**Chris Horton, g11 & Porsche World:**

*Just as I am sure you must have done, Chris, my first step was a Google search. As well as confirming that this is a common problem in both the 987 Boxster and Cayman and the 997-model g11 Carrera, that led me to [www.climarepair.com](http://www.climarepair.com), which for around £25 offers a set of two decals, plus cleaning wipes, a special tool (shaped not unlike a guitar plectrum) for pushing said decals into position on the switches, and not least the necessary instructions. The kit is said to be suitable for all 987s and 997 Carreras. (Both the 996 Carrera and the 986 Boxster have elliptical push-button controls.)*

*I can't comment on how good the finished repair might prove to be, but like pretty much anything else that involves sticking one small and rather delicate component to another it looks to me like a world of pain and frustration to tackle – although I have to say that your switches do look a great deal worse than those in the Cayman I featured, and so might be worth the effort. I doubt if any other simple DIY remedies would*

*improve matters, either, so maybe it's just one of those things – like stone-chips on the front apron, or minor scrapes on wheel rims – that ultimately we might all have to learn to live with. It would be interesting to hear others' views and experiences, though.*



**Chris Morley's Cayman 'S' shows much the same wear pattern on its heater controls as our recent *Tried & Tested* candidate. Fix it, or just live with it?**

## LIFTING A CLASSIC g11; I'M ALRIGHT, JACK

I am a newcomer to Porsche ownership, having recently bought a 1986 g11 Carrera 3.2. I have always done my own basic servicing, and some relatively simple repairs, and if possible I would like to continue that tradition with this latest acquisition.

My question, then, is this. What is the best way of raising the rear of the car for access to the underside of the engine, the transmission, and so on? I can see that there is a jacking point midway along each sill, but each of those will raise only one side of the car at a time – and I would like to have the entire rear end in the air.

Someone has told me that it is permissible to position a jack directly beneath the engine, but that seems completely counter-intuitive to me, if not downright dangerous. Surely the light-alloy crankcase can't possibly be sturdy enough for that? I would appreciate your advice.

**Tony Adamson**

**Chris Horton, g11 & Porsche World:** You can, indeed, safely raise the rear end of your Carrera 3.2 – and, in theory, almost any other air-cooled g11 – by carefully placing a suitably low-slung trolley jack under the centre line of the crankcase, exactly as shown in the accompanying photograph (below, right). Unlike in most – if not all – other engines, this is an immensely strong area.

That said, and for the benefit of those readers with much earlier models, with magnesium-alloy crankcases, we would probably suggest avoiding this practice if at all possible. This rather exotic material is now both inherently more fragile than the later aluminium alloy, and also difficult and so expensive to repair successfully if it should happen to suffer any damage. Better safe than sorry.

Note, too, the use of a soft pad between the saddle of the jack and the underside of the engine. Obviously this is partly to provide a cushion to prevent any possible damage from metal-to-metal contact, but also to help avoid slippage as the car rises, and the previously flat surface on the crankcase begins to tilt.

The pad shown in the photo below is a piece of folded hessian sacking, but a suitably thick wad of newspaper does the job, too. Better still, cut a roughly four-inch square from the tread of an old tyre – that will provide both cushioning and plenty of grip. Do not attempt to raise the car with any kind of jack on anything other than a perfectly smooth, level and solid surface.

Once the car is raised, of course, you need to support it safely on axle-stands before even thinking about venturing beneath it. The best place for those is either as suggested in the other photograph – again with suitable padding or perhaps a small block of wood to prevent metal-to-metal contact – or else beneath the outer ends of the transverse torsion-bar housing (arrowed).



## WHEEL WOBBLE COULD BE WATER RETENTION

My 996-model g11 Carrera 4 seems to have developed an increasingly annoying steering-wheel shake at anything over about 70mph. I thought it must be simply because a balance weight had fallen off one of the rims, but so far my local garage has been unable to get rid of the vibration by rebalancing the wheels – or even reduce it.

They have tried rotating the two front tyres around the wheels by 180 degrees, but with no discernible improvement. I am the only person who drives the car, so I can state with some certainty that it hasn't been kerbed, or even hit a bad pot-hole. What might be wrong?

**Peter Briggs**

**Chris Horton, g11 & Porsche World:** Your steering-wheel wobble could be the result of several factors, including worn wheel bearings and/or weak suspension dampers, but with any situation such as this it usually pays to start with the easiest (and cheapest) to deal with. Assuming, then, that all four wheels and tyres appear to be basically serviceable, make sure that you don't simply have a build-up of water in them.

Filling-station air-lines rarely incorporate an effective system for filtering out the moisture that builds up inside any compressor and/or its storage tank, and over a period of time can inject a surprisingly large amount into each tyre, particularly if you have had a slow air leak, and so use the facility fairly regularly.

You say that your garage has rotated the tyres on the wheels, but unless they physically removed them from the rims they still might not have realised that there was water inside them – and even a small quantity of liquid sloshing around inside can have a marked effect on the wheel's overall balance when it is turning at the higher rotational speeds routinely achieved on the road, as opposed to a balancing machine.





## 944 BEARING NOISE: TRANSMISSION OUTPUT SHAFTS OR TORQUE TUBE?

My 944S has started making a loud droning noise from the rear, especially under power. I thought it might have been a worn wheel bearing, but my local garage – albeit with only limited experience of these Porsche models – suggests that it could be a bearing, or bearings, inside the transmission itself. This sounds worryingly expensive to fix, so I would appreciate your experts' second opinion.

**Robert Hale**

### **Chris Horton, 911 & Porsche World:**

It is plainly impossible to give you a precise diagnosis without hearing for ourselves the noise you describe, but from my own experience I would say that you probably have worn output-shaft bearings in the transmission. I suffered exactly the same scenario in my own 944 about 10 years ago, and the accompanying photos show why. Those individual bearing rollers (top right) should, of course, be perfectly smooth.

Their replacement, if I am correct, is going to mean at least a partial transmission stripdown (the final drive has to come out of the casing for access to the left-hand bearing's inner track), but that is probably no bad thing in the circumstances. For a start, it will allow your garage, or whoever does the work, to check for damage that may have been caused by the

swarf that will have come off the bearings.

There is one other thing to check – or more likely to have checked for you – before you go to those lengths, though. Instead of a conventional propeller shaft, your 944 has what is known as a torque tube connecting the engine and clutch to the rear-mounted transmission. It is essentially a long drive shaft, supported in bearings inside a rigid tube.

Those bearings, too, can wear and generate a huge amount of noise inside the cabin (it's more like a high-frequency rattle than a drone, however), and while replacing them is in its own way no less awkward than dealing with the transmission itself (you still have to take the complete transaxle out of the car in order to remove the tube), it should certainly be a little less expensive.

Good second-hand torque tubes cost from around £100 apiece – and it is possible to replace the internal bearings relatively easily, as we hope to show in one of our how-to stories in the near future. If you get to that stage, however, it would be prudent to have a look at the clutch, at the very least, and arguably to replace it while you have the opportunity – which will obviously push up the overall cost again.

Perhaps, then, you had better hope it's just the differential bearings that are at fault!



Output-shaft bearings in Horton's 944 were badly worn and commensurately noisy, but replacement was relatively straightforward – if you call removing and stripping the transaxle straightforward, that is

## POP-OFF VALVE HELPS 911SC AND EARLIER CARS STOP GETTING IN A FLAP

Back in the August 2014 issue of *911 & Porsche World* (Q&A, see pages 127–130) I explained how Auto Umbau proprietor Robin McKenzie ([www.classicporsche.repairs.co.uk](http://www.classicporsche.repairs.co.uk)) had replaced the airbox in a customer's 911SC, after the original had been irreversibly damaged by a backfire.

I concluded by suggesting that if you were going to those lengths yourself then you might also wish to fit a so-called pop-off valve, to help prevent any repetition of the backfire subsequently wrecking the new airbox. (Although I also suggested that it would be equally sensible to rectify the fault that was most likely causing the backfire in the first place; ie incorrect ignition timing and/or a worn fuel metering unit.)

During one of my subsequent visits Robin was able to show me exactly what is involved in this once popular but now rarely seen modification. I shall have to let the photographs below tell the story, but suffice it to say that the keys to success are first very accurately marking the centre of the hole that is to be cut in the ribbed base of the airbox, with the aid of the paper template that should have been provided with the valve, and then – no less obviously – making as neat a cut as possible.

For that you will need a good, sharp hole saw of exactly the right size, or in other words very slightly bigger than the diameter of the valve. That will allow the latter to slide in neatly without binding, and then to sit perfectly square. The joint can then be sealed with some sort of flexible, non-setting mastic. Robin uses a Sikaflex product (221, actually), but there are plenty of alternatives on the market.

Use a vacuum cleaner to suck out the plastic swarf during the drilling process (it doesn't really matter if a few tiny particles end up in the inlet manifold, but it's naturally best to avoid that if at all possible) and, finally, remember to position the valve in such a way that the flap will be able to open beneath the air-filter element. It needs to sit with the spring-loaded hinge toward the rear of the car, essentially.

Where to buy the valve? PorscheShop ([www.porsche-shop.co.uk](http://www.porsche-shop.co.uk)) is a good source here in the UK, but a Google search will doubtless turn up all sorts of others wherever in the world you happen to live. Pelican Parts ([www.pelicanparts.com](http://www.pelicanparts.com)) is one of the major suppliers in the United States, and there is always eBay, of course.



Paper template helps find the spot; that is then 'found' again with a scribe, and a very small pilot hole can be drilled. Hole saw needs to be exactly the right diameter; extract plastic swarf with a vacuum cleaner. Making sure valve is correctly seated, position it so that the flap can open beneath the air filter; otherwise it's useless



## BOXSTER BRAKES FOR A 911 CARRERA 3.0: THE WHYS AND THE WHEREFORES

As a long-term subscriber to *g11 & Porsche World* I have very much enjoyed your stories over the years, particularly the technical ones.

I am currently restoring and upgrading a 1976-model 911 Carrera 3.0. I would like to improve the brakes (the car has no servo assistance, of course) and remember an article of yours, Chris, showing how the front calipers and discs from a 986-model Boxster could be fitted to an early car such as mine.

I wonder if you have any record of which issue that story appeared in, and could point me in the right direction as far as my suggested modifications are concerned? Many thanks!

**Richard Holt**

**Chris Horton, *g11 & Porsche World*:** The story I believe you must be referring to was published in our July 2009 issue. I have e-mailed you a PDF copy, and I hope that helps.

Are you sure, though, that you wouldn't achieve similar improvements in the car's overall braking performance simply by completely overhauling the

existing system? The Porscheshop conversion I wrote about in that story is undeniably effective, but with the benefit of hindsight I think that would probably be my favoured option, at least to start with – and if only because originality is becoming increasingly important as far as these earlier cars are concerned. It would be interesting to hear what you decide to do, anyway.

**Richard Holt:** Many thanks for your speedy reply, Chris. I still have the July 2009 magazine, so I shall go and dig it out of my collection very shortly!

I am currently completely rebuilding and/or refurbishing the front suspension and brakes on my car. It's all in pretty sad condition. Even the light-alloy front crossmember is so badly corroded that the anti-roll-bar brackets' attachment holes have broken away, and the wishbones are so corroded that I have replaced those, as well.

I got a good second-hand crossmember via eBay, and the wishbones were brand-new from Sportswagen Eckert. Most of the other parts I have obtained from the Car Parts 911 division of Euro Car Parts.

As far as the brakes are concerned, my rationale is that the original calipers will need refurbishing anyway, and I am replacing the master cylinder partly on the basis that it looks pretty rusty externally, and partly because – while everything else is apart – I can.

As I am sure you already know, it is possible to fit a master cylinder with a 23mm piston (compared to the current 19mm unit), so I am going to use this in conjunction with the Boxster calipers.

I have actually got a pair of the latter, which I acquired a couple of years ago when I owned a Boxster, but never got around to using. They came from a relatively low-mileage 986-model 2.7 dating from 2003, so at this stage I am not planning to do more than simply clean and repaint them.

Incidentally, the cost of the mounting brackets from Porscheshop is now £121.70, compared to £99.71 when you wrote your 2009 article.

Anyway, that's the masterplan, and I shall be more than happy to let you know how things progress, particularly when I eventually get the car back on the road. I'm looking forward to that!

## PANEL GAMES MIGHT CURE A 987 BOXSTER'S WATER LEAK

After a recent thunderstorm I was shocked to discover that the carpet in the driver's footwell in my 987 Boxster 'S' was soaking wet. I have owned the car for about three years, and this has never been a problem before – even during last winter's storms, when it seemed to be raining all the time. So why should it start now? And, no less important, how might I cure the leak?

**Peter Willis**

**Chris Horton, *g11 & PW*:**

I think the most likely culprit will be the foam-rubber seal at the base of the door's so-called component carrier – the pressed-steel panel that has mounted on it the window motor and lift mechanism, the loudspeaker, and not least the airbag mechanism. I would guess that the hot weather we had during the

summer caused the final deterioration of the foam that has allowed it to break up and so cease to work effectively.

The 'official' way of dealing with the problem is to fit a new component carrier, complete with a new seal; Porsche doesn't sell the latter separately. But those are quite expensive – typically around £120 plus VAT for your 987 Boxster – and there is plainly no guarantee that you won't be in precisely the same situation again in a few years' time, if you were to keep the car.

My suggestion, then, especially if you are up for some fairly easy DIY, would be to buy a roughly £50 roll of the generic mastic-style 'cord' that Porsche sells for various other applications (not least sealing 944 rear lights to the body shell), and thereby make your own seal. I recently tried the

same technique on my 2004 VW Passat, which has exactly the same kind of layout inside the doors, and thus the same water-leak problems, and so far it has been 100 per cent successful. You will also avoid the need to transfer all of the various individual components from one panel to the other, of course.

The only drawback with this method is that you will have to remove all traces of the old foam rubber, but at the same time avoid scraping away the paint protecting the inside face of the component carrier – and that can itself be a rather laborious process. (The Passat's carrier seems fairly robustly plated, but Porsche seems to prefer a brown, primer-style paint.) Use a plastic scraper, then, rather than (say) a steel screwdriver blade, and if you do damage the surface on

the edge of the panel give it a coat of some suitably protective aerosol spray paint – and obviously let that dry before you attempt to refit the carrier.

Make sure, too, that the edge of the component carrier is perfectly straight and true. The panel on the car shown below had plainly been off at least once before, and showed all the tell-tale signs of having been roughly levered away from the door shell, and so was quite badly distorted (see arrow). If yours is similarly damaged you might well be able to straighten it, but it will reduce your chances of a successful cure first time round.

The part number of that mastic sealing cord is 000 043 172 00 (it comes as a number of individual strips, with a total length of 10 metres), and any Porsche Centre should be able to order it for you.



Like many current and recent VAG vehicles, 987 Boxster/Cayman and 997 Carrera have a pressed-steel 'component carrier' inside each door, behind fabric trim panel. It should be sealed against the door shell by a foam-rubber strip, but that eventually perishes (middle two pics) and allows water into the cabin. Strictly correct fix is a complete (and expensive) new carrier, but buy some mastic-style 944 rear-light sealing 'cord' (far right) and you can at least have a go at reclaiming the original panel





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# DETAILING SCIENCE

## PART TWO: DEEP CLEAN & DECONTAMINATION (TIME REQUIRED 2-3HRS)

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In the previous issue we covered the precursor to all detailing, the safe wash. In this second article, Professional Valeters & Detailers member Rich March of Classic Details in Gloucestershire ([www.classic-details.co.uk](http://www.classic-details.co.uk)) shows us how to make our GT3 truly clean – an auto exfoliation.

The safe wash removed the easy stuff: mud, grime, oil and bio stains. The decontamination process removes the

ingrained detritus: tar, industrial fall-out, bird lime, and brake dust.

The first step is to assess the car to see what types of contamination you are dealing with and then use the specific product (eg tar remover) to treat each area. Once any heavily contaminated areas are dealt with the next step would be to clay bar the paint. There are various grades of clay: heavier versions remove more ingrained marks quickly but cause marring; lighter versions take more effort

but create a finer finish and are less inclined to mark the paint. In this instance Rich used a medium clay with plenty of lubricant as the paint will in due course be corrected so slight marring wasn't really a problem.

The next step was the grime that gets stuck in drainage gullies, around window rubbers, in grilles, and on badges. As the photo shows, the 'GT3' badge was hiding a lot of muck, despite looking clean. Rich sprayed on some All-purpose cleaner

(APC), left it to work for approximately five minutes, and then used a detailing brush to loosen all the dirt. It was then rinsed thoroughly.

The key to deep cleaning a car is to remember all areas, not just those you can see. For example, all door, boot and bonnet shuts should be cleaned using diluted APC and a suitable micro fibre. Remember to turn the micro fibre regularly, particularly on heavily stained areas to avoid marring the paint with the dirt particles.



Finally, the rather nice split rim wheels got some attention as they were covered in a mix of road grime, tar and brake dust. Rich used a specialist genre of product known as 'Iron' or 'Fallout' removers, in this case Iron X by Car Pro which uses pH neutral ammonium thioglycolate as opposed to the oxalic acid that cheaper products use. These react

with the iron content of brake dust, usually turning purple and making a somewhat disturbing smell. A different detailing brush was then used to clean inside the lug holes and a specialist wheel brush allowed Rich to clean the inner wheel which made a huge visual difference. This is then finally sprayed off with a low pressure hose, remembering to spray right inside the inner wheel. With

the GT3 the fallout solution seeped from the centre cap so it was important to double check everything had been removed. Though safe when used correctly on vehicles, this type of product needs to be treated with care, and you should always wash your hands after use.

For cars that are not going to be detailed further than this stage, it is highly recommended to

add a paint sealant or wax to protect the bodywork. Most good paint sealants are a two stage process, one to removed any residue and create a perfect surface for sealing, and the second to add a polymer layer with gloss

enhancers and UV filters. We would also recommend using a tyre dressing to add a satin finish, however all these products usually contain silicone so should only be used if no further paint enhancement is planned. **PW**

### EQUIPMENT LIST

Detailing brushes & APC – Envy Car Care: [www.envyvaleting.co.uk](http://www.envyvaleting.co.uk)  
Fallout/Iron Remover – Iron X: [www.carpro.co.uk](http://www.carpro.co.uk)  
Clay bar and lubricant – Formula Clean: [www.formulaclean.co.uk](http://www.formulaclean.co.uk)  
At least five or six micro fibres for all the door shuts and grubby areas.  
Somewhere protected from direct sunlight and with access to a hose





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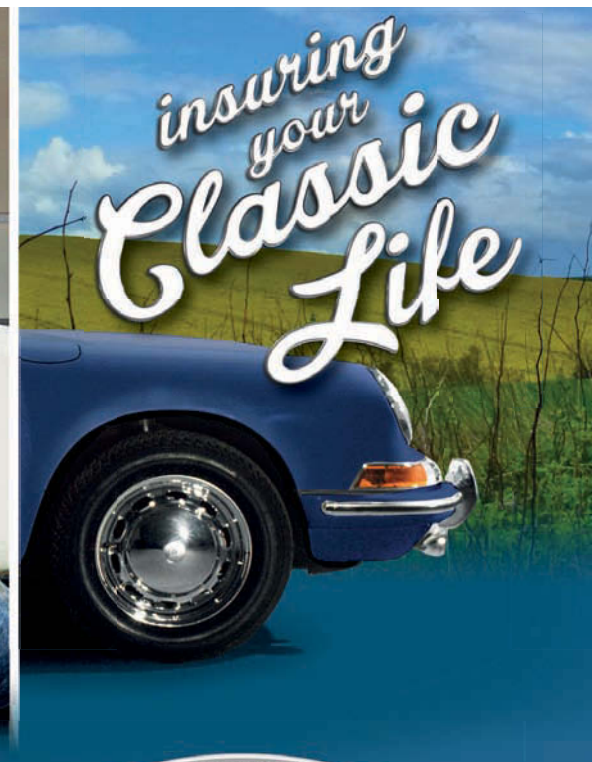
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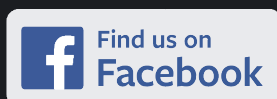
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# THE MODERN 911

The 1989 964 was the first major update of the 911 concept since its 1963 launch. Misunderstood at first, it's now in demand



## SPECIFICATION

### PORSCHE 964

|                    |                              |
|--------------------|------------------------------|
| Engine .....       | 3600cc flat-six              |
| Transmission ..... | Five-speed manual            |
| Max power .....    | 250bhp at 7400rpm            |
| Max torque .....   | 229lb ft at 4800rpm          |
| Brakes .....       | Vented discs.                |
|                    | 298mm/299mm front and rear   |
| Wheels & Tyres..   | 6x16in (f), 8x16in (r).      |
|                    | 205/55x16 (f), 225/50x16 (r) |
| Weight .....       | 1350kg                       |
| 0-60mph .....      | 5.7 secs                     |
| Top speed.....     | 161 mph                      |

**W**e've been here before with the 911. Internal competition from the 928 threatening to kill it off, a stay of execution and then in the '80s it was the threat of Japanese sports cars that galvanised Porsche into action. The ultimate riposte was the four-wheel drive 959, but developed in tandem was a mainstream model in the shape of the 4WD 964. Well, four was the buzzword in the '80s, with the launch of the Audi quattro and the excitement surrounding GpB rally cars.

It's fair to say that the 911 was due a fairly radical makeover. The

Carrera 3.2 had been something of an afterthought. Great car though it was (and still is), it offered little over the SC except a bigger engine and slightly more refinement.

## PRODUCTION AND MODELS

Work began on the new project in 1984, with a planned launch in 1987 for the 1988 model year. It was an ambitious timetable, but a challenge to which the engineers rose. It was decided that the 911 needed to be upgraded in several areas, including the adoption of power steering and anti-lock brakes and four-wheel drive don't forget.

Initial plans were to market the new model in parallel with the rear-drive Carrera 3.2. Another alternative was to produce a two-wheel drive version in parallel with the 4WD newcomer, which would essentially be a facelifted 'old' 911, that looked outwardly similar to the new 964.

The third – and thankfully successful – option was to build a new bodyshell to be used by both the two and four-wheel drive alternatives. This was the only way to go if Porsche was to offer power steering across the board.

Going to 4WD presented a number of challenges. Among those were concerns about the

reduction of luggage space in the front, thanks to the intrusion of the front diff. This was solved by the adoption of a plastic fuel tank that could be more accurately shaped to fit around the mechanical components.

Then there was the styling. The introduction of the 'impact bumpers' in 1974 has been pretty radical, but beyond that Porsche had been very conservative with future revisions. The 1980s was a time when much attention was being paid to aerodynamics, something that the 911 definitely wasn't with a Cd of just under 0.40! The design brief called for a Cd of 0.32, but the new model had to be recognisably a 911.





The design team, led by Tony Lapine, paid most attention to the nose, designing new aerodynamic bumper mouldings, which smoothed out the lower segment of the car. Above the bumperline the 964 was essentially identical to what had come before. The more bulbous plastic front and rear aprons divided opinion, but the 911 retained its shape.

Unseen were the underbody panels, which largely concealed the drivetrain, allowing a smooth passage of air under the car. Then there was the trademark retractable rear spoiler, which rose at speeds above 50mph. All these details combined to make the 964 the most slippery to date.

The new model, badged as the Carrera 4, was launched in the last months of 1988. Full scale production started in Jan 1989, but the UK market didn't get its full quota of right-hand drive cars until August.

In 1990, the two-wheel drive 964 Carrera 2 joined the ranks along with Targa and Cabriolet versions. There was also the option for the first time of Porsche's new ZF-developed 'Tiptronic' semi-automated transmission, although this was an option for the Carrera 2.

## FOUR-WHEEL DRIVE

As well as being the 'in thing' in the '80s, Porsche viewed going four-wheel drive as a way of taming some of the 911's occasionally wayward handling, which gave the 911 something of a reputation in the wrong hands. This was all part of giving the 911 a 'broader appeal.'

As you might expect of the time, the 964's system was fairly basic taking drive to the front axle via a simple centre diff. It certainly had the desired effect,

curing the 911 of its wayward tendencies at a stroke. The system is also pretty tough with few problems, but it does introduce weight to the front and the suggestion that it introduces understeer is no fallacy. Overall, though, four-wheel drive has proved to be a huge success for Porsche, although purists will always seek out the two-wheel drive alternative.

## INTERIOR

While retaining the traditional 911 look and interior dimensions, the 964 is a step up from the previous Carrera 3.2. The bottom of the dash was redesigned to incorporate a bigger glove compartment, while the dials are rather more modern and the warning lights less scattered.

The biggest change, though, is the central transmission tunnel, which accommodates the prop shaft. This allows for a more elevated centre console and a much shorter gearlever, which makes for a more modern appearance compared with the 'wand' like levers of previous generations of 911.

Seats were carried over from the Carrera 3.2 and if you're lucky you'll pick up a 964 with deep bolstered 'Sports' seats, which is the best seat Porsche has ever made. Just our opinion, of course!

Equally, you might find a car with air con too. Even if it doesn't work, it's a massive bonus.

## ENGINE

Not surprisingly the 964 engine is a development of the existing air-cooled flat-six, but now featuring new cylinder heads, with two spark plugs per cylinder. This required the adoption of dual distributors connected by a toothed rubber belt

## WHAT TO PAY

Guess what? 964 prices are on the up. No surprise there, given the air-cooled market at the moment. What is surprising, though, is how the 964 has come of age and shed itself of its undeserved reputation, not to mention emerged from the shadows of the 993.

Where once you could pick up 964s for under £10,000, you are now looking at double that for something half decent and much more for a really good car, where the market is now at £35,000+.

There is a premium for the Carrera 2, and you will pay less for Targas and Cabriolets. Most cars will be with dealers, simply because if a good private sale 964 hits the market, it's more than likely that a dealer will get there first. Any private sales hanging around will doubtless be at the rougher end of the spectrum.

This dual ignition system made the combustion process more efficient, which in turn allowed the engineers to redesign the camshafts with more overlap to improve power. The engine was cleaner, too, and more fuel efficient, helping the 964 meet strict emissions in the USA.

The existing Bosch Motronic ignition system was revised to cope with the higher operating temps of the new twin-plug heads, and the oil system was redesigned too, after testing highlighted surge problems.

The induction system was new, with a manifold incorporating

what was called a variable-resonance system, which allowed the engine to breathe more freely at high rpm.

In the development process, the engine capacity was gradually increased to 3.6-litres and power came in at 250bhp.

## TRANSMISSION

The 964 uses the G50 five-speed gearbox that was first introduced in the Carrera 3.2. It's a tough and slick shifting unit and the driver's choice over and above the 'Tiptronic' semi-auto 'box. Dual-mass flywheels features on both the Carrera 2

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## WHAT THE PRESS SAID

"Fourth gear, perhaps the most useful of all, is a real workaholic on open roads, taking the car from 30 to 130mph in one effortless surge that can only be compared with the thrust of an aircraft taking off"  
*Motorsport*

"At first almost neutral, with increased cornering force the Porsche clearly tends toward understeer; it thus pushes its front wheels outward, which fundamentally influences its manoeuvrability in a negative way"  
*auto motor und sport*

There will always be those who say that the 911 has lost its particular charm, but for each of those, there will be a dozen who'll welcome its comparative modernity and the taming of its vices  
*Road & Track*

and Carrera 4 and created something of a reputation for breaking up. Most, if not all, have been replaced with single-mass flywheels now.

## SUSPENSION AND BRAKES

Porsche had all sorts of big ideas for the 964 suspension wise, including self levelling air suspension, to keep the ride height at a constant level in all situations.

However, what stuck was the adoption of conventional coilover struts front and rear as opposed to the torsion bar set up of the previous generation of 911. This was a practicality issue as much

as anything. The torsion bar tube at the rear would have got in the way of the propshaft running to the front diff.

Brakes were Porsche trademark aluminium four pot calipers, first seen on the 911 Turbo and a feature of 944 Turbos and S2s. They were a step up from the Carrera 3.2's single pot calipers.

## WHAT TO LOOK OUT FOR

The poor old 964 was, for some years, the whipping boy of the 911 line-up. This was partially borne out of some of the issues that the 964 suffered, almost all of which have been dealt with over the years. Yes, the 964 had

problems with oil leaks and the dual mass flywheel and ignition issues with the twin dizzy drive, but a lot of the problems were compounded by the fact that values had slumped to such a degree that they were cheap to buy but still expensive to maintain. A classic double whammy.

These issues shouldn't be ignored, but largely they are in the past. Far more important to today's buyer is overall condition and history. There is no doubt that there are a few rough 964s out there, that haven't benefited from the model's resurgence in popularity. Some of these might have been spruced up to cash in. The standard 964 is a popular donor too for the 964 RS look. If that's what you're after, then don't be put off, particularly if it's been done well.

In the main, though, look for an impeccable service history and check for corrosion. The 964 isn't immune to this.

A good 964 is a pleasure to drive and should feel solid on the road. Power steering is a bonus if you want to use the car every day, as is the four-wheel drive in the winter. **PW**

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## 'I BOUGHT ONE'

**Andrew Oswald**  
Like many people who bought an air-cooled 911 a few years ago, I've watched in astonishment as prices of 964s have gone up. The funny thing is, it's not been gradual, but quite a sudden thing. We all used to sit around talking about house prices, now we talk about Porsche prices. Actually, I don't, I keep my mouth shut, except to my wife who's impressed at my apparent reading of the market. Little does she know!

I bought my 964 Carrera 2 10 years ago for £15,000. At that price, and as a private sale, it was a good one, with 65,000-miles on the clock. Since then I've taken it up to 100,000-miles, with little to do but routine servicing. There was, however, the clutch. It was the original dual-mass job, which had started to clunk, but at 80,000-miles it was due for replacement anyway. Looking at the prior service history, it was obvious that early oil leak issues had been attended to, and I've certainly not had any problems.

With prices as they were a few years ago, I wasn't scared to modify my car and so, like many 964s, it has undergone a bit of an RS transformation, and some split rim BBS wheels with gold centres. At the time they cost a good percentage of the value of the car! Overall I've been delighted with it and can't think of anything else I would rather have - except a GT3!

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928

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944

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# TRIED&TESTED

WITH **g11** & **PORSCHE WORLD'S** CONSULTANT EDITOR, CHRIS HORTON

**CAYENNE (3.2 V6) ■ 2004/54 ■ 106,648 MILES ■ £7995**

To be brutally honest, I wasn't expecting great things of an £8000, 107,000-mile Cayenne V6 – even from an independent with as good a reputation as Northway. First impressions weren't overly encouraging, either. The car was covered in a layer of late-summer dust – it clearly hadn't merited being parked in the barn, with all the best stuff – and the company's valet was on holiday. (But then I had turned up more or less unannounced.) Nothing for it but to set to with hosepipe and sponge.

Washing any car is always a great way to get to know it, though, and immediately this Cayenne's many qualities began to show through (no pun intended). The Crystal Silver paintwork, barring a few very light scratches – most likely from suburban bushes – is by and large excellent, and the front and rear aprons show no sign of grounding during off-road excursions. (And they are way too high to suffer the kerbing that seems endemic to low-slung g11s and the like.) There is a minor scrape at the right-hand end of the front bumper, and a rather odd-looking blister on the plastic trim along the bottom of the driver's door, but that apart it could pass for a 20,000-mile two-year-old.

Same story inside. The steering wheel, gear shift and centre-console grab handles are all a bit grubby, and the black-leather front seats have that patinated look you would expect – and the rears would benefit from some gentle cleaning and 'feeding'. The pedal rubbers are predictably worn, too. But the expansive fascia top (also in black leather, of course) is unmarked, and likewise the headlining, the door cards and the carpets, those last items protected by genuine Porsche overmats. All of the fiddly bits, too – glovebox, cup-holders, cubbyhole lids – still look and feel reassuringly robust (and clean), likewise the roller-blind luggage cover; and it was nice to see a moulded-plastic load-space floor protector. The carpet beneath that is thus good to excellent, and those of you who recall my early history in Cayennes will know why I was so pleased to find beneath that a space-saver spare wheel – so far unused. All the tools and other emergency equipment appear to be present and correct, as well – including both the original warning triangle and first-aid kit.

Outside again, the 19-inch Cayenne Design wheels (one of a number of extra-cost options; more on those in a moment) are all good, and the Bridgestone (front) and

Continental (rear) tyres have plenty of tread remaining. The wheel bolts are the standard rusty mess, but it would hardly break the bank to fit new ones. The brake discs are smooth and polished, the pads thick enough to forget about for the foreseeable future, and the calipers look clean and fresh. There are no dramas underneath, either, and the dust in the engine compartment is a sign of good, honest toil that has required nothing more than routine maintenance. Speaking of which, the car has just had a full service at Northway (which has looked after it for the last five years), and it will leave with just about a full year's MOT certificate. The only major replacement parts to date – again fitted by the Northway team – are an exchange propeller shaft in September 2012, and a front final drive in May this year. 'The old one was just a little bit noisy,' said Northway's Paul Stacey, 'but the then owner, who is a very fastidious chap, insisted that we change it.'

If all that was unexpectedly encouraging, then the icing on the cake was seeing how many extras the first of the car's so far two owners had specified. (Interesting, too, that he went for the standard six-speed manual gearbox and steel springs. Both are now deeply unfashionable, but will stand the test of time and mileage far better than the high-tech alternatives everyone now demands, I reckon.) Lack of space precludes much detail, but suffice it to say that they include that Crystal Silver paint, smooth black-leather trim (£1845 according to the original invoice!), Park Assist, the 19-inch wheels and 18-inch space-saver spare, PCM with phone module and handset, air-con (which blasts out a gale of cold air), a three-spoke steering wheel, floor mats, and even a Tracker system. Total cost of the car, in October 2004, was a whopping £43,681.94.

Unsurprisingly for a petrol engine with only 250bhp and 310Nm this roughly 2200kg Cayenne is no fireball to drive, and at an average 21mpg you will likely be a fairly frequent visitor to your local filling station. It's all pleasantly quiet and refined, though, with a smooth and progressive clutch action and somewhat notchy but precise gear shift allowing satisfying progress, both in traffic and on the open road. Ride is good, the steering light and fairly sharp, and the brakes predictably powerful. No clonks or bangs from beneath, either, reinforcing the notion that, with care, these now often casually dismissed early Porsche SUVs really can – and do – last the distance. **PW**

## CHECKLIST

**Background:** An early and so high(ish)-mileage Cayenne V6. Manual transmission and steel springs (ie not 'air' suspension), but has a host of useful extras, including air-conditioning, PCM, Park Assist, Tracker, and not least a space-saver spare wheel. Two owners, a good history – for the last five years in the capable hands of Northway – and will go out with a warranty and a year's MOT

### Where is it?

Northway Porsche is at Grange Place, Grange Lane, Beenham Industrial Area, Bath Road, Reading, Berkshire RG7 5PT; tel: 0118 9714333; [www.northway.co.uk](http://www.northway.co.uk)

**For:** Condition, provenance and history. Has a pretty enticing specification, too, with arguably 'future-proof' manual transmission and (relatively) simple coil-spring suspension. Nice, tasteful colour scheme. Oh, and that eye-catching price, of course. Makes you realise how massively over-valued certain other Porsches still are...

**Against:** It's a Cayenne – and an early one, at that, so about as fashionable with the SUV set as one of last year's handbags. That small engine (and manual gearbox) makes it definitely more a plodder than a road-burner, and it will probably be quite thirsty, too. Mileage could count against it, as well

**Verdict:** Personally, I think this is a huge amount of Porsche for the money, and for anyone genuinely looking for one of the world's best off-roaders – bar none – I'd say it's well worth a look, and certainly if you do only a modest annual mileage. Winter draws on, as they say...



## Value at a glance

|  |       |
|--|-------|
| Condition  | ✓✓✓✓✓ |
| Price  | ✓✓✓✓✓ |
| Performance                                      | ✓✓✓✓✓ |
| Overall  | ✓✓✓✓✓ |
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# TRIED&TESTED

WITH *g11* & *PORSCHE WORLD*'S CONSULTANT EDITOR, CHRIS HORTON

## PANAMERA 4S ■ 2009/59 ■ 74,031 MILES ■ £39,995

I wanted to try this Panamera 4S for several reasons. One: we have – so far – done precious little on this often overlooked modern Porsche. Two: it is nearly nine months since we last went to see the team at Maundrell & Co, who always manage to have some nice stuff in stock. And three: having just driven to Italy and back in a brand-new Panamera V6 diesel (more on that trip in due course), I was understandably keen to see how an older petrol-engined model would compare.

And the short answer is, very well, indeed. Registered in December 2009, so now approaching its fifth anniversary, the car has clearly been driven far and presumably fast by its so far three owners. Overall, though, the Dark Blue metallic paint is showing commendably few signs of wear and tear, and the interior is literally almost spotless. There is the usual crop of small stone-chips on the front apron – highlighted by the white primer showing through the dark topcoat – and a few very minor scrapes beneath it. The rear end of each sill member is similarly peppered with tiny marks, and there is a blemish in the plastic film protecting the lower part of the right-hand rear door. Hardly the end of the world, though, and all easily fixable – should you wish to be made painfully aware of the gravel rash your own tenure would no doubt quickly generate, of course. All four 20-inch RS Spyder design wheels, refurbished in December 2013, are unmarked – although you will need new tyres within perhaps 5000 miles – and likewise the brakes: discs all good, but pads beginning to look a bit thin.

It is, if anything, an even more encouraging picture inside the extremely well-appointed cabin (and I'll come to the equipment manifest in a moment). The so-called Cognac Natural Leather is spotless, with matching steering wheel, door cards, dash top and carpets, the last of those items protected by genuine Porsche overmats. Those are black, unfortunately, and so look a little bit like an afterthought, but at least they will hide any dirt. Slightly disappointing, too, are the gadgets left over from what I presume to be some sort of hands-free phone kit (which is odd, because the PCM3 system has both telephone and Bluetooth connectivity): one next to the right-hand windscreen pillar, the other dangling from the interior rear-view mirror mount, but no doubt they could be removed without trace if necessary. There is also a slightly sticky residue on and behind the 'AC' button on the centre console – and it was a

bit of a shock when the bonnet release quite literally came off in my hand (but easy enough to replace it without damage). Out back, as it were, the substantial cargo area is similarly clean and tidy (this time with a matching tan-coloured overmat to protect the carpet beneath it), and the emergency kit appears to be present and correct.

Mechanically the car both feels and performs like new – which is another way of saying that it can behave like a bit of an animal, especially when you hit the Sport and even Sport Plus buttons. As it happens, the engine was replaced quite recently with a brand-new Porsche unit (because of what is believed to have been misfuelling, rather than anything more sinister), but I have no doubt that even on the original motor it would still have gone like the wind. Who needs a *g11*...? Servotronic steering makes predictably light work of low-speed manoeuvres, quickly sharpening up on the move, and even with those thinning pads the brakes pull straight and true. Not a trace of noise from the suspension, either – although in any of these big Porsches you are always conscious that there's a lot of rather heavy hardware thrashing about beneath you.

Optional equipment, as I've suggested, is extensive – and the standard kit (seven-speed PDK auto, bi-xenon lights etc) can hardly be called sparse. The wheels, the leather, the Servotronic steering, the PCM3 and the mats I have already mentioned, but the first owner also went for – deep breath – air suspension and PASM; Porsche-crested wheel centres; Park Assist (front and rear); Sport Chrono Plus; a tilt/slide sunroof; the Bose sound upgrade; a multi-function steering wheel; heat-insulating privacy glass – and not least a power-assisted tailgate. The total must have been somewhere north of £100,000, making the current £40,000 asking price seem even more of a bargain.

The car's history, too, is impeccable. The most recent service was at Porsche Centre Swindon in August 2013, so it will have another before it is sold, and both the brake-fluid changes and condition report are up to date, as well. The car will also have a full year's MOT, and not least Maundrell's standard no-quibble, three-month warranty, which is not only extendable to one, two or even three years, but is also 'invisible'. 'Customers deal direct with us,' says the company's Steve Rogers, 'and not the warranty people, so in the highly unlikely event of any problem we do literally all of the work.' Sounds perfect to me. **PW**

### CHECKLIST

**Background:** An early Panam with the 400bhp, non-turbo 4.8-litre petrol V8; seven-speed PDK transmission, and all-wheel drive. Fully loaded with both standard equipment and some useful options. Recently fitted with a new engine (see text), and has a good service history. Will leave with a full year's MOT; minor cosmetic flaws will be dealt with. Private registration number is not included

#### Where is it?

Maundrell & Co is based in Letcombe Regis, Oxfordshire OX12 9LJ; tel: 01235 762033; [www.maundrelland.co.uk](http://www.maundrelland.co.uk)

**For:** Everything that makes any Panamera – as I have recently discovered – such a wonderful long-distance cruiser. Safe, secure, fast, comfortable – and surprisingly entertaining, too. Plus, in this case, price (roughly 40 per cent of new), that replacement engine, and not least Maundrell's warranty. Would you want to buy a car like this privately? I wouldn't

**Against:** Colour scheme could be considered a bit, well, bright – certainly inside the cabin.

There are some minor paint blemishes, too (see main text again). And it's never going to be cheap to fuel or to keep supplied with tyres and brake pads. Other than that – not a lot

**Verdict:** I'll freely admit that until my 2200-mile drive in a V6 diesel this summer I had always been a bit of a Panamera-sceptic. But I do like big, fast, solid cars that offer such a feeling of security – if not superiority – and this 4S, while perhaps not quite as sublime or as economical as my test-car, is a hard act to follow. Give it a try. You might like it, too

### Value at a glance

|  |       |
|--|-------|
| Condition  | ✓✓✓✓✓ |
| Price  | ✓✓✓✓✓ |
| Performance  | ✓✓✓✓✓ |
| Overall  | ✓✓✓✓✓ |
| ✓ Poor ✓ OK ✓ Fair<br>✓✓✓ Very good ✓✓✓✓ Excellent |       |





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fig 1. 1972 Porsche Carrera 2.7 RS

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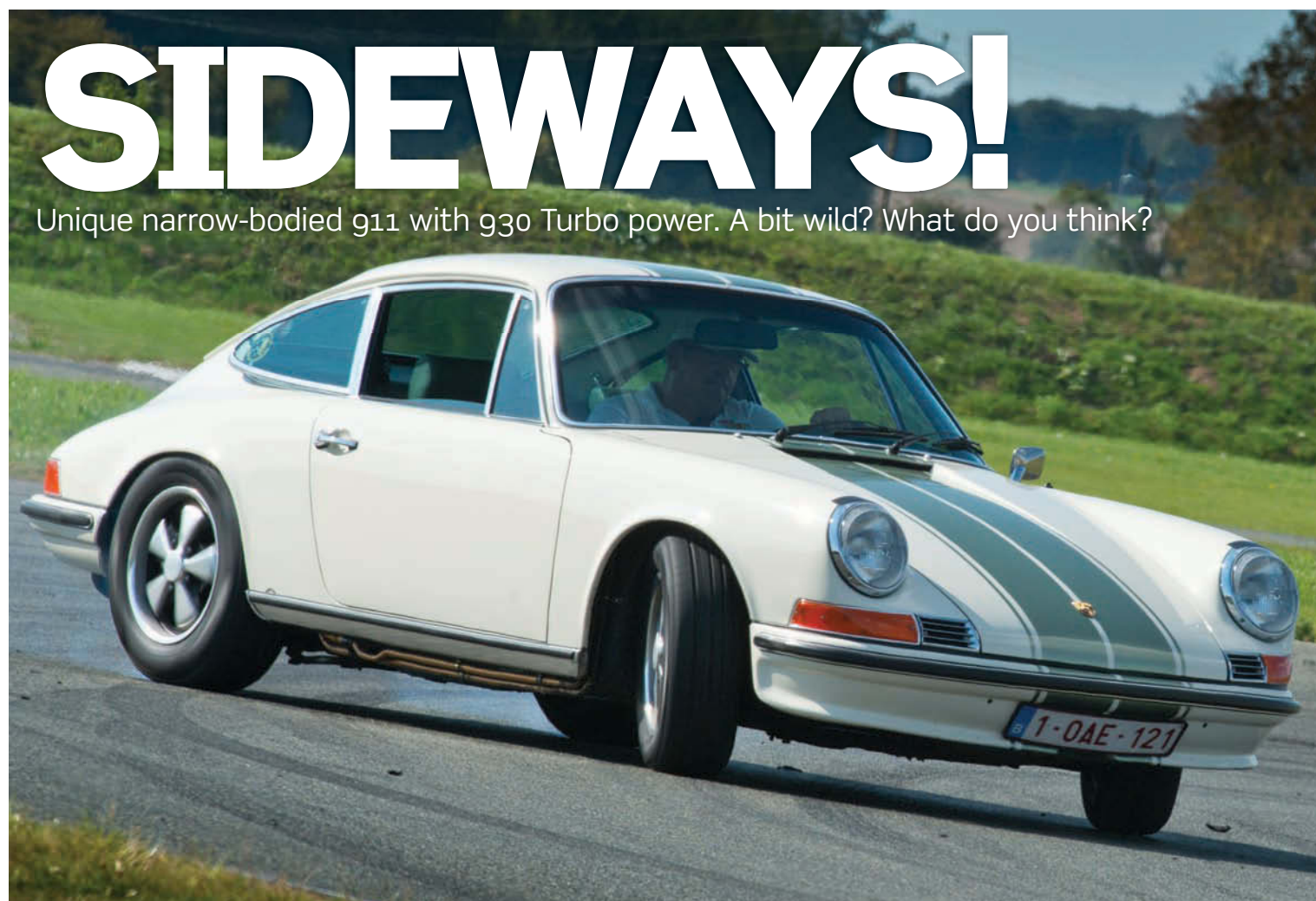
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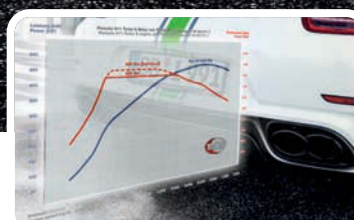


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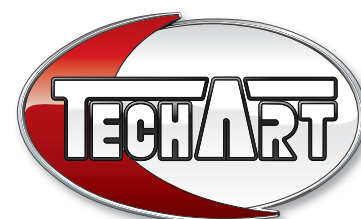
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