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It may only be early January 2014, but already in this issue we've taken a long look into the future. I'm referring, of course, to our first drive of the Porsche 918, a car so advanced and packed with interactive drive train technology, I'm kind of surprised that time travel isn't an option. Warp drive certainly is, so fast is it.

I thought that Porsche were rather spoiling the 918's arrival with the constant drip feeding of development and testing info, but it would seem that the reality more than lives up to the promise, although just imagine the wow factor if Porsche had developed the 918 in total secrecy? It's kind of a shame that marketing doesn't work like that these days.

“Just imagine the wow factor if Porsche had developed the 918 in total secrecy”

Like it or not, this is the way that cars are going. On the one hand I love the engineering and the notion that envelopes are being pushed. On the other I worry about the incredible complexity and the faint whiff of hypocrisy over claimed emissions and fuel economy. And if I had another hand I would also be hugely excited about what this means for the 911, Boxster and Cayman too. The 918 is a loss leading test bed. This technology will filter down. It's unlikely that we will see a plug in hybrid 991, unless Porsche were to lose the rear seats, but it's safe to predict that the next 911 will feature this technology. In fact Porsche is working on it right now.

Steve Bennett

FEATURES

YOU AND YOURS

Meet Liz Greenwood and her 993 C4S

34

PORSCHE 918 FIRST DRIVE

The future is now. Porsche's plug-in hybrid supercar is a stunning machine

40

THE ODD COUPLE

The switch to the impact bumper 911 created some unusual 911s

50

924 TURBO WITH MODIFIED ATTITUDE

Inspired by the 924 Carrera GT, this 924 Turbo is slammed with attitude

58

SILVER MACHINE: 993 WITH CUP ENGINE

One of the best 993s we've seen, and featuring 3.8-litre Carrera Cup power

66

FROM THE ARCHIVES: BRAKING SYSTEMS

From drums to ceramic, Porsche has always been at the forefront of braking technology

77

SPECIALIST: HEXAGON MODERN CLASSICS

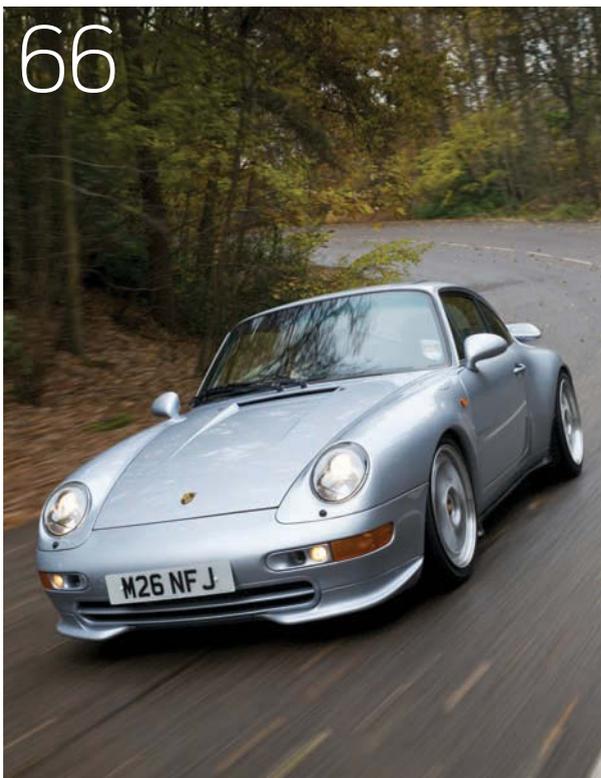
London dealer with history branching out into classic Porsche sales

86

HOW TO: BOXSTER OIL/AIR SEPARATOR

Tricky but do-able with the right equipment

92



CONTENTS 02.14



40

REGULARS

PORSCHE NEWS 08

All the latest Porsche news...

PORSCHE PRODUCTS 18

...and all the latest must-have Porsche bits and bobs

USUAL SUSPECTS 26

US columnist, Terry Thomas, on his late cousin's 356, plus a new acquisition

PORSCHE LETTERS 30

A packed sack of opinion!

PORSCHE PROJECTS 98

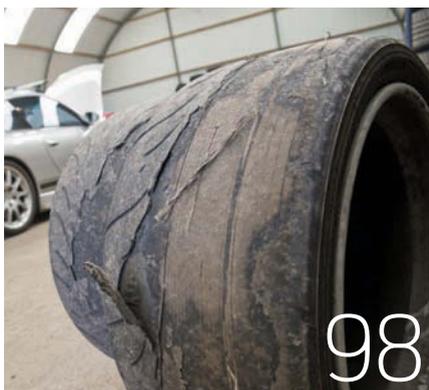
Catching up with the *g11&PW* projects: Fraser's GT3 and Seume's *g11* hot-rod

CLASSIFIEDS/T&T/BUYERS' GUIDE 110

Porsches, parts and plenty more for sale



18



98

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103



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PORSCHE NEWS



Photo: Michael Furman



Photo: Brian Henniker



Photo: Alejandro Rodriguez

PORSCHE VALUES OVERHEATING?

It is not just the UK's housing market that is in danger of growing too fast. With the prices of classic Porsches having leapt by more than a quarter in 12 months and by just over a half in three years, there is an increasing likelihood that this bubble too might eventually burst, with messy consequences for some investors.

While not predicting an imminent meltdown, Dietrich Hatlapa of the London-based Historic Automobile Group International (HAGI), which monitors values on a monthly basis by means of an index compiled on stock market lines, believes a correction is inevitable at some point. 'When an investment grows at a double digit rate you should not assume it will go up for ever - in the long term it cannot last,' he warns. The last time this happened was in 1990, when after years of growth classic values crashed, with those who had bought at the top of the market losing huge amounts - Porsche 959s, for example fell from £500,000 to under £100,000.

In the latest HAGI report available before *911 & Porsche World* went to press, Porsches had risen 19.5 per cent in value from January until the end of October, possibly making up for lesser growth in the past. 'Porsche values have increased by an average of around 10 per cent per year since 1980, which is actually below the market for rare cars as a whole as measured by the HAGI Top Index, which has risen about 12.5 per cent per annum long term,' Hatlapa points out.

And the potential for Porsches climbing even higher as the international auction circus gets underway in 2014 is

also seen in that Porsches were 10 per cent below the overall classic market growth in 2013, thanks to buyers competing hard for other classics such as Jaguars, Alfa Romeos, Maseratis, Bentleys and AC Cobras.

HAGI only releases specific model information to clients, but Hatlapa reveals that one increasingly strong performer is the 2004 to 2007 Porsche Carrera GT - the V10, carbon bodied supercar that had to be discontinued early due to lack of demand. 'It has been an under-performer in the past, but in 2013 it was an unusually strong performer, increasing by 10 per cent.'

As 2013 drew to a close there were clear signs that Porsches were as sought after as ever, with a fully restored 1959 356A Carrera 1600 GS fetching \$605,000 (about £369,200) at an RM Auctions sale in Paris. Powered by the "Fuhrmann" quad cam engine, and delivered with the optional factory sunroof, an 80-litre fuel tank, a luggage rack, Blaupunkt radio with two speakers, and an anti-roll bar, this was the non Speedster 356 in its most desired specification.

Underpinning 356 expectations, a 356A Convertible D and a 356A Speedster go into the Scottsdale Auctions, to be hosted by Gooding & Company in Arizona on 17-18th January, with minimum estimates of \$180,000 (£109,850) and \$275,000 (£167,800). In the same sale, a 1968 911L, offered without reserve, is expected to sell for between \$140,000 (£85,430) and \$180,000 (£109,850).

Big numbers indeed and the results will be interesting.



Photo: Alejandro Rodriguez

TECHART TUNING TURBOS ONLY

One of Germany's leading Porsche tuners has given up developing new power packs for all Porsche engines that are not turbocharged. TechArt, based in Leonberg, admits that the sophistication and complexity of modern Porsche engines prevents this being a viable exercise – it offers one for the 997 Carrera, but this amounts to a remap and sports exhaust, which produces a modest 35bhp extra, and there are no plans for a 991 equivalent.

'It is technically possible, but just not worth it on cost grounds,' a TechArt spokesman said. 'We want

to get some volume in our products, and not many customers will want to pay €5000 for very little extra horsepower.'

Even TechArt's newly announced modifications for the 991-series 911 Turbo (pictured) initially comprise only a carbon/polyurethane aerodynamic kit, albeit it a sophisticated one including an extendable, and automatically retracting front spoiler.

The other components are rear and roof spoilers, side skirts, headlamp trims and exhaust tailpipes.

But turbocharged engines offer more tuning potential, particularly in their ECUs, which allow the turbo boost to be turned up. The firm plans that by the Geneva motor show in 2014 an engine enhancement will be available, in its ultimate form comparable to that of the 997 GTstreet RS with some 700bhp on tap.

'It's getting tougher,' the spokesman continued. 'There is still a way to do it, but it is getting very complicated. We will do something, but the engineers only got their 991 Turbo two weeks ago.'



WEBBER MAKES DEBUT IN LMP1 4-CYLINDER HYBRID

On the same day that Mark Webber made his debut as a Porsche Works driver, details were also finally released about the power unit in Porsche's 2014 LMP1 race car.

Webber was released from his Red Bull contract early in order to make a start on his new sports car career and described his first LMP test as an "intense experience."

Rather overshadowing all that, though, is the revelation that Porsche's new LMP1 car will be powered by a four-cylinder hybrid engine. While there are no details of capacities or power outputs yet, Porsche is promising 'a very efficient, high-performance hybrid drive.'

The new engine will use direct fuel injection and a pair of energy recuperation systems and the energy will be stored in the battery

until accessed by the driver.

So, there you are. A four-cylinder Porsche race car and the first four-cylinder Porsche since the 968.



OUR TAKE

SPEED LIMIT

The days of the monster tuned Porsche road car may be numbered, reckons David Sutherland, but there is still enough horsepower to go round

For as long as there are Porsches in the world there will be people extracting more power out of their engines, or making their tyres stick more tenaciously to the road. And for 40 years the German tuning industry has led the field in super quick 911s that are sometimes so heavily modified they bear little resemblance to what their instigators started with – indeed it is common in Germany for tuners to have acquired car manufacturing status, selling the finished article under their own names.

But have we seen the best years of these extreme fire-breathers? The news that one of the longest established and most committed Porsche tuners in the world, TechArt, has effectively given up modifying anything but turbo engines is surely a sign of the times.

The Stuttgart tuner will persist with turbos because they are still relatively simple to work on. Despite the complexity of Porsche's twin turbo system, significant extra horsepower can be achieved by increased boost pressure. But otherwise, what scope remains for modifiers?

All engines are four valves per cylinder, so you can't stick multi-valve cylinder heads on. Given modern engines' sophistication of design, other measures, such as optimised crankshafts, conrods and pistons cost a lot but make only a small difference. The excellence of the factory product also means chassis upgrades are doing less and less, apart from making the ride harder, and the wheels on most current 911s are about as big as you can go, at 20-inch diameter.

However, TechArt promises that the latest, 991-series 911 Turbo – and GT2, assuming Porsche is to build one – will be served up as the next model in the tuner's long running GTstreet series, with around 700bhp for starters. And for all but the most uninhibited thrill seekers, that is surely enough to be going on with.



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SPYDER GETS QUICKER STILL

Against the background of less than favourable comparisons of the Porsche 918 Spyder's output with the McLaren P1 and the LaFerrari, in early summer Porsche released what it called 'close to final' power and performance figures for its forthcoming hybrid sports car, which were significantly up on what was originally stated. But it took up until mid November 2013, when the first of the cars were practically in the hands of customers, for the car maker to actually state the final figures, which are slightly up on before.

The improvements are, however,

with the Weissach package fitted (which includes some carbon body panels, less sound deadening, and lighter wheels, saving 41kg), and after tweaks to the electric motor. 'We have now used all options available to electrify the 918 Spyder, working right up to the last minute to do so,' said Dr Frank-Steffen Walliser, senior vice president of the 918 Spyder project.

Zero to 100km/h (62mph) was originally quoted at three seconds and then reduced to 2.8sec, before this latest 2.6sec. Zero to 200km/h (125mph) was first nine seconds,

then 7.9 and now 7.2sec, while zero to 300km/h (188mph) has gone from 27sec to 23, to 19.9sec. On its twin electric motors alone, the 918 can accelerate from rest to 62mph in 6.2sec, and the combined petrol/electric 875bhp is sufficient to power the car round the Nürburgring Nordschleife in 6min 57sec, currently a road car record. In its latest form the Weissach equipped 918 is even fractionally more economical and cleaner than before, with a combined fuel consumption figure of 94.2mpg and CO₂ rating of 70g/km, improvements of three per cent.



HYBRID PANAMERA UNDER FIRE

Time was when Porsche slipped under the radar, leaving the likes of Rolls-Royce, Mercedes-Benz and Jaguar to take the heat from environmentalists and general anti-car groups. Not any more, though – the Stuttgart manufacturer is now a fully fledged capitalist icon, and has even run into criticism over the launch of its greenest car ever, the hybrid Panamera that, theoretically, can give up to 91mpg and which can run for 22 emissions free miles on its battery.

Under a scheme introduced in 2011, the Panamera S E-Hybrid qualifies as an Ultra-Low Emission Vehicle in the UK, triggering a £5000 government grant towards the cost, which in this case is £88,967. It also escapes with zero Vehicle Excise Duty, when top model Panameras are hit for £840 in the first year.

A lecturer in Economics and Policy at Bangor University in north Wales, Neal Hockley, told The Guardian newspaper, a

publication never knowingly sympathetic to the car industry, that 'Subsidising electric Porsches is a terrible idea. The UK government already provides considerable financial incentives for low carbon transport.' Porsche responded in its usual low key way, saying 'the grant was not why we built that car.'

The 918 Spyder priced at £651,400 is also likely to be eligible for the same Plug-in Car Grant. 'My problem is that grants to purchase new cars are an inefficient way of reducing emissions,' Hockley added. 'They constitute a simple transfer of wealth from taxpayers to purchasers, with little effect on emissions.'



NEWS IN BRIEF

Even before the first road tests appeared or the first car was delivered to a customer, some 100,000 readers of the German magazine *Auto Zeitung* voted the Porsche 918 Spyder as the winner of the "Super Sportscar" in the publication's Auto Trophy 2013 awards.

Porsche is planning to build a third Porsche Driving Experience Centre, located at the Le Mans circuit in France. It will join the existing centre at Silverstone and the one currently under construction in Los Angeles.

In the US sales of Porsches reached a record 39,077 in the first 11 months of 2013, up over a fifth on the same period in 2012. As ever the Cayenne was the top seller, accounting for 44 per cent of sales, while the 911 took 19 per cent and the Boxster/Cayman 25 per cent. Porsche's UK sales in this period rose 3.4 per cent to 7483.

Independent Porsche specialist RPM Technik in Hertfordshire is offering a detailed report on the state of any air- or water-cooled Porsche engine. The Engine Condition Assessment costs £119 including VAT, more details at www.rpntechnik.co.uk

Porsche has added a special version of the Cayenne, the Platinum Edition, based either on the V6 petrol or the Diesel, and priced at £49,017 and £49,584 respectively, £2194 extra. They have enhanced equipment and special exterior trim detailing.

Hard core Porsche racing fans can now buy the ninth edition of the book that details the Porsche Cup in Germany, the one make series for 911s. Porsche Sports Cup Deutschland 2013 is a 176-page tomb in German, with 700 photos and which is priced at €48.15 (about £40) and available at www.gruppec.de

In the Buying Power pages of the January issue we stated, based on information supplied, that Essex-based Design 911 is the sole UK distributor for Öhlins suspension. We have since been informed that the UK distributorship is shared between Design 911, which serves the southern half of the UK, and Techg in Liverpool which caters for the north.

CATCHING UP WITH

LEONARD STOLK



The globetrotting management consultant discovered the joy of Porsche in a 993 on track days. He now races historic 911 RSRs and runs Dutch classic Porsche parts company, Twinspark Racing.

How old are you and where do you live, and work?
I'm 52 and live and work in Amsterdam.

What was your big break into the motor industry?
Meeting Twinspark partner, Lex Proper. A former Dutch racing champion and huge 911 aficionado, he gave me the RSR bug and put up the space to start Twinspark.

Summarise your career
Got into Porsches via a 993 I bought while working in Florida. I took it on track, bought a 911T once back in Europe and started historic racing and rallying. Finding great parts and Porsche people led to Twinspark Racing.

Are you a petrolhead?
The Dutch word is the same – petrolhead! Yes, that's me.

What was your first car?
A 1967 Beetle inherited from my mother. The air-cooled bug never leaves.

What was the first Porsche you ever drove?
A Guards Red 993 C2 in Miami.

Which Porsche past or present do you like best?
Twinspark's Viper Green 911 3.0 RSR – the car we won the 2011 Dutch Historic GT championship in.

What car do you drive?
A Gen 2 997 GT3 in Carrera White.

What gets you out of bed in the morning?
Solving complex business problems and selling Porsche parts.

What has been the biggest challenge in your working life?
Finding the right model for a financial consultancy in the global economic crisis was almost as tricky as stringing a championship win together.



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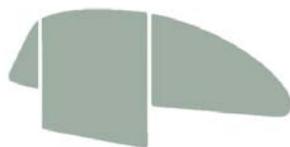
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WIND GOES OUT OF AUCTION SALE

Probably to the disappointment of the UK classic Porsche restoration business, the sale of a collection of more than 200 classic Porsches, mostly in run down condition or incomplete, that was due to be spread over the course of a year appears to have stopped in its tracks after the first batch went under the hammer in August. All from one vendor based in the Midlands and who built the collection up over a 10-year period, the cars are mainly 356s and early 911s, many in a barn find state.

The second tranche of cars was due to be sold in January, but they have been withdrawn from the auction. 'The owner, who does not want to be identified, has decided to hold off for the moment, and is now

taking stock,' said a spokeswoman for Anglia Car Auctions, which was due to host the sale.

What has made the cancellation of the second sale surprising was the success of the first one, which raised over £500,000 for the owner. Almost all lots made more than their minimum estimate, and some a lot more, especially the 911s. A 1969 911T with a top estimate of £7000 sold for £13,125, a 1973 911T (£9000) for £15,750, a 1972 911E (£18,000) for £24,150 and the 1965 rolling shell 911 seen here (£5000) for £7140, this the cheapest sale price in the collection so far. Two cars shared the highest selling price of £61,950, a "matching numbers" 1963 356 Super 90 in good condition, and a red 1959 356 B Roadster in barn find state (pictured).



PUNCTURE BLOWS OUT BLOMQVIST

There is much impressive wildlife in Kenya and Tanzania, but possibly the creature that loomed largest may well have been the elephant in the room at the end of the East African Safari Rally at the end of November 2013. The 1984 World Rally Champion, Stig Blomqvist, could have been forgiven for not wanting to talk about why, after leading by 38 seconds going into the final stage of the nine-day, 2400-mile event in his 1973 Porsche 911 RSR and almost tasting the podium fizz, he ended up being pipped at the post by the car Britain's working men allegedly always promised themselves – a Ford Capri.

The Ford pilot, local driver Ian Duncan, seized his opportunity

when Blomqvist's 911, entered by Oxfordshire-based Tuthill Porsche and run under the Team Tidö banner, picked up a puncture and dropped behind by some three minutes. 'I don't have much to say, I am very disappointed,' Blomqvist said.

However it was still a good result for Tuthill, with six out of

the seven 911s it prepared for the event finishing in the top 10, Blomqvist joined on the podium by third placed Gerard Marcy. Sixty crews entered the rally that, run over routes alternatively strewn with rocks and covered in mud, is reckoned to be among the most punishing of its type.



PANAMERA POWER PLAY

Gemballa has unleashed its high performance Panamera on the world, the 690bhp car having already made an appearance at the recent High Performance Event at the Nardò test track in Italy. Based on the Panamera Turbo, the Gemballa GTP 700 features a distinctive, cleanly styled body kit and weight reduced alloy wheels – although customers can specify a special aerodynamics package from the Stuttgart-based tuner, and also a bespoke interior.



CALLING TIME ON VW PARTS

It is all change at long standing classic Porsche and Volkswagen parts specialist Karmann Konnection based in Southend-on-Sea, which has moved into a nearby pub and dropped VWs in order to concentrate on the more profitable Porsche side of the business, which it plans to expand.

'The VW market is still good,' says KK founder Richard King, whose wing mirrors, wheels and other cosmetic tweaks have graced Beetles and other air-cooled VWs for the last three decades. 'But the Porsche market is international, and the VW market is national, so we're more excited by the expansion of the Porsche side.' He adds that Porsche customers, who KK have been catering for since the early 1990s, are 'more affluent in general, they're slightly older.'

He plans to increase KK's parts coverage for early 911s, particularly supplying "custom and tribute" parts such as bonnet fuel fillers and steering wheels in the style of those used on the early racers such as the 911R and 911ST, as well as accessories for the iconic 1973 911 RS and its many lookalikes.

The bulk of KK's VW stock has been sold off to the trade, but the air-cooled vehicles won't disappear completely from the catalogue, as KK will continue to sell parts for the camper vans. The pub's bar and attached stable complex will serve as a showroom and workshops – there was already a specialist Porsche body shop there, Lionel's Body Shop, which will remain. However customers in need of refreshment can expect no more than a cup of tea, as the pub's landlord and licence departed four years ago.



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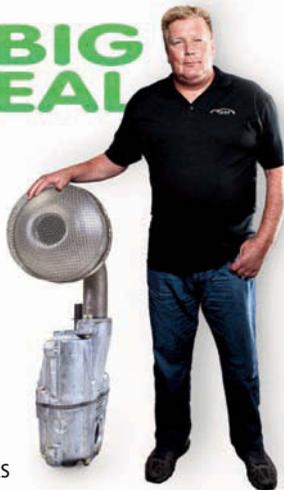
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BUYING POWER

THIS MONTH'S MUST-HAVES AND PORSCHE ACCESSORIES

Working the shift

Classic Porsche parts specialist Windrush Evolutions (WEVO), based near San Francisco in California has developed a gearshift coupling for the 356, suitable for models from the 1959 356B up to the final 356s of 1965. The WEVO 356 Precision Shift Joint is a bolt-in replacement for the standard shift, and uses the same hardened steel pin-and-block joint as the firm's tried and test 911 shifter.

It comes with a new Porsche original equipment screw set, so lockwire is not needed, as it was on the VW original, and the neoprene synthetic rubber dust boot can be removed for inspection and lubrication. WEVO chairman Hayden Burvill claims improved shifting accuracy – hardly a 356 virtue at the best of times. Being a tighter connection than the original, it may transmit slightly more noise, but this would not be noticeable if the car is fitted with a non standard exhaust.

WEVO also supplies a securing clamp made from billet aluminium, which might be an advisable extra given that after 50 years or more

the pressed steel original may well be fatigued. The WEVO 356 PSJ is available online from Porsche specialist Twin Spark Racing based on the outskirts of Amsterdam in the Netherlands, and is priced at €196 (about £164) including tax. Visit www.twinsparkracing.com



Worth the weight

EB Motorsport has introduced a range of lightweight glassfibre body panels for the 911R (or recreations of it), this early, short-wheelbase model a Porsche that is rising in popularity in historic racing. The wings are made at EB's premises in Barnsley, Yorkshire and feature steel headlamp bowls and integrated side light units complete with bulbs plus the hard to source lens covers. They are moulded from original, unused SWB 911 wings, but have been adapted so that they are easier to fit – an important aspect, as they are likely to be of interest to home builders of 911 racers.

Delivered in white gelcoat, which some customers leave unpainted, the wings are priced at £1200 per pair, with VAT and shipping extra. EB Motorsport, two times champion in the Masters Historic Sportscar series, also supplies composite 911R replica bumpers (front, £280), doors (£1100 per pair), bonnet (£396), roof panel (£396) and engine lid (£300). For more details, call 01226 730037 or visit www.eb-motorsport.co.uk



Not fade away

Brake discs inevitably fade to a greater or lesser extent, and wear out too. However, racing brake specialist GiroDisc based in Seattle in the US has introduced a disc – or “rotor”, as Americans prefer to call them – that, due to the high carbon content in the iron, lasts well and offers stable braking performance. The company says it worked closely with American foundries to formulate the most suitable casting.

The discs shown here are for the 997-series 911 Turbo, and are the standard diameter of 350mm. They can also be fitted to 996 Turbos and the Carrera 2 and 4 as an upgrade. Their construction is claimed to give an improved braking level over the standard Porsche disc on two counts.

First, the disc is a “floating” design which allows it to expand and contract at a different rate to the rest of the brake assembly including the aluminium centre “hat” section, a key advantage of this being the elimination of pad “knock back”, when expanded discs cause the pads to retreat back into the caliper resulting in momentary pedal softness.

Second, the discs are grooved, a format which GiroDisc says stands up better to stress under extreme braking than the cross-drilled discs on standard 911s. Purchased direct at www.girodisc.com the discs are \$1200 (about £740) a pair, with UK shipping \$170 (£105) for two and \$280 (£175) for a set of four. However, they are also available in the UK through 911 specialist Nine Excellence in Surrey, at www.nineexcellence.com



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Having long been regarded as the benchmark in high-performance road and track suspension across a wide range of performance and tuner cars, the Road and Track range brings Öhlins unparalleled competition knowledge and peerless build quality to the Porsche marque. Owners of the 996 Carrera and GT3 models, as well as the much vaunted 997 Carrera already know a thing or two about handling finesse, but the Öhlins kit allows dedicated drivers and true enthusiasts to really test the limits of these capable cars – as well as finally solving the puzzle of how to achieve a truly comfortable ride from competition-quality units.

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Dashed convenient

Early Porsche 911s residing in California, or those imported from there, are likely to have sound bodywork, thanks to the warm and dry climate. But the fierce sunshine in that state takes a heavy toll on interior trim, fading and cracking it, which is why classic Porsche parts supplier Karmann Konnection in Southend-on-Sea, Essex, is supplying a replacement dash top for 911s made from 1969 until 1973. A faithful reproduction of the original, it is vinyl over foam and it will also fit 1974 and 1975 cars.

With practically all the cars affected being left-hand drive, the panel is not available in right-hand drive (although other suppliers do make them). The price is £792 including VAT. More information is available on 01702 601155 or visit www.karmannkonnection.com



Bush on a plate

With most 964-series 911s at least 20 years old, it will be no surprise if the bushes in the rear suspension spring plates (shown here, and which fits on the trailing arm) are worn out and close to failure. Hitherto, curing the problem entailed replacing the entire spring plate with the bush already attached – but in fact this combined part for the 1990 to 1994 911s is no longer supplied by Porsche.

Given its unavailability, and having been continually asked by customers to replace the bushes but not the plates, California-based Porsche suspension specialist Elephant Racing has introduced replacement bushes that can be installed in the existing plates. The price of the kit for both sides is \$560 (about £345) plus UK shipping, but you are getting more than just a few bits of rubber and metal: as with the Porsche original, the bush features a monoball cartridge in a noise and vibration reducing elastomeric layer.

This layer is harder than the factory item, thus benefiting handling by reducing bush movement under load but at the same time noise and vibration containment is unaffected, the firm says. The bush is maintenance free, so perhaps it'll last for another 20 years. More details are available at www.elephantracing.com



The Tyre DEPOT

The recently unveiled Porsche Macan will come shod with quite special rubber, designed for anything most SUV drivers are likely to encounter

The new Porsche Macan will be fitted with three different types of Michelin tyres, depending on driving conditions – summer, winter or all-season. These are the brand new Latitude Sport 3, the Latitude Alpin 2 for winter weather and the Michelin Latitude Tour Hp for use in all season markets.

The Latitude Sport 3 is the third generation of Latitude road biased performance SUV tyres. The Latitude Sport was first certified for Porsche on the Cayenne in 2002, the latest version being promoted with an image of power and control, designed to meet drivers' needs for maximum performance while simultaneously reducing rolling resistance compared to the previous Latitude Sport, and therefore improving fuel consumption and tread life.

The Michelin Latitude Alpin 2 winter tyre has been specifically developed for high performance SUVs, offering enhanced manoeuvrability and control whatever the winter driving conditions. The Michelin Latitude Tour Hp has also been conceived with high performance SUVs in mind, and offers good handling and comfort, and has a particular relevance in all season markets such as the US.

All three tyres reflect the commitment of Michelin and Porsche to performance and innovation. Advances in technology with these newest generations in tyres give enhanced safety, longevity and fuel savings – and hopefully driver enjoyment.



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PRODUCTS

Cover story

The driveway at any car enthusiast's house is likely to have at least a few drops of engine oil on it, but if you have a Porsche 964 or 993 then there is every possibility that the deposits will be more like a healthy puddle, due to leaks from the boxer engine's valve covers. Rennline claims to have the answer in the form of valve covers that, due to high quality machining and a tight gasket fit, keep the motor oil tight.

The German car parts specialist, in Vermont in the US, supplies the corrosion resistant covers in anodised clear or black finishes, and in powdercoat red, with or without the fins highlighted. Prices range from \$295 (about £182) to \$340 (£209) per pair, with the gaskets extra. More information is available at www.renline.com



GAZ supply

Suspension specialist GAZ (Gazzmatic International Limited) has introduced a coilover kit intended for race or track use that can be fitted to all 911s from the start of production in 1963 to the last of the Carrera 3.2 models in 1989. The GAZ Gold kit dampers come with a gas cell in the outer reservoir and are filled with a high viscosity oil to prevent cavitation (bubbles forming), and are adjustable for bump and rebound, by means of easily accessed adjusters on the units. The ride height is adjustable through 60mm.

Manufactured in GAZ's premises in Basildon, Essex, the dampers are plated in either zinc or black nickel and fitted with anodised

adjusters. Covered by a two-year warranty, the kit costs £1590 including VAT, with more information available on 01268 724585 or at www.gazshocks.com



Year long shine

Not keen on polishing your car but want to keep it shiny? Car detailing specialist Swissvac near Harrogate can at least cut down the elbow grease needed, having developed a wax polish that gives a coating claimed to last up to a year. Its Crystal Rock wax contains over 76 per cent pure ivory coloured Grade One wax from northern Brazil, and was specially formulated by Paul Dalton, a renowned expert in the detailing field. It sounds good, and so it should be, the 50ml pot costing £239 (a limited run of 50 is being offered). More details can be seen at www.swissvac.co.uk



App for all

Two years ago German suspension maker KW Automotive introduced its DDC (Dynamic Damping Control) coilover kit for the 911 and other Porsche models which, via an app, could be adjusted from an Apple iPhone or iPad. Great, but that excluded users of any other smartphones.

This changed in November 2013, with all Android smartphones now compatible with the electronic damping control system. Once paired, the phone can be used to select up to five suspension set ups, taking milliseconds to engage, and even individual dampers can be adjusted for firmness, from zero per cent (maximum comfort) to 100 per cent (maximum sport), with the settings able to be emailed to others with the KW suspension and app. The app takes just a few minutes to download provided you have a decent internet connection. For further information call KW Automotive UK Ltd on 0870 990 7536 or visit www.kw-suspensions.co.uk



Cup/RS Kill Switch Mount

964/993

The growing popularity of the 964/993 cars in today's market is going out of control. Owners are transforming these cars into Cup clones, RS clones and even backdating them into long hood hot rods. The factory style switch mount found on these rare factory cars is unobtainable, forcing owners to fabricate their own, or settle for a non-purist alternative. Due to the demand, Rennline has tooled up to produce exact replicas of these mounts. Each kit comes with (1) switch mount, (1) remote pull cable bracket, primed and ready to install. Although these brackets are intended to be welded like the factory did, many customers choose to install them with screws.

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USUAL SUSPECTS

US CORRESPONDENT TERRY THOMAS ON THE POIGNANT TASK OF FINDING A GOOD HOME FOR HIS LATE COUSIN'S 356 AND UNDERTAKING A 2000-MILE TRIP FROM KANSAS TO SEATTLE IN HIS NEWLY PURCHASED CARRERA 3.2 - IN MEMORY OF COUSIN TIM

THIS IS A SAD/HAPPY STORY

A few weeks ago, my beloved cousin Timothy was killed when his BMW motorcycle collided with an SUV whose driver failed to see him on a busy highway and turned left in front of him. It was night, traffic was heavy, and the other driver was young – a 16-year-old girl. Tim, an eclectic man, was, among many other things, a BMW trained master mechanic, car salesman, and, ultimately, lawyer (a huge step down, in my estimation).

But first and foremost, he was a lifelong Porsche guy, having sold Porsches back in the mid-1980s, during what I consider one of the marque's heydays. We both lived near Washington DC at the time, and all through 1986, Tim would appear at my house once a month or so, a brand new Porsche 'loaned' from his dealership, sporting his trademark devilish grin. We would then take said loaner out for a 'test drive' on the back roads near my house. Together, we drove what was, according to Tim, the first 944 Turbo imported into the US. I'll never forget the whoosh of boost slapping my head back against the seat as we both giggled like schoolgirls. "You know you pegged the rev limiter in every gear," Tim chided me. "Good thing the new owner won't know." Indeed. And it's a good thing the statute of limitations has run.

The parade of spanking new cars continued unabated. A gorgeous Arena Red 928 appeared. It accelerated like the space shuttle upon liftoff. A Diamond Blue 911 Carrera left me wondering if any car ever made could possibly be as fast. (Little did I know then that the 3.2 would become, by today's standards, utterly leisurely in its gathering of momentum, roughly on par with a Toyota Camry in acceleration.) My love affair with the 944 grew unshakeable in

1987, when I drove a fine Stone Grey example home from his dealership one night. Tim had, ahem, disabled the odometer (that statute of limitations thing again), which also disabled the speedometer. I drove at what seemed to be a reasonable speed around the DC Beltway, followed by Tim in my car. When we arrived home, Tim said, somewhat bewildered, "Did you know you were going 85mph the whole way?" I had no idea I was exceeding the posted speed limit by 30mph. It just felt so... right.

Tim lived a complex, somewhat private life, and was a self-described pack rat – faithful keeper of the family's heirlooms, which he trucked up and down the Eastern Seaboard during his many moves. Among his possessions was a 1956 Porsche 356A coupe, purchased new in 1955 by his uncle Gerhard – known as Geg – and handed down to Tim upon Geg's death. Geg, an engineer, had driven it daily, rain or shine, summer and winters, until the Pennsylvania road salt ate holes the size of footballs through the floorboards. After a less-than-cosmetically pleasing repair with glassfibre failed for the third time, Geg parked the car in a shed, where it remained until willed to Tim upon Geg's death. Sometime in the mid-1980s, Tim had the floor pans, door sills, and headlight buckets replaced by a reputable shop in Connecticut. The car then sat in a barn for 20 years before being transported last year to Tim's final home in Florida.

Tim, being Tim, left no will. He left behind no parents, siblings, children, and had never married, so the cousins, of whom I am one, became heirs to the estate. I went to Florida to take an inventory of what was there, and visited the old Porsche in its new home, a storage shed on an industrial park. There it sat,

a frail combination of silver paint, red primer, and a surprisingly complete Oxblood interior. The original motor, out of the car and frozen solid, stood mute watch on an engine stand nearby. Boxes and boxes of parts were everywhere, patiently awaiting Tim's expert ministrations to reunite them. Tim is gone, but the car doesn't know. Or perhaps it does.

Will I inherit the Porsche? No. Nor will I buy it from the estate. It will likely be sold, at a fair price (I'll make sure of that), to someone with the time and funds to restore it to its original glory. I can only hope the new owner will drive the hell out of it. That's what Tim would have done, wringing every ounce out of that flat-four wailing behind him, all 50 horses pulling the tiny silver missile down the road. After its decades-long nap, it will awaken to a world that now reverses what was, when it drove its last many years ago, just another rusty used car in a barn.

Tim was born a few years after the Porsche was built, and, alas, died an untimely death before the car did. As I age, I'm continually reminded of how fragile life is – we only have so many heartbeats, so many wild rides through the countryside, so many bounces off the rev limiter, before we return to the earth. Age also reminds me of the importance of friends, which, to me, has always included the presence of cars, particularly Porsches.

Next week, I will fly to a Midwestern city to take delivery of a beautiful black 1987 911 Carrera coupe, a car Tim might – just might – have sold when it was new. We will make our stately way 2000-miles back across this beautiful country on the roads Tim loved so much, the Porsche's magnificent tuneful whir paying tribute to a great man who cherished these great cars.



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



PAUL DAVIES



STEVE BENNETT



BRETT FRASER



JOHNNY TIPLER



KETH SEUME

AMERICAN ROAD TRIP

As mentioned, partly in Tim's honour, I took delivery of a 1987 911 coupe in Kansas City. The car was as-represented, and the buyer was a very nice fellow who had worked hard to keep the car up to snuff. I handed over the cheque, and he the keys. I then began the 2000-mile journey back to Seattle, making it only far as Fort Riley, Kansas before calling it a night.

Although the trip home was fraught with all kinds of weather, ranging from wind to rain to freezing fog, to snow, the 911 shrugged each new insult with aplomb, tracking straight and true. For November in the upper middle United States, the weather was unremarkable.

My abiding memory of the trip, I think, will be the vast array of – mostly menacing – road signs I saw. No one can say we are a country that hasn't been warned. Shortly after leaving Fort Riley, a billboard sporting a rather cranky-looking Jesus queried "If you die today, where will YOU spend eternity?" In fairness, I'd look cranky too – hanging from

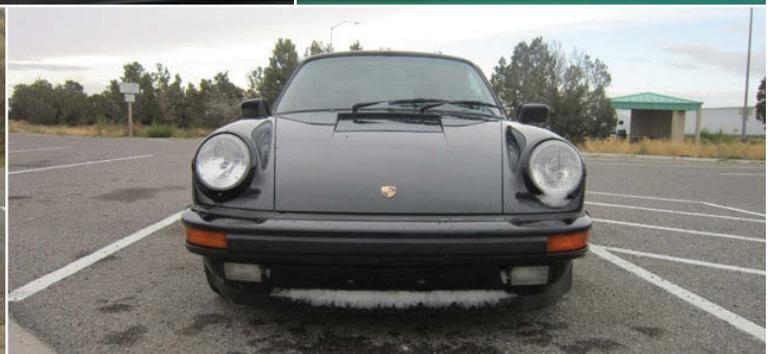
that cross looked mighty uncomfortable. I pressed harder on the gas pedal; if I died that day, I certainly didn't want to spend eternity with that guy. A few miles on a billboard invited me to see "The World's Largest Czech Egg! Plus 18-hole golf course!" Who knew Czechoslovakians were hatched from eggs? This outside Abilene: "World's Largest Prairie Dog! Come pet the baby pigs!" Curious though I was, I resisted. And this, outside Denver: "Rocky Mount Sire Services." Sounds rather painful.

Although the default interstate speed limit in Wyoming is 75mph, the state has variable speed limits, set by electronic signs that explain, somewhat apologetically, why your haste to exit Wyoming might be delayed. A sign I could barely read warned me of INTENSE FOG AND LOW VISIBILITY.

Day 3 began in Ogden, Utah, with more rain, which turned to serious snow once I reached Idaho. Like Utah, Idaho's road signs warned of impending doom. "EXTREME WEATHER AREA," screamed one, flashing for

emphasis. "ANIMAL MIGRATION AREA – NEXT 10 MILES," another told me, unnecessarily, as the road was heaped with bloody carcasses. An equally superfluous sign warned of "EXTREMELY HAZARDOUS CROSSWINDS – 35+ MPH." This was indeed true, as I had to continue to crank in full right rudder to keep the car straight for the next 200 miles. "EXPECT BLINDING DUST STORMS," read one further along, warning me, however, not to pull off on the shoulder if confronted with one. Whatever should one do? "EXPECT TO GET HERPES OFF OF TOILET SEATS IN REST AREAS," warned another. (OK, I made that up).

Idaho had fewer dire warnings, though the weather was equally miserable. I guess the denizens of Idaho have come to recognise wind and snow without signage. Then, lo and behold, my home state of Washington greeted me with bright sunshine. The car, nearly flawless throughout, seemed pleased, once washed and sheltered in my garage from the terrors of the outside world.



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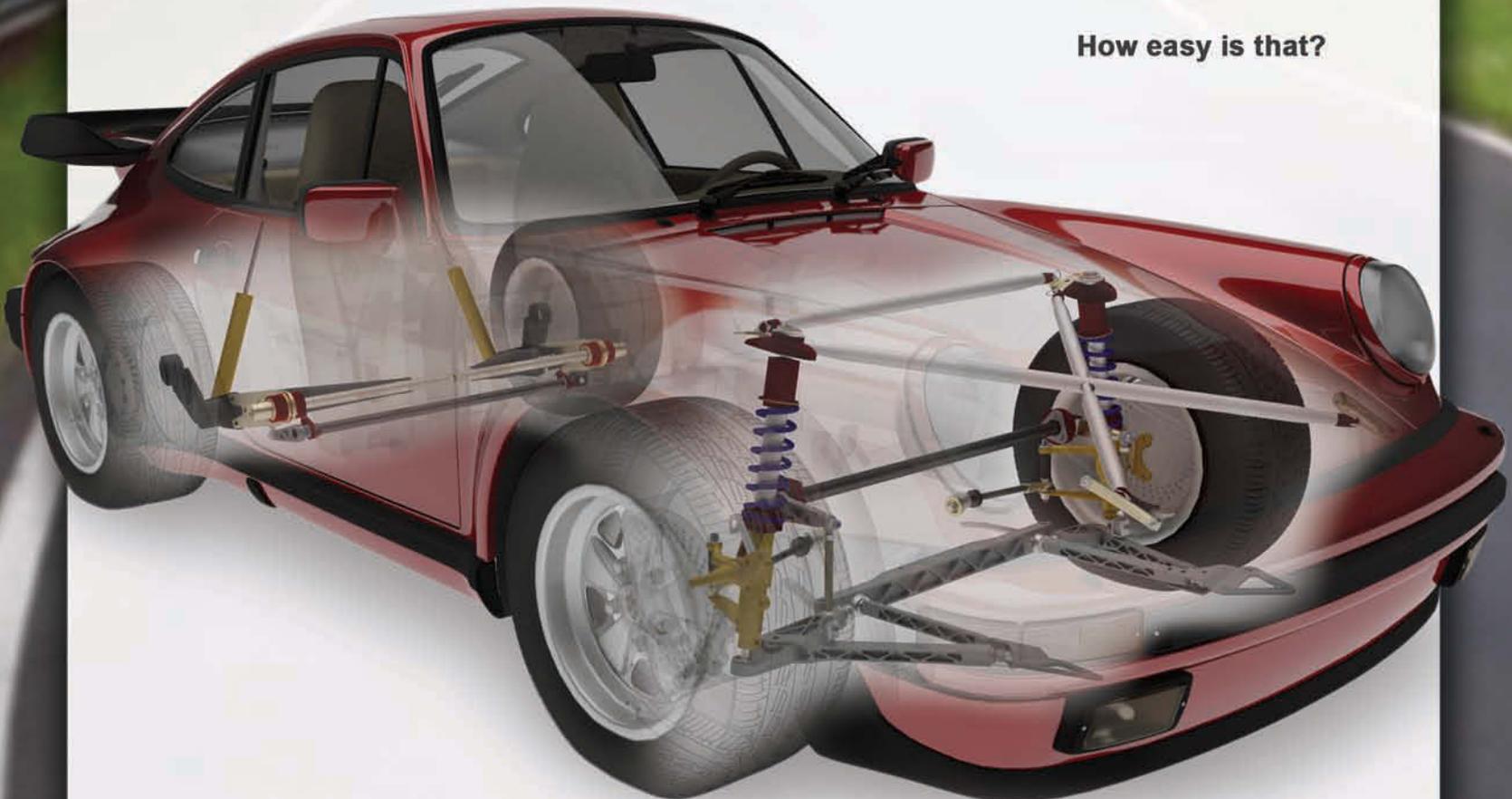
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LETTERS

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



IN PRAISE OF THE SC

So, I took a call from my brother, Neil, to let me know our old SC (YWD 817X) was featured in issue 237.

It was a great pleasure to see the old girl looking every bit as good as when I sold her in June 2012 to help fund the purchase of my current Cayman S. I know, I know, but in my defence I really needed an 8000 mile a year weekly user, opposed to a 1500 mile a year twice-monthly user, finances not permitting me to have the pleasure of both SC and Cayman S at the same time.

Here I have to acknowledge and pay credit to my brother for breathing life into the SC, bringing it up to scratch and maintaining accordingly during his five years of ownership, before passing to me to put the latter of those 200,000 miles on the clock – faultlessly I hasten to add, with the exception of a replacement alternator.

An absolute delight it was too, blasting across North Shropshire and over to the Peak District on a bright Sunday afternoon, particular fun being had in a small North Shropshire town with a car-lined, narrow high street. Why? Because taking my foot off the throttle at just over 2000rpm triggered

some pops and bangs from that beautiful exhaust (thanks again to Neil), sufficient to set off more than one car alarm in a single pass. It was a game even my girlfriend, as a fairly nonplussed car fan, found more than mildly amusing.

Whilst my tenure was fairly short at just over 12 months, I have a deep affection for that '82 SC and all that goes with it, as pointed out in your feature, my only concern being for the future of 'our old SC'.

Rather like a comment from a planning officer assessing an application to transform a historical building, we are simply custodians with a responsibility to preserve and maintain, passing on to future owners to enjoy, just as my brother did for me with the SC featured. So, whilst it may be tempting and financially beneficial to use as a donor for an RS recreation, I (we) sincerely hope that is not the case and that Paul and future owners keep the SC going in its original form, as it so deserves.

The badge of honour is to be worn not just to recognise the ability to complete high mileages with no engine rebuild, but to recognise the moment in time that belongs to the SC, and for all its attributes

that make it such a unique and iconic design, and piece of engineering.

Colin Robbie, via E-mail

NO MORE WATER!

I'm a long term subscriber both to your modern (*g11 & Porsche World*) and your classic (*Classic Porsche*) magazines.

I'm afraid I found the latest issue of the 'modern' one disappointing. You were clearly scratching around for decent copy, but failed to find any. (*This sounds ominous – KS*)

I know somebody was complaining about 'not enough front-engined stuff' but for me, there was far too much! For goodness sake, if people want front-engined material, why not begin a dedicated publication for them?

There really is no place for them in a *g11* publication, let's be honest, the '& Porsche World' part of the title is just so that when you have no other copy you fill the mag up with front-engined rubbish. (*Told you it sounded ominous – KS*)

Decent articles on proper (ie air-cooled) Porsches are getting fewer and fewer, and with all respect, your 'classic' magazine takes about five minutes to read – it's so thin in

overall size. It really is time to get back to basics if you don't mind. You're trying to be all things to all enthusiasts and it just isn't working out too well.

While I'm in rant mode, Johnny Tipler's piece on the so-called *g64* Targa RS wasn't exactly inspiring – more infill, I suspect. And how was it that he felt 'the same speed' in his own car, needed to have 'an extra 1000 rpm in the Targa'? That makes absolutely zero sense! Oh, and there was a feature about winter tyres, that suggested they work better in smaller diameters – oh no they don't! Smaller widths yes (as was indeed said) but larger diameters always. Think 'tractors'!

Anyway, that's my spleen vented for the moment, but I do mean it when I suggest the magazine is very much heading downhill these days – as witness how few private ads there are nowadays as compared with a few years ago. More meat please, as in an awful lot more air-cooled material and a whole lot less of the rest, especially the front-engined nonsense. (*You do like to live dangerously – KS*)

I would be delighted if you develop your classic magazine further, making it monthly at the same time. Then the 'other' magazine can deal with water-cooled junk of every description – and I can cancel my sub with pleasure...

Thanks for reading!

I Wilson, France

Steve Bennett replies: It is impossible to please all of the people all of the time, but we do our best. The 'Porsche' bit of the title is very important to us and ignoring the front-engined cars, plus anything with water

in the cooling system, would be to ignore a huge swathe of Porsche owners and enthusiasts (and indeed the last 18-years of Porsche production). And telling the front-engined owners to 'get lost' is hardly constructive. Shame that you won't enjoy the reader-built *g24* Carrera GT-inspired *g24* Turbo in this issue, although I would urge you to appreciate the engineering that went into it. Private ads? Yes, like most we have lost out to the immediacy of the Internet as testified by the demise of the paper version of the Autotrader, but that's progress for you – a bit like water-cooled Porsches.

MAY'S PORSCHE CONNECTION

I greatly enjoy Keith Seume's 'Porsche Archive' features. In the December *g11* & *PW* he mentioned engineer Michael May and his work on the BMW 2002 turbo.

There is an interesting connection here, as May actually went to work in the Porsche competition department in 1961, and five years before this mounted an outrageously large wing on his 550 Spyder to considerable effect, although it looked pretty alarming!

In the November edition, Mr Seume refers to Louis Citroen, but I'm sure that he meant André (*I did, sorry! – KS*). The incredible journeys undertaken by the Kegresse-designed vehicles under his sponsorship successfully took motor vehicles to parts of China and Africa for the first time, and details of these expeditions are well worth seeking out.

Martin Broadribb, via E-mail

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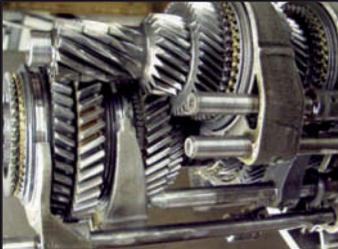
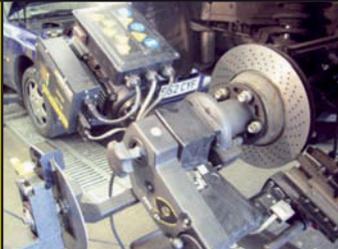
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RIGHT SIDE OF THE TRACK

A chance track drive at Goodwood led to a passion for Porsches and track days for Liz Greenwood. We meet her and her immaculate 993 Carrera 4S

Words and photography: Mike Taylor

Clearly, Liz Greenwood is a lady who not only likes her cars to look good, but they have to perform well, too. As a result, she has a passion for Porsches. Liz likes nothing more than taking the wheel at one of the celebrated trackday events organised by Porsche Club GB, thoroughly enjoying the action and the camaraderie.

Liz's enthusiasm for trackdays can be traced back to the late 1970s. Quite by chance she was at a Triumph day at Goodwood with her Stag (which, incidentally, she still has). "There were three other Stags and a Dolomite Sprint ready to go out and they were looking for a fifth car to make up the numbers," recalls Liz smiling. "Someone persuaded me to have a go and handed me a crash helmet. It was a baptism of fire. Even so I really enjoyed it. I could drive fast, but stay within my speed comfort zone. But, it quickly became clear that my Stag was not built for the rigours of the race track. It was designed more for long distance touring and I did not want to stress it."

Then followed an enforced interlude imposed by the responsibilities of raising a family before thinking seriously about attending trackdays once more. "In the early 1990s I began looking around for something suitable, something that would take the tough demands of track events," she continues. "Coincidentally, I inherited some money and after a lot of research I concluded that Porsches were very robust, the ideal car for what I had in mind. At that time, the Porsche 944 Turbo was the cheapest pound per performance value for money car on the market. It was no contest."

Eventually, after a lot of test drives, Liz found the right car. "It was beautiful and had been meticulously maintained with a comprehensive history file," she beams. "I bought it through a private deal in 1997 and it

thoroughly lived up to my expectations. It proved to be the ideal introduction to driving on a race track. I did a number of Porsche Club events as well as taking it to France and the Nürburgring in Germany. In fact I enjoyed it so much I kept it for seven years."

If there was a downside to Porsche 944 ownership it was that it had a conventional drivetrain layout. "Having joined the Porsche Club I began to realise the prejudice of some members over the fact that the 944's engine was in the front and not, in their opinion, in the correct location at the rear. Eventually, in 2001 I came across someone who needed to sell his 1979 Porsche 911SC. The owner before him had restored the car with a bare metal re-spray and uprated and lowered the suspension, adding wider wheels and tyres so he could enjoy it on the circuits. We agreed a price and I paid £11,000, a good deal considering the amount of work that had been done to it. In fact, I had the 944 and the 911 together for a short while."

During the first few weeks of SC ownership Liz admits she drove the car with considerable care, the words of some of her Porsche Club colleagues echoing in her ears. "Of course, I'd heard all the stories that rear engined Porsches need to be treated with respect, otherwise they'll turn around and bite you. Then, I gradually gained more confidence and since I bought it I've done a huge number of trackday events and never had a three sixty degree spin. Ever."

Leafing through her files, which include the complete service histories of all her Porsches, Liz records that her dark blue SC has never let her down by failing to start or breaking down by the roadside. "It's probably done nearly as many trackday miles as road miles and as a result it's led a very hard life. It says something for the person who undertook all the work on the car's drivetrain originally

Right: Liz and her 993 Carrera 4S, which shares the 993 Turbo wide-body and rear wing. She also owns a 911SC, which works hard on trackdays, and prior to the SC a 944 Turbo, which was her introduction to Porsches



that it's remained as reliable as it has. It has been down to Le Mans more than once. But then, mechanically and electronically, compared to modern Porsches, it is a very simple car. There's far less to go wrong."

So, how did the 993 come about? "When my mother died I was left some money, so I began looking for another Porsche. Having just sold the 944 Turbo it took many months to find the right one. I chose a 993 because it's the last of the air cooled cars and I considered it would depreciate less than more modern Porsches. They've been in production for many years which means that all the bugs will have been fixed. Then, before seeing any cars, I did a lot of research on the 993 so I knew what all the models were and what to expect"

When Liz began looking around, obviously condition was a major consideration while shape was another very important criteria, perhaps more so than colour. "I did try other cars, too, such as a TVR, which can make a good trackday car, and a Ferrari, which do break down often on the circuit. But, none of these cars were quite me. I was looking for a car that was capable of being driven to a racetrack, do a hard day's work on the circuit and then be

driven home again without mishap."

Highest on Liz's list of priorities was that the car should come with a comprehensive history file, showing all the work which had been done to it, and its service documentation. "I looked at a couple of 993 Turbos, but they were at the very top of my budget," reflects Liz ruefully. "Also, I didn't find one with a good enough history and a low mileage that suited my needs. Then one day in 2004 I found a car on the g11Virgin website (known as Prestige and Performance Cars Ltd., based near Uxbridge) and I drove up to take a look. When I arrived the salesman let me read through a box-file full of paperwork. I was extremely impressed. It was black with a dark red interior, which is a nice combination."

One of the modifications done by the second owner had been to have the original automatic wing removed and a Turbo-type engine cover fitted, but without the 'Turbo' insignia. He'd also had an engine sound enhancement system installed and different sporting exhausts to lift the note of the engine. "Then, we did a thorough check; the carpets came out from inside and the boot, I was even underneath it at one stage," she says

Liz chose the 993 over other contenders, which included a TVR and even a Ferrari, neither of which she felt would stand being lapped all day on a circuit and then happily drive home again



grinning at the memory. "And, throughout all of this the salesman never pressed me. Eventually, we did the deal. I paid £39K, which included a full service and a warranty."

The car's documentation pack revealed that the previous owner had entrusted its servicing to the Porsche Centre in Tonbridge, Kent. "I telephoned the service manager, who recalled the car, adding that the owner had been a very particular and fussy customer," laughs Liz. "It gave me added confidence."

After buying her original 944 Turbo Liz began by building up her confidence and experience of driving on a racetrack by attending many of the club organised events. She also took instruction from professional teachers at the circuits, who gave invaluable guidance over braking points and cornering lines. "I enjoy the Porsche arranged days because we can discuss the best line to take, the car's handling and so on," she continues. "So long as a person wears a crash helmet and signs the appropriate paperwork you can take out passengers. My advice to a passenger who is feeling sick is not to look

'yes, this is more like it.'

Oh, and we should mention, of course, that Liz's 993 is a Carrera 4S, with all the Turbo widebody stance and attitude that comes with it. So does the all-wheel drive transmission make the steering seem different? "It does feel notably heavier than my two-wheel drive cars," she acknowledges. "But, on a circuit in wet conditions it performs extremely well. I'd driven several four-wheel drive cars on the road before buying the 993, but it wasn't until I was on a track that I noticed all the four-wheel drive characteristics and benefits." Since buying the 993, in addition to driving on circuits in the UK, Liz has used the car on several European tracks including driving on both the full and shorter Sarthe circuits at Le Mans.

According to Liz the 993 also makes a nice everyday car, too. The only modification she has made to it is to have a modern 10-stack CD changer added. Nowadays, the car is serviced by the local main mid-Sussex Porsche dealer. "Doing so many trackdays I do have a good relationship with my tyre supplier," she laughs. "The 911SC

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Liz swears by the club's organised trackdays at circuits all over the country, plus trips to European tracks

“Doing so many trackdays, I do have a good relationship with my tyre supplier”

around, stay focussed on the track; pretend you are driving and look straight ahead. You can always tell if someone is feeling queasy; the car will make a dash for the paddock, the passenger door will fly open and the person will make a rush for the toilets. Luckily, I've never had anyone feel sick with me, but the G-forces can create a feeling of nausea if you're not used to it."

However, during her first day on a circuit in the 993 Liz recalls she was very unhappy with the car's feel and handling, even wondering if she'd bought the wrong car. "That was at Bedford Autodrome. I'd driven there many times in the 911SC, so I knew the course well. But, in the 993 the suspension seemed soft, causing it to roll badly on corners; I felt I couldn't turn in as hard as I wanted to. I took it to a Porsche race specialist, explained the problem and they reset the tracking mid-way between a road car and a race car. The next time I was out I thought,

came on Bridgestones and I've always kept to them because the car handles so well on them for whatever reason. As for the 993 I use N-rated Pirelli P Zeros. I'm very particular about tyres, especially wheel balancing, because it can make all the difference to the car's handling on a race circuit while I always have the same fitter and insist that the wheel nuts are put on using a hand torque wrench; those air guns could be adjusted to any setting."

Today, Liz has semi-retired from trackdays. So, very sadly, she has decided the 911SC will have to go. And what of the future? "I'd like to go to the Monaco Historic and other similar events on the Continent. In 2014 I will have had the 993 for ten years, so maybe I'll do something special by way of celebration, I have already booked in for the 2014 Le Mans Classic and I can't wait to drive the full Le Mans circuit while I'm there." **PW**

Last of the classic 911 interiors, the 993 can trace its swooping dashboard and layout all the way back to 1963. The red leather with black trim and black exterior works well





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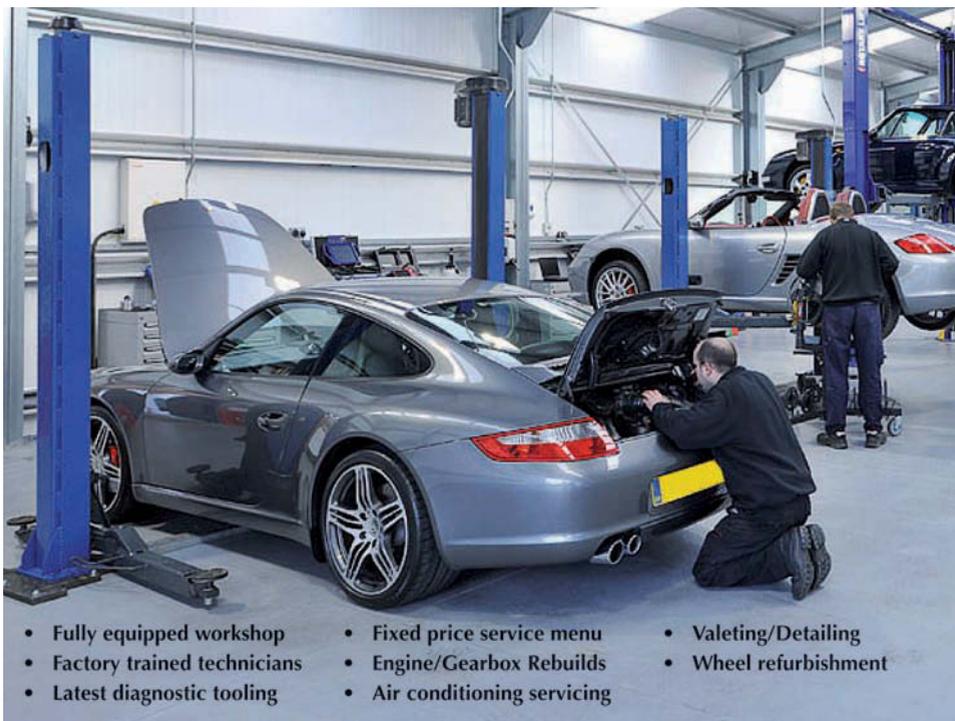


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ELECTRIC SHOCK

The future is now. The Porsche 918 hybrid supercar is a game changer and clearly points at exactly where Porsche is heading. We drive it for the first time at Valencia

Words: Paul Horrell

Photography: James Lipman/Porsche AG

We know that on paper the 918 Spyder will leave a 911 Turbo S gasping. Now I know what that means, visibly, viscerally, down the tarmac. I'm following the Turbo S pace car at the track and, in the interest of enquiry, let the 918 fall well behind at the start of the main straight. Floor it. Revs to 9000-plus, crazed V8 noises, definitive traction out of the bend, sawtooth upshifts. It reels in the distant Turbo S in half the straight, like it had been a base-model Boxster. Afterwards I ask its driver, one Herr W Röhr, whether he'd actually been flat-out down the straight. "Oh yes."

The jaw-dropping headline figures bear repeating at the outset, partly because Porsche actually managed to improve them considerably during the 918 Spyder's development, so only these latest set apply to the production cars. For a start, no other full-production car has lapped the Nordschleife as fast, at 6 minutes 57 sec. The total system power, with V8 and electric motors, is an absolutely stunning 887bhp. Porsche claims 0-60mph in 2.5 seconds, and 0-125mph in 7.2, and 0-186mph (300km/h) in 20.9.

There are more extraordinary statistics too. The mid-mounted 4.6-litre flat-plane-crank V8 will rev to 9150rpm, putting out 608bhp at 8700rpm and 398lb ft of torque at 6700rpm. If that sounds a little peaky, note that there are also two electric motors, between them chipping in another 286bhp, and an instant kick of torque right from zero revs.

Because the electrical system is so powerful, when the poles are reversed it can by the same token generate up to 0.5g braking load, it needs a big battery. So it was worth giving it plug-in capability too. It will drive for 11-20 miles on e-power alone, and still have hot-hatch performance: 0-62mph in 7.1sec. Oh and when doing its official economy run it can use undeclared electrical energy as well as the petrol – this isn't Porsche cheating, it's the rules for plug-in hybrids. So it returns 94mpg and 70g/km. OK that's being

unrealistic, but the engineers say that even when driven without ever plugging in, the hybrid recuperation means it can do about 30mpg touring.

What else? Where to start? A full carbon-composite tub and engine cradle like the Carrera GT. A similar four-wheel-steer system as the new Turbo and GT3. A rear e-diff. Huge carbon-ceramic brakes behind the 20/21-inch wheels. A seven-speed PDK, an all-new unit that's mounted upside-down to drop the centre of gravity. Adaptive damping. Even a completely new entertainment, connectivity and information system and Burmester hi-fi, though we can be fairly sure Marc Lieb wasn't listening to 'A Walk in the Black Forest' as he thundered round the forests of the Nürburgring.

The videos of that record run show a pair of gloved hands working the wheel fairly calmly. Until you watch the clock, it doesn't seem like a machine at the outer edge. Good. The last thing I need today, trying to learn a car of borderline-insane power on a tricky and unfamiliar circuit, is for spiky and unpredictable handling. I am no Marc Lieb. No Walter Röhr either, and he's doing the pace laps in the 911 Turbo S.

OK, open the doors and drop in. The basic driving position isn't so different from a Carrera GT's – a fairly wide space, very low, an angled centre console, lovely race seats, good visibility through a sensibly upright if shallow windscreen. But of course there's no gearlever. Instead, a paddle, more of a toggle switch really, to the right of the steering wheel. R-N-D it says, and next to it an electric park brake switch. Foot on brake, release the EPB, switch to D. On the steering wheel is a switch labelled M, to get the transmission into manual, and then it's the usual gearshift paddles.

I pull out of the pits in electric mode, noting the smooth surge and the strong traction through the first corner. That's enough of that – I'll be out on the road later and can experiment more with the e and hybrid modes then. Right now there's a whale-tail to chase. But he's promised to be gentle to start with.



D S GO 9182

I half-deactivate the PSM and select a nice high gear into the second bend.

Oh. Good. Grief. Even at 3500rpm, the bolt of torque sends my spine into spasm. Cold tyres and a big outward arc from the tail. Catchable yes, but even when you're trying not to mess with it, this is reminding me it's not a car to be messed with.

From anywhere on the dial, the powertrain's response is savage. Perfectly proportional to your input, yes, so you can't call it uncontrolled in any way. But it's you the driver that needs the control because whatever you ask for, whether properly considered or not, will come straight back at you. It's so instantaneous it seems to arrive before you've even asked, this combination of right-now electric torque and a combustion engine with racing in its genes. Theory tells you it's the electric motors doing the

It's not that the g18 is a tricky car for fast cornering. Nope, it does all it can to look after you. What with huge tyres, four-wheel drive, four-wheel steer, a computer-controlled torque vectoring system and a rear e-diff, it'll do all it can to keep you going in the direction you've pointed it. I'm just feeling very occupied because it's so staggeringly fast, not just in the straights but the corners too. OK not the fast ones with me at the wheel and Walter in the g11 because he's on a different stratum of skill and confidence and knowledge of lines and braking points, but through the easy slow ones the g18 is all up the g11's tailpipe.

I'm in a car with the Weissach pack. This is the one that was used for the record Nürburgring run, and saves 40kg over standard (down to 1634kg) and has a few extra aero aids – evidently last-minute add-ons. I tried and at this

“From about 3000rpm the V8 emits a guttural, feral growl that hardens with throttle and revs”

work at mid revs and the V8 taking over as it sears towards the red-line, but in all honesty theory doesn't matter. What matters is this epic, mind-altering, fathomless well of pure performance.

At about 3000rpm the V8 emits a guttural, feral growl that simply hardens, adds volume and pitch as you pile on throttle and revs to its endlessly arousing red-line howl. This engine shares its basic design, although no parts, with the one in the RS Spyder that raced in ALMS and Le Mans. It also has a pair of central exhausts, which exit above the engine between the cylinder heads. It's an arrangement that keeps heat away from the low-mounted battery, and brings the hectic soundstage right to your ears.

Result of all this torque, though, is that I'm not bothering too much about which gear I'm in, instead short-shifting for a lot of the corners on my early laps. Sure the PDK's shifts are effectively instantaneous and pretty smooth with it, but right now I have other things to think about.

track couldn't tell the difference between that and the slightly heavier marginally less forced-down 'base model', but still, when you want the extreme Porsche and can pay for it, you might well go further and get the extremest of the extreme. For that you'd pay the extra 60-odd thousand: £715,000 versus £654,400, at the launch-day exchange rate.

Both versions turn into bends with knife-hone sharpness, showing no delay or slop or indeed giving any sense that the car is carrying the weight of all these electricals. I tried a dynamically representative prototype in the wet on Porsche's Leipzig track earlier in the year and found that if the PSM's off, the back end will edge out under braking. But in the dry that's not the car's natural state. You can brake deep into a bend.

There's plenty of feel through the steering wheel that's sharp and progressive rather than over-direct. Sure you can cut off the PSM, but even so it doesn't want big slides. The engineers simply point out that sliding isn't the quick way, and they developed all the car's systems for

Below: The g18's electrical systems are highlighted here in red. There is no mechanical connection between the engine and front wheels. A separate electric motor powers the fronts creating the four-wheel drive effect. The battery pack sits across the middle of the car, while another electric motor sits between the compact V8 and the PDK gearbox



PORSCHE 918 FIRST DRIVE

exploitable speed. Through the apex of slow or fast corners it's very neutral, and tells clearly where the extraordinarily high limits lie. You can get on the power very very early and it will just catapult out of most bends. Get on the power even earlier, and it will edge the rear out, especially in the wet or in tight bends. But controllably. Or if the stability controls are off and you're in second gear, there's no way the tyres can cope with that brutal power. That's how you spin a 918.

Using the electric motors, the 918 has access to 0.5g of braking without ever using the discs. That feels a bit odd on the road, partly because the braking tails off strangely just as you approach standstill, and partly because there's not quite the initial bite you expect, and partly because in strong braking events there's a slightly artificial moment as one braking system is blended with the other. But hey, they aren't deal breakers, and the absolute retardation is plain stunning.

At normal track pace, never mind quickish road driving, in the 'sport' and 'race' modes you never see the battery's state of charge deplete. You can harvest enough back from braking, or the occasional moment of engine-driven charging when all the power isn't needed at the wheels. Both those modes keep the engine running all the time, but 'race' allows for deeper charge and discharge of the battery and more boost power from the e-motors. To keep the battery charged, it then runs the motors as generators by using surplus engine power when you're not at full throttle. In contrast, 'sport' mode tries to optimise economy by occasionally prioritising e-motor load over engine load, to let the engine run more economically – 'race' instead emphasises engine power. Finally there's 'hot lap' where you can push the throttle past a detent once you're near the end of a lap and the car will throw every electron at the wheels, ending the lap with the battery down and the clock stopped in the

The 918 is mindblowing on track, when all its modes are working together. Equally impressive is the braking. Without touching the brakes it has 0.5g of retardation via the electric motors. Introduce the massive discs too, and it will stand on its nose



shortest possible time.

That 'Ring time, by the way, illustrates something else. It's a firm rebuttal to the Internet chatterers who say the g18 would have been faster as a 'pure' car, shorn of the mass of its battery, high-voltage electrics, charger and two motors. Sure that lot weighs some 314kg (more than three times the bare V8's 135kg) but the engineers are adamant that without the extra urge and four-wheel traction that the motors provide, the hypothetical combustion-only car would have lapped slower. Besides,

you have a 156bhp motor, and this runs through the DSG transmission, either independently of the V8 or in concert with it. That's a similar idea to the Panamera and Cayenne hybrids (though they use a torque converter box). There's no propshaft to the front. Instead, the front wheels have their own electric motor of 129bhp, which has a simple one-speed transmission. That means the front-rear torque balance when all power units are at full crack does vary depending on what gear you're in, but the ratio of the front one has been chosen so it provides the best

“The engineers are adamant that a hypothetical combustion only car would have lapped slower”

There are various modes to be chosen on the road. Most will probably choose 'Sport' or 'Race.' 'Hybrid' mode uses the battery as much as possible to save fuel, only sparking up the V8 when required. And, of course, there is electric only when the g18 will slip silently along

without the rear electric motor acting as starter and alternator, it wouldn't be able to start its own engine or charge its 12v battery.

Plus the g18 would have been a car of very different character. Without the e-boost, the engine would have needed turbos – adding lag and subtracting noise – or a far bigger and hence less rev-happy engine. Those things would have added weight in themselves, as would a mechanical four-wheel drive system to get it down. All those things would have taken away from the unique and utterly charismatic character of the g18's driveline.

The electric system is different front and rear. Out back

balance of torque at times when you need it – corner traction in the lower gears. In fact above about 165mph it's declutched because by this time it's doing its maximum of 16,000rpm. In other words, at high speed the g18 is RWD only. But since you won't spin your wheels at those speeds because you'll be in a high gear, 4WD is unnecessary.

By controlling the electrical power to the front and rear motors, the car can instantly vector its own torque. As soon as the rear wheels spin up, the car is designed to send more torque to the fronts, giving extra post-apex stability.





But however much the 918's engineers seemed to be obsessing crazily about raw speed, they actually built a car that offers far, far more.

It's rather beautiful. Not as dramatic as the rivals from Ferrari and McLaren, but an immaculately resolved design, that subtly tiptoes its way around the needs of mechanical packaging and getting air over and under, and indeed through the car for the five separate cooling circuits. There's active aero front and rear, of course.

The cabin is beautifully made, its surfaces generous in carbonfibre and soft leather. The targa panels store neatly enough in a boot that's roomy for the type of car. The entertainment, connected apps, phone and navigation are taken care of by an all-new 'black panel' system. One touchscreen sits on the console and there's another screen higher on the dash, next to the instruments. Both screens have nice graphics and high resolution, and the touchscreen will accept pinch and swipe commands. In a car like this everyone would happily have accepted a normal Porsche Communication Management system, but team 918 just had to go one better. It gave them endless extra headaches in a development schedule that was already ridiculously overcrowded. But compromises were never on

their agenda. And yes, the 600W Burmester hi-fi is pretty amazing.

These things are for the road, not the track. So let's head off out of captivity. One of the things first to strike you when you're not lapping fast is that the 918 Spyder feels mechanically edgy. It doesn't have all the normal layers of muffling that swaddle a normal road car, even a supercar. You hear the suspension knocking and the transmissions whining, and noises make their way through the tub, and every control is sharp-edged. It's not enough to be disturbing, and in fact gives you an extra feeling of connection with the viscera of the beast. Might be slightly tiring on long daily drives in a saloon, but in a car like this it adds to the specialness.

The suspension, so controlled in fast driving, isn't too harsh on the road. It has the tautness you expect, but the dampers don't clamp it to potholes and edges. It's helped by the fact you sit right in the centre, low and a long way from the wheels, with the masses of battery and engine right behind your hips and spine. The steering is lovely too, as well geared and weighted for quick road work as it is on the track, and alive with more feel than the current-gen 911 or Boxster's.

Most of the time on the road you're

Above: Active aero features front and rear.

Raised centre console is a Porsche design feature first seen in the Carrera GT.

Screen accepts touch and swipe commands. Brakes are humungous and green to highlight the, er, 918's green credentials

Carbon tub and engine cradle is incredibly stiff.

Battery pack is liquid cooled. It's heavy, but sits bang in the centre of the car and low down in the chassis





going to be driving it in the sport mode, or maybe race. But there are two others to play with. One is 'hybrid', a fuel-saving mode where it draws on the battery as much as possible, and sparks up the V8 only when needed. To be honest it's a bit of a kludge. Works smoothly enough and saves fuel no doubt, but it sounds odd. When a racetrack V8 starts up, and then goes dormant, on a cycle largely unrelated to the position of your foot on the accelerator, it all seems a bit strange.

Pure-electric mode, though, is a surprising hit. The silence lets you slip past busy pavements without drawing too much attention to yourself. And it's not slow, pure EV mode. Probably excellent on a frosty morning too.

Hypercars never had this range of ability before. A well-equipped cabin, a boot, electric propulsion and four-wheel drive for bad conditions. Those things are nice to have, but hypercar owners have so many other cars that they can find these qualities elsewhere in their fleet. They're not reasons to buy the 918 Spyder.

Instead it has to stand on its qualities as a fast – outrageously fast – sports car. Suddenly the electric boost and the four-wheel drive have a whole other purpose. They really do take this car into a new realm of performance and grip. It accelerates like a Bugatti,

corners like a McLaren P1. It comprehensively dusts the Carrera GT. But what's almost more amazing is how easy it is for ordinary drivers to reach and use that performance and grip. Nearly 900bhp, under seven minutes lap-time, and friendly with it. In a way it's the 911 of hypercars: brilliantly dynamic, and yet useable. A Porsche, then.

And I suspect only Porsche could have done it to this schedule. The Geneva 2010 concept was truly a concept – quite unfeasible. But it wasn't long before the company announced a limited-edition car, again before even the basic engineering feasibility had been done. Not only that, but it announced the specification, and the production number (918), and even the date for the start of production, 18 September 2013 (or 9.18 in American calendar notation). And most astoundingly, this was all done in the knowledge this would be technically the most advanced and complex road car ever built. It's a story akin to the first announcement of the Bugatti Veyron, but the Veyron actually ended up years late. Porsche's self-confidence was almost scary.

But here we are, having experienced the car, with production getting underway on schedule. That self-belief was justified. And what a car. **PW**

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£59,995



911 Turbo (997, Tiptronic S)

Meteor Grey • Black Leather Seats • Satellite Navigation • 19" Turbo Wheels • 32,101 miles, 2008 (08)

£52,995



911 Carrera 2 S (997, GEN II, PDK)

7-Speed PDK • Guards Red, • Black Leather Sports Seats • Sport Chrono Pack with Sport Plus • Paddle Shift Wheel • 11,127 miles • 2010 (60)

£49,995



911 Turbo (997, Tiptronic S)

Guards Red • Black Leather Adaptive Sport Seats • Sport Chrono Pack Plus • Satellite Navigation • 43,950 miles • 2007 (07)

£45,995



911 Carrera 2 S (997, GEN II, 6-Speed)

Arctic Silver • Black Leather Heated & Ventilated Seats • Touchscreen Satellite Navigation • 19" Carrera S II Wheels • 32,224 miles • 2009 (09)

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911 Turbo (997, 6-Speed)

Arctic Silver • Black Leather Seats • Sport Chrono Pack Plus • Satellite Navigation • Sports Exhaust • 35,687 miles • 2007 (56)

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911 Carrera 2 S (997, 6-Speed)

Arctic Silver • Ocean Blue Leather Seats • Satellite Navigation • 19" Carrera S Wheels • 33,775 miles • 2005 (05)

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911 Turbo (996, 6-Speed)

Arctic Silver • Black Leather Seats • Aerokit • Satellite Navigation • 18" Turbo II Wheels • 75,294 miles • 2002 (02)

£27,995



Boxster 2.9 (987, GEN II, 6-Speed)

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PORSCHE 997 – GT3/TURBO / C4S / C2S / C2

2012 - 991 C2S PDK COUPE (GUARDS RED) 14,000 Miles
3.8L Black Lthr Intr. PDK Gearbox + paddle shift, PSM/PASM/PCM - Touch screen Sat Nav./ Telephone/Bluetooth/BOSE sound system/CD Changer/Sports Chrono pack/Sports Exhausts/Multi-function Steering Wheel/Front and Rear Park Assist. Adaptive Sports Seats, Electrically Adjustable/Heated Mirror, Embossed Leather headrests and wheel crests fitted, Porsche Vehicle Tracking System (VTS), Bi-Xeno Headlights, Suede Headlining, 20" Alloy wheels, Porsche Warranty.

2008 - 997 GT2 GUARDS RED CLUB SPORT Specification 11,000 Miles
Carbon interior Pack, Black Leather and Alcantara, Original Rollcage Fitted, Carbon Fibre Sports Seats, Alcantara Roof Lining, PCM Sat. Nav. Telephone, Sport Chrono Package, Radio CD System, PASM, Electric Windows and Door Mirrors, Up-rated Steering wheel, Xenon Headlights, On Board Computer, Climate Control, Ceramic Brakes with Yellow Callipers, 19" GT2 Alloy Wheels with Michelin Super Cup Tyres, Tracker, Alarm, Complete with Full Porsche Service History and 2 Sets of Keys, Outstanding Condition.

2008 - 997 TURBO CABRIOLET MANUAL (ATLAS GREY) 28,000 Miles
Black Lthr Intr. PSM/PASM/PCM-Sat Nav-Telephone, BOSE sound system, CD Changer Sports/Memory/Electric/Heated Seats, Cruise Control, Porsche VTS, White Dials, Chrono pack, Sports Exhaust, M/F Steering wheel, R/park assist, Hardtop, 19" Turbo Alloys, Full Porsche Service History, One owner from New.

2009/58 - 997 C2S COUPE PDK (GEN II) (MIDNIGHT BLUE) 32,000 Miles
PDK Gearbox, Full Grey Lthr Intr. Sports Chrono Plus, BOSE Soundsystem, Sports Mode, Heated Seats, Multi-Function Steering Wheel, Sports Seats, Electric Memory Seats, PSM/PASM/PCM-Touch Screen Sat.Nav./Telephone/On board Computer/White Dials, Rear Wiper, 19" TURBO S Alloy Wheels, Rear Park Assist, Xenons, Full Porsche Service History.

2006 - 997 C2S CABRIOLET TIPTRONIC (SILVER) 22,000 Miles
Full Metropole Blue Lthr Intr. Sports Chrono, Sports Mode, PSM/PASM/PCM-Sat Nav. Heated Seats, Multi-Function Steering Wheel, Telephone Module, On board Computer, White Dials, CD Changer, 19" Carrera S Alloy Wheels, Rear Park Assist, Xenons, Original Wind Deflector, Full Porsche Service History.

2006 - 997 C2S COUPE TIPTRONIC (ARCTIC SILVER) 33,000 Miles
Black Lthr Intr. PSM/PCM-Sat Nav. Telephone, Bose sound system, CD changer, M/F S/wheel, White Dials, Sports Seats, Heated Seats, Sports Exhaust, Rear Wiper, Climate Control, Xenons, Sunroof, Rear Park Assist, 19" Carrera S alloys, Full Porsche Service History

2005/54 - 997 C2S COUPE TIPTRONIC (ARCTIC SILVER) - 59,000 Miles
Grey Lthr Intr. PSM/PCM-Telephone, Computer, BOSE Sound system/CD Changer/Sunroof/19" Carrera S Alloy wheels/Rear Park Assist/Full Service History.

2005 - 997 C2 COUPE MANUAL (SEAL GREY) 37,000 Miles
2 Previous Owners only, Full Black Lthr Intr. PSM/PCM-Sat Nav. Telephone Module, CD Changer, Part Electric Seats, Rear Parking Sensors, White Dials, 19" Carrera Alloys, Colour Crested Wheel Centre Caps, Tracker Fitted, FPSH.

PORSCHE 996 - GT3 / GT2 / TURBO / C4S / C2 / C4

2003 - PORSCHE 996 GT2 (BASALT BLACK) 20,000 Miles
Full Black Lthr Interior, Electric Windows, Climate Control, Rear Roll Cage, Porsche Radio with CD Player, 18" GT3 Alloy wheels, Full Service History (Just been Serviced)

2004 - PORSCHE 996 GT3 (ATLAS GREY) 30,000 Miles
Comfort Specification, Full Blk Lthr Intr. Porsche Crstid Sprrt Bucket Seats, Guards Red Seat Belt, Porsche CD Player & Radio, AC, 18" GT3 Alloy Wheels with Cloured Crstid W/Cntrs, On-Board Computer, FPSH, Only 2 Owners From New, Recently Fitted Tyres.

2004/54 - 996 TURBO 'S' MANUAL (BASALT BLACK) 19,000 Miles
Full Black Leather Int. AC, Bolt in cage-stdRd Porsche equipment cage, Billstein PSS10 lowered suspension, Performance Friction 350mm Brakes, Porsche GT3 Nomex Buckets Seats With 5 Point Seat Belts By Willems, Had a Full Engine Rebuild, Standard K24 Turbos, Standard Fly Wheel With an Updated Clutch, Very Low Mileage, Only 1 Prev. Owner.

2004 - 996 TURBO CABRIOLET TIPTRONIC (BASALT BLACK) 53,000 Miles
Full Black Lthr Intr. Xenons/PSM/PCM-Telephone/SatNav. Heated Seats, Cruise Control, BOSE Soundsystem, Climate Control, 19" 997 Turbo Diamond Cut Alloy Wheels, New Tyres all around, Full Porsche Service History.

2004 - 996 TURBO CABRIOLET TIPTRONIC (BASALT BLACK) 67,000 Miles
Full Black Lthr Intr. Xenons/PSM/PCM-Telephone/SatNav. Heated Seats, Cruise Control, BOSE Soundsystem, Climate Control, 19" 997 Turbo Diamond Cut Alloy Wheels, New Tyres all around, Full Porsche Service History.

2004 - 996 TURBO COUPE TIPTRONIC S (ATLAS GREY) 53,000 Miles
Full Black Lthr Intr. PSM/PCM-Sat Nav with Full set of DVDs for Europe, BOSE, CD Changer, Telephone, H/d & Memory Seats, Climate Control, Sunroof, Extended Lthr Pack, Optional Sports S/Wheel in Lthr, Cruise Control, R/Parking Sensors, 18 Turbo Alloys with a set of New Tyres, FPSH.

2003 - 996 TURBO COUPE MANUAL (BASALT BLACK) 45,000 Miles

Black Leather Interior, PSM/PCM-Sat.Nav/Telephone/On - board computer, Bose sound system, CD Changer, Cruise Control, Sports Seats, Heated Seats, Alcantara Headlining, Sunroof, Xenons Rear wiper, Rainsensor, FPSH.

2002 - 996 TURBO COUPE MANUAL (MERIDIEN SILVER) 44,000 Miles.

Mid Grey Leather Interior (PCM/PSM/Sat Nav/Tel.Module) BOSE Sunroof White Dials Computer Climate Control Xenon Headlights 18" Turbo Alloys (OPC Service History)

1999 - 996 C2 CABRIOLET MANUAL (BASALT BLACK) 63,000 Miles

Black Leather Interior, PSM, Telephone Module, Electric windows, Electric mirror, Climate Control, Full service history, Hard top, Low number of keepers, many more extras will update very soon

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.

1995 - 993 TURBO COUPE MANUAL (ARENA RED) 31,000 Miles.

Grey Leather Interior Wood Package Electric Sunroof/Seats Sports Seats Cruise Control Up-rated Becker CD Player/Bluetooth/Speakers/Sat-Nav Compatibility Climate Control 18" Turbo Alloys (OPC Service History)

1996 - 993 C2 COUPE TIPTRONIC (IRIS BLUE) (VARIORAM) 73,000 Miles.

Black Leather Interior On Board Computer Upgrade Stereo & CD Changer Electric Windows Electric Mirrors Electric Sunroof Climate Control 16" Carrera Alloys (OPC & Specialist Service History)

1996 - 993 C2 TARGA TIPTRONIC 'VARIORAM' (TURQUOISE) 83,000 Miles

Marble Grey Leather Interior, Electric Glass Targa Roof, Electric Seats, Electric Mirrors, Porsche Stereo, A/C, Rear Wiper, On-board Computer, 17" Targa Alloy Wheels, Full Specialist Service History with recent service (12/2011)

1996 - 993 C2 COUPE TIPTRONIC (ARENA RED) 73,000 Miles

Black Leather Interior, Sports Seats, Electric Window & Mirror, Part Electric Seats Sony Radio Player, Sunroof, Rear wiper, Climate Control, 17 Alloy wheels, Full Main dealer and Porsche Specialist Service History

1994 - 993 C2 COUPE TIPTRONIC (BLACK) 92,000 Miles

Black Lthr Intr. Up-rated Becker Radio system, Sunroof, computer, Electric Spoler/windows/Mirrors/Alarm, 17" Alloys, Rear Wiper, Central Locking with Immobiliser, Full Service History, Extremely Comprehensive Service History (Spare Key, Old MOTs and Tax Discs, Original Manuals, etc)

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)

1989 - 911 CARRERA 3.2 CABRIOLET (G50 GEARBOX) 124,000 Miles

Manual Gearbox, Matching Numbers Exmple, Iris Blue Metallic, Full Beige Intr, Matching Dark Blue Hood, Fully Electric Softtop, Electric Windows/Mirrors, Period Correct Fuchs Alloy Wheels, Comprehensive Service History, 10 Years With The Same Owner.

1989 - 911 CARRERA 3.2 CABRIOLET (G50 GEARBOX) 92,000 Miles

Manual, Matching Numbers Exmple, Black Metallic, Full Blk Intr, Matching Black Hood, Fully Electric Softtop, Electric Windows/Mirrors, Period Correct Fuchs Alloy Wheels, Full Service History, 21 Years With The Same Owner.

PORSCHE BOXSTER S

2008/57 - PORSCHE BOXSTER (987) 24V SPORT EDITION 12,000 Miles

Black Lthr Intr. PASM/PASM/PCM-Sat.Nav/Telephone, Climate Control, BOSE sound system, CD changer, Colour Crest wheels, Xenons, New Brakes, Recently Serviced, Striking example.

2006 - PORSCHE BOXSTER (987) 2.7L TIP (BASALT BLACK) 30,000 Miles

Full Black Lthr intr, PSM, Bose sound system, CD changer, Wind shield, Full leather seats with electric adjustment and heating Seats, Air condition, Rear park assist, Xenons, 19" Carrera S Alloys, Full Official Porsche Service History, 20 previous owners only.

PORSCHE PANAMERA

2010 PORSCHE PANAMERA 4 TIPTRONIC (CARBON GREY) 25,000 Miles

4.5L V8 Engine, BOSE Soundsystem, SatNav, PCM Unit, Telephone Unit, Active Suspension, Parking Sensors Front and Rear, Heated Seats Front and rear, Memory Seats, M/F Steering Wheel, Xenons, 22 inch Alloys with New Tyres, Foldable TowHook, Very Good Service History, One Previous keeper

FERRARI - MODELS FROM 1967 +

2006 - FERRARI F430 SPIDER V8 MANUAL TITANIUM SILVER 28,000 MILES
6 Speed Manual, 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 Blk Intr. 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.

Black/Red Leather Interior Red Carpets Climate Control "Ferrari Classiche" Full Continuous History Superb Provenance 3 Owners From New.

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

Full Black Leather Interior Detailed Restoration History Full History Original Build Sheets/Sales Invoice/Tool Kit/Wallet/Hand Books Numerous Concourse & Awards Winner Engine Rebuilt By Ferrari In Johannesburg 26,000 KMS Ago Comprehensive photos showing The Repair & Work Done By Ferrari Exceptional Condition Throughout.

1962 - FERRARI 250 GTE LHD MANUAL (NERO BLACK) 73,000 KM.

LHD, Rosso Red Lthr Intr, Matching-numbers 2nd series, Ferrari's First series-produced 2+2, Ferrari Classiche certified, Nardi S/wheel, Chrome-rimmed Vagila instruments, Independent front suspension, live rear axle with semi-elliptic leaf springs & parallel trailing arms, and four wheel disc brakes.

CLASSICS - AC / BENTLEY / JAGUAR / PORSCHE 356

1991 - AC COBRA LIGHTWEIGHT (BLACK METALLIC) 5,000 Miles.

1 of 26 RHD Lightweight Black Leather Black Metallic Coachwork with White Stripes Full Black Leather Interior Full Weather Equipment Absolutely Stunning Condition Very Rare With Approximately ONLY 26 Vehicles Manufactured.

1964 - PORSCHE 356 SUPER 90 COUPE LHD (SIGNAL RED)

1600cc Signal Red Coachwork Soit Beige Leather Interior Left Hand Drive 4 Speed Manual Recent Restoration To Concours Standard Eligible For Many European Events

1962 - JAGUAR 3.8 MARK II AUTOMATIC LHD (BLACK) 16,478 Miles.

Automatic Black Coachwork Red Leather Interior Power Assisted Steering Wire Wheels Recent Restoration To Virtually Concours Standard

1936 - BENTLEY 4 1/4 PILLARLESS COUPE (MIDNIGHT BLUE)

Grey Lthr Gurney Nutting Coachwork 1 Owner 40 Years Extensive History A True Classic Completely Original Throughout & Has Been Exhibited At Luois Vuitton Concours D'Elegance In Paris 2003. Sunroof Produced By Gurney Nutting Chassis Completely Original Throughout

1935 - BENTLEY DERBY 3.8L SALOON

A true classic. Completely original throughout and with a very well documented history. Saloon, 3792cc, Petrol, 2-Axle Rigid Body, Chassis Frame no: B51EJ, Engine no: P3BP Date of First Registration: 30.08.1935, Had a Bare Chassis Restoration, rebuilt to the highest standard. The restoration took over 5 years.

2010 - PGO BUGGY BR - 500 ccn PGO BUGRACER (WHITE) 700 Miles

Original PGO Buggy, Powered by a 500 cc Motorbike Engine, Steel Tube Frame, Right Hand Drive, Road Legal, LCD Dashboard, Locking Differential, Hand Brake Reverse.

2008/57 - LAMBORGHINI GALLARDO SPYDER (NERO BLACK) 21,000 Miles

Paddle shift Gearbox (Automatic), Interior in Nero Leather with Yellow Stitching 19 inch Lamborghini Crested Alloys with Yellow Callipers, Satellite Navigation, Fully Electric Seats with Lamborghini Crests and Yellow Piping, Aluminium Crested Flat Bottom Steering Wheel, Aluminium Dash Dials and Fascia Trims, Fully Electric Heated Seats with Lumar Support and Lamborghini Logos, Tracker Fitted, Bi-Xenon Lights, Full Official Lamborghini Service History, recently Serviced, New Lamborghini Continental Tyres Fitted, An Immaculate Example

2007 MERCEDES CLS CLS320 CDI (SILVER METALLIC) 59,000 Miles

Diesel V6, Tiptronic (Automatic Gearbox), Full Black Lthr Intr, SatNav, Telephone, TV Module, TV Set in the Rear, CD Changer, Full Electric Seats, Heated Seats, Multi Function Steering Wheel, El. windows & Mirrors, El. Folding Mirrors, Cruise Control, On board Computer, Full Climate Control, ESP, Xenons, Parking Sensors Rear and Front, 17" Alloy Wheels with good tyres, Full Service History, Spare Key, all original Manuals present

THE **ODD** COUPLE

The changeover from classic long-bonnet to concertina bumpers is a major milestone in 911 history. The transition was not so straightforward, abundantly exemplified here on two contemporary cars

Words: Johnny Tipler Photography: Antony Fraser

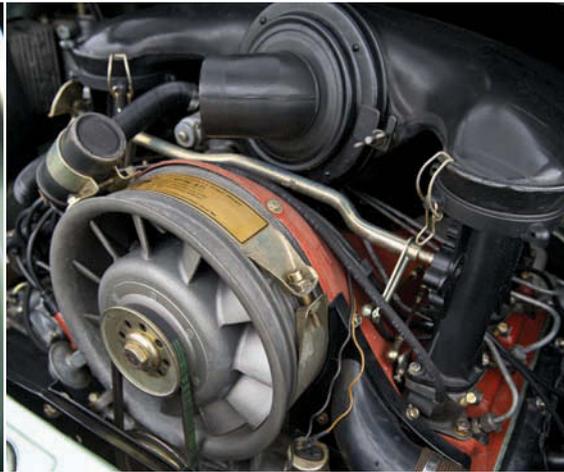


Get those stripes! Did you ever see such outrageous bars on a road car, especially a 911? And what about this Flying Dutchman – Cees with his Sahara Beige 2.7 up on two wheels! How wild is that? On the face of it, two very different takes on the 911, one concerned with visual impact, the other with extravagant handling. In fact, as far as age goes, they are siblings, both built in 1974 for the '75 model year. They are indeed an odd couple and their spec is as dissimilar as their visual imagery suggests. Let's call them 'Orange Stripes' and 'Sahara Beige'. For starters, 'Stripes' is a 2.7 Carrera (210bhp 911/83 engine), while 'Sahara' is a plain 2.7 (150bhp 911/92 engine), opposite ends of the '74 'G-programme' 911 line-up that also includes the 911S (175bhp 911/93 engine). The T- and E-suffixes of the previous 'F-programme' cars were now out of use.

This pair hail from one of the most significant moments in the evolution of the 911, which happened in 1974 when the classic long-bonnet look that had defined the first decade of 911 and 912 production was replaced by the formidable, no-nonsense impact bumpers that were

designed to absorb 5mph nudges and recoil into their original position. So, despite their different powertrains, these two '74 2.7s should have the same bodyshell then? Well no, the changeover didn't happen in such a cut-and-dried way. You'll notice that 'Stripes' has the flared rear wheelarches unveiled with the G-programme, while 'Sahara' has the narrow body of the preceding F-programme cars, albeit with the new concertina-bellow bumpers and short bonnet. Occasioned by swingeing US safety and emissions legislation, Porsche development was frenetic, and it was a period of relentless and wilful flux on road and track. With RSs no longer in production the flagship in 1974 was the 911 Carrera, retaining the 2.7 RS engine, which accounts for 'Stripes' running the older generation 2.7 RS unit, while 'Sahara' has the latest low-emissions, 8.0:1 low compression version of the engine (as opposed to 8.5:1), its performance dumbed down to appease Stateside legislators. The spec of the 2.7 Carrera RS engine included gomm Nikasil-coated aluminium cylinders, with forged pistons and mechanical fuel injection, while the new 911 and 911S flat-sixes were equipped with Bosch K-Jetronic injection systems and





were fitted with cast aluminum slipper-skirt pistons. Die-cast Alusil (aluminium-silicone) barrels were introduced soon afterwards instead of Nikasil (nickel-silicone coated) ones. Twelve-blade cooling fans were still fitted, but the location of the new bumpers called for a single battery instead of the two single ones used previously. The exhaust system also featured upgrades aimed at reducing noise levels as well as emissions, including aluminium coatings on the heat exchangers and a double-skinned stainless-steel silencer. The flat-six engines differed in external detail too, with obvious variations such as the air intake and inlet manifold configurations. The rev-counters are red-lined differently too: 'Stripes' goes to 7,000rpm and 'Sahara' calls time at 6,000rpm. 'This is still a high-revving engine for the time,' says Sahara's Dutch owner, Cees de Zeeuw, 'bearing in mind that these were the new engines, equally happy at low revs for better economy and less emissions.'

We've come to expect g11s of this era to have five-speed g15 gearboxes as a matter of course, but back then the standard issue (in the US) was a four-speed box, with five ratios optional. The running gear was subtly different, with 16mm anti-roll bars front and rear on the

travel backwards up to 50mm, bouncing off collapsible steel tubes in European and rest-of-world cars, and hydraulic rams in US cars. This meant the bumpers on American models projected slightly further than the rest, though the whole heavy-manners bumper revision only upped the g11's overall weight by 25kg (to 1075kg from the 1050kg of the old g11T). At the rear the numberplate lights were sited in the stocky rubber overrides, and the rear light clusters were separated by the new red, non-reflecting plastic strip bearing the PORSCHE script. As for those garish orange bands running down the front lid and cleverly incorporating the g11 numerology, they are not merely a product of the track-bred boy-racer tendency, or even publicity-seeking; they are actually security stripes, applied with the specific intention of announcing in no uncertain terms the car's presence on the road. Not dissimilar in concept to modern police 'jam sandwiches' and proliferating motorway maintenance vehicles. Back in the day, certain Porsche press cars' livery featured these 'security stripes', and the fact that Johan's car was thus resplendent suggests that it was itself either a demonstrator, a press car, or run by a member of the Porsche family or board member. When he bought the car,

Above: Cookie cutter wheels make a nice change on a g11, but will never surpass the Fuchs for popularity. Shame. Stack injection pipes are a giveaway that this is a 210bhp RS spec engine

“When shunted, the impact bumpers could travel backwards up to 50mm”

g11 and g11S, and a 20mm front and 18mm rear anti-roll bar on the Carrera, which also featured Bilstein gas dampers instead of the Boge dampers used by the others. The Carrera's brake calipers were larger than the other two as well. The old fabricated-steel rear semi-trailing arms were replaced on all models by much lighter and stiffer forged aluminium alloy items. Spacesaver spare tyres (BFGoodrich) were the new thing, along with an 80-litre petrol tank, and a headlamp washer system was located in the front bumper. The plain g11 and g11S came with brightwork window surrounds while the Carrera's were in black. As yet, the only anti-rust protection consisted of zinc coating of the floorpan, though galvanising was just a couple of years away.

Yet both specs reflect the need to comply with US emissions and safety legislation. No placebos here, this is serious stuff. When shunted, the impact bumpers could

the stripes were a bit the worse for wear, so Johan cast around for original replacements. 'There is only one shop in the world where you could get items like this, and that is Freisinger; so I called Manfred and I said, "do you have the striping;" and he said, "yes, I will sell them to you for 725 euros but I'll give them to you if I can use your g11R oil tank to make a copy as I need one." I said, "well, I'm very sorry, we can't do that because the tank is in my car, so I cannot give it to you." So I had to pay 750 euros for the original ones, but I had them copied to go on the car.' These stripes have sentimental value to Johan: back in the day, his grandfather owned an RS emblazoned with black and gold stripes. Very JPS, though Johan sees the orange ones more as a hangover from '60s psychedelia and flower power. 'Orange Stripes' has never been restored, though slight differences in pigmentation point to individual panels having been repainted. Johan



Above: Simple times and a simple interior, although those shapely Recaros are a custom fit. The 2.7-litre engine is detuned to 150bhp – emissions strangled for the US market

The classic Porsche market woke up to the rarity and value of the Carrera 2.7 some time ago. Now, inevitably the narrow bodied 2.7s from the era are rising in value too, and 'Sahara' here looks great on wide 'cookies'

concedes that metallic green is a very difficult colour to match, 'so what I would like to do over the wintertime is have it completely re-sprayed and lacquered, and take care of all the small details like the window surrounds.' And despite its exalted powertrain it lacks the (by now optional) ducktail spoiler that graced the 2.7 Carrera whose engine it harbours. In fact the ducktail was superseded in 1974 by the whaletail wing, because the pert ducktail was deemed a safety hazard – though how it's possible to impale one's self on the rear of a 911 thus equipped is anyone's guess. Nevertheless, it was another indication that the times they were a-changing. 'Porsche was battling to find a way out of the economic crisis,' Johan points out, 'and they were obliged to develop all these new parts to match the new regulations, and these are mostly manifest in the G-programme models.'

The Carrera's original ATS cookie cutter wheels have also been replaced: 'I bought new ones and painted them in the original matching metallic green,' says Johan.

'Porsche had them in the '74 colour catalogue in gold, green, silver of course, and one other colour which I can't remember. But I have to say I have never seen a '74 Carrera with cookie cutters on it. In '76 of course you had the police cars, but I have never seen a Carrera with the wide ones on the back like the SC's.'

Inside 'Stripes' cabin the upholstery is extraordinary too. The newly introduced high-back seats with integral headrests are upholstered in blue-grey tweed, the same as were fitted in the 25th Anniversary cars. (In 1975 Porsche marked its 25th anniversary with 1,063 special edition Carreras, divided into 664 coupés and 399 in Targa format, released in 1974 for the '75 model year, celebrating the firm's Silver Jubilee). So, not the more numerous leather or basket-weave leatherette fabrics. Inertia-reel Repa seat belts made their debut with the G-programme cars too. While the Carrera had electric windows and a padded three-spoke steering wheel, the base 911 had wind-up windows, though side-window





demister vents were present on all 911s. Opening rear quarter-light windows were optional, and the door pockets were reconfigured with a lid.

Porsche continued finding homes for the 2.7 Carrera RS unit until 1976 and the advent of the Carrera 3. In this case, the engine number starts with 80 followed by the rest of the digits, which Johan says indicates it's a replacement engine, a 2.7-litre 210bhp unit documented as installed at the factory after it was sold to the first private client. That also raises the possibility that it was used not only as a demonstrator, but also maybe as a test car. Perhaps that is why they took out the engine; we shall have to figure that one out. Every other day a fascinating car comes up, and I'm asking myself, "is this real or is it fabricated," but I think this one is real enough, though I think we'll be lucky to find anybody at the factory who would remember any more about it, because the guys who worked on these cars have all retired.'

The overall presentation suggests that it was an important car in the factory hierarchy. That's basically

because it was sold in Salzburg by Porsche Austria, so it was probably a demonstrator, and that's why they made it like that, very obvious with the stripes, so I think it was more like a press car than a family car.' I take it out for a dozen laps of the circuit, though I've already got a soft spot for it and there are no heroics: the only stripes I put down are the ones on the front lid. It's a beautifully agile car, jinking this way and that in the corners, with a fair turn of speed between them, as you'd expect from an RS-powered 911, though if anything it feels more poised, less flighty than its long-bonneted predecessor. I make mental notes about applying its quirky colour scheme to my 964, but Fraser reads my mind and threatens to kill me.

Our attention turns to the Sahara Beige 2.7. 'It's done 70,000 miles, and it's chassis number 911474,' Cees tells us, 'so this is a '74 model. The '4' is always the giveaway for the year, so in '73 cars you see 9113, later they got lots more letters because they sold a lot more cars.' It joined Cees's two other classic 911s; a 2.7 Carrera RS and matching '72 Sepia Brown 2.4S. It's just as much of a

Garish 'Security stripes' were an odd mid-'70s option. As 'security' suggests, they were not go-faster stripes but designed to let other road users know of your presence





'Sahara' owner, Cees de Zeeuw, demonstrates the wilder side of track driving, aided by some skinny steels and tyres

paradox as its striped sister, having the narrow body with impact bumpers and the latest wheels, sharing the same door mirror as its sibling. Another year passed before the base model received the bigger wheel arches. The double wraparound indicators set in the front bumper corners betray its North American domicile, which is where Cees acquired it, confirmed by the MPH speedo. Another manifestation of the burgeoning US preoccupation with safety is the reminder to buckle up with the 'fasten seatbelts' sign, and there's evidence of the original air-con switches, suggesting a California car, though Cees removed the enormous crankshaft-driven air conditioning compressor as it's redundant. 'The pipes are still in the car, everything is there except for the pump, and I was thinking about getting a smaller, better aftermarket pump. It's typically American, because nobody in Europe ordered the car with air con back then.' Cees points to a perished window surround: 'this is also typical of California cars; it's dried out because of the heat.'

The 2.7 was running well when he bought it, though a clutch problem needed sorting. It's evidently going pretty

originally fitted in the car, but you could get them at the same time, so maybe the guy ordered them as an option: they match the colour of the car, so why not? The tendency in Europe is for sombre interiors, usually they're all black, but in America a lot of cars have a two-tone black and brown upholstery scheme.' There's an ergonomic benefit too. 'For guys with my figure (he's a big man), these seats are marvellous! You've seen me drive, and it's no problem. That's also a strange thing, because the seating position and all-round visibility in these small-body cars is wonderful, even if you compare it to the 964.'

It's obvious from Cees's two-wheel dramatics that he's no stranger to on-track capers. 'Sure, I do some of the European trackdays; I drive to an event, change the tyres, go on track and drive this car like you see me doing now; but on the other hand it is nice to go to France, to the Champagne area, or even drive to Spain, it's no problem. So I do different events like this, and I like classic 911s because they are easy to drive, simple to run, and you're not really in the shit when you have a scratch.' We won't mention the sill that's recently ridden the Abbeville kerbs,

“It's obvious from Cees's 2-wheel stunts he's no stranger to on-track capers”

well now, even with only one driven wheel! Cees also replaced the ATS cookie cutter wheels and the cabin headlining, and he's trying to find a period radio. He points out the rear view mirror – 'it's the same as they fitted in an RS, and you see the structure on the back of the mirror housing. It is very rare to find one outside of a '73 RS.' The badging on the engine lid reveals another variation in the models: 'Sahara' simply states 2.7 on the grille and 911 on the lid, while 'Stripes' says 2.7 on the grille and Carrera on the lid. 'Sahara' is actually quite a rare car, with 4,014 base 911s made in 1974, because a year later, for 1975 the only 911 available in the US was the 911S (165bhp 911/43 engine, 160bhp in California), thanks to a stricter exhaust emissions policy that called for thermal reactors and exhaust gas recirculation systems. Mercifully the Americans wouldn't have to wait too long until the Carrera 3 arrived, with its 930 Turbo-based componentry.

Cees thinks his Recaro sports seats are one of the first applications in the 911. They may not have been the ones

though the car is scheduled to go on display at Porsche OPC in Rotterdam the week after this episode, so a repair has already been arranged. 'The exhibition there celebrates seven generations, 50 years in the same ownership, and because it would be hard to find a 'G' model that looks as nice as this, the manager called and asked to borrow it because he really liked the spectacular Sahara Beige colour, and you know that ad where you see the seven different colours – green, tangerine, you know all these different colours? Well this is one of them.'

There we have it: a pair of 911s on the cusp of classic and modern, both deferring to the vital US market, though chalk and cheese in terms of their spec as well as their behaviour. 'Stripes' is compliant, 'Sahara' requires a firm hand on the reins, much as I imagine a wilful camel. Cees certainly demonstrated an aptitude for that, two-wheeling most of the lap, though the narrow-bodied car seems a tad incongruous with its big bumpers; so, personally, I'd settle for the striped Carrera's smooth performance and extrovert spectacle. **PW**

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PUTTING THE BOOST IN

Porsche never built a 924 Turbo Club Sport, so Steve Cooper has done it for them. Slammed on Fuchs and with a 220bhp 924 Carrera GT inspired engine, it makes for a wild drive

Words: Steve Bennett Photography: Antony Fraser

We've been here before, in the July 2011 issue of *g11&PW* to be precise. A 924 group test at Bruntingthorpe. Steve Cooper's white over red 924 Turbo attracted us for all the right reasons, and yet when we see the car again, some three years later at the *g11&PW* Picnic in the Park, we're slightly confused. It's the same but, er, different.

The white over red is the same (the launch colour for world market 924 Turbos in 1980), but everywhere else detail changes abound, not least the 16in Fuchs all round, which give this 924 Turbo some serious attitude. Indeed it's amazing what filling the arches and reducing the ride height does to a car's appearance. Tough is the word we're looking for.

Steve's car has attracted quite a crowd and so we muscle in to take a look at the engine bay. Wow! This is something else. It's a 924 Turbo engine all right, but it's, er, different. For a start it's immaculate, but there are bits that are not quite right. The intake manifold seems to be completely different and the fuel-metering unit is in the wrong place. And there's a bigger rad and an intercooler that 924 Turbos never had.

Rewind back to 2011 and within said group test, Steve's 924 was allocated just a few hundred words. Not enough to do it justice, but since then it's obvious that Steve has done a huge amount of work and it's worthy of a much bigger slice of the action. So here we are at the Haynes Test Track at the must visit Haynes Motor Museum in Sparkford to really get under the skin of this hot-rodged 924.

Steve is an unashamed child of the '80s. He owned a 924 in said decade at the age of just 19. These things stick with you, and besides, a 924 at 19 is pretty good going. So no surprise that when Steve did decide to build a car based on those halcyon first car days it was a 924. Well, a 924 Turbo to be precise.

Finding a good one was something of a trial, but the long gone standard 924 that this car is based on started life as a 1980 Alpine White first generation Turbo, and first registered as a demonstrator at Lancaster Garages, Norwich. As is often the way, what

appeared to be a good solid 924 Turbo wasn't quite what it seemed. It wasn't rotten especially, but more tired, slightly neglected and gradually seizing up through lack of use, which is, of course, the scourge of many a classic car that only gets used on high days and holidays.

Steve put it to good use though, installing bucket seats, sorting the suspension and lowering the ride height and even entering the odd sprint at local circuit Castle Combe. But, as ever, full restorations tend to creep up on you. One minute you're attending to a few bodywork issues, the next the car is away for a few months while it undergoes a full bare metal – windows out, front wings off and replaced – restoration. Well, if you're going to do something properly. At this point Steve decided to flip the colour back to the original white over red and the result, as we first saw it three years ago, was pretty smart, particularly on refurbished lattice spoked alloys and with that lowered look.

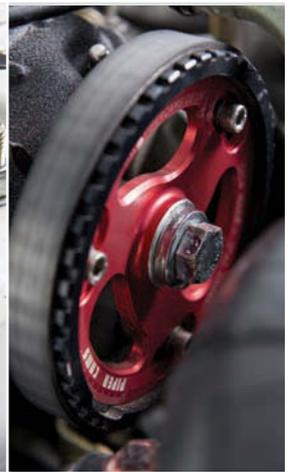
It could have all finished there, of course, but rather predictably the engine started to chuff out oil. It was, as Steve recalls, plain worn out. And this really is where the project takes a whole different engineering turn. An engine rebuild throws up all sorts of possibilities. You can go standard, but where's the fun in that. Or you can look higher up the 924 development ladder and seek inspiration there, which is exactly what Steve did. At the top of that ladder is, of course, the 924 Carrera GT in its various guises. This is the 924 that really floats Steve's modified boat. Indeed he had considered kitting his Turbo out with Carrera GT body panels, but decided to stick with the narrow body stock look. However, a 924 Carrera GT inspired engine under stock bodywork, now that was something to get excited about. And so a rebuild began.

Parts for 924 Carrera GT engines are not exactly abundant. Indeed, they are pretty much non-existent, and what is out there is prohibitively expensive. The Carrera GT was something of a 'bitsa' anyway (bits of this and bits of that), borrowing heavily from the Porsche parts bin of the time. Also, with the benefit of over 30-years of hindsight, what featured as cutting edge turbo technology in the early '80s, is considered to be rather low tech now.



MODIFIED 924 TURBO





Having said that, Steve was determined to retain much of the technology in as much as he decided not to go down the 'digital' route. By that we mean he's stuck with mechanical solutions and resisted the temptation to introduce full ECU engine management, fuelling and ignition, all of which would have made his job a lot easier.

Where the 924 Turbo struggled back in the day was with cooling. It didn't feature an intercooler for example and while the Carrera GT did, it still wasn't really very efficient, sitting on top of the engine as it did. These are the areas that Steve decided that he really needed to address with his engine build. Keeping his turbo build cool would enable him to run more boost.

But we're turning the boost up too early here. Steve decided that what he needed was a good strong base engine and so he had the standard 2-litre lump rebuilt by race car engine builder Maynards of Stroud. The standard bottom end is balanced and lightened and tough enough for the job, but he did decide on Omega forged pistons to slightly raise the compression ratio to 8.2:1. The rods are clamped to the crank with ARP fasteners. At the top of the engine the head has been hand finished and features a Piper 270 cam, plus an adjustable vernier pulley. Turbo

Using the 944 Turbo's radiator has meant re-routing the cooling system too, with the header pipe running along the top left hand side of the engine, or to put it another way, where the fuel metering head used to be. Steve has relocated this to the right hand side of the air filter.

In standard form the 924 Turbo produces 170bhp and 180lbs ft of torque at 0.7 bar of boost, while a 924 Carrera GT will knock out 210bhp and 207lbs ft. With its various modifications and bigger Carrera GT turbo, Steve's car is now producing 220bhp and 250lbs ft of torque at the same 0.7 bar, which is limited more by his mechanical/clockwork ignition and fuelling set up than anything else. With 1.0 bar of boost, Steve reckons that he'll be on for 250bhp but the sparks and the fuelling both need to be wound up to match the forced air feed. The factory Carrera GTs used a 928 fuel metering head running eight feeds into the 924 Turbo's four injectors, which Steve is looking at fitting, but he needs more flexibility with the ignition curve and to that end he's planning on fitting a Mittelmotor electronic distributor from Germany too. But we're getting ahead of ourselves here, because as we're soon to discover, 220bhp and 250lbs ft of torque is plenty in something that weighs

Left to right: Interior features body-hugging Cobra bucket seats and a full cage. Adjustable top camber mounts allow for a myriad of suspension set up options. Adjustable vernier pulley for spot-on cam timing

“Steve has stuck with mechanical solutions and resisted computerised engine management”

wise Steve has used a Carrera GT spec K26 turbo.

So all fairly straightforward so far, but as we've already intimated cooling is always an issue on turbo cars and Steve was determined to make his run as efficiently as possible and came up with a very neat solution to both cooling the engine and the charged air. He decided to run with a 944 Turbo radiator and intercooler, both of which sit parallel in line with each other. In order to really get a factory fit and finish, Steve transplanted the inner front end of a 944 Turbo complete with all the appropriate fixings for the radiator and intercooler. It looks factory because, well it is factory.

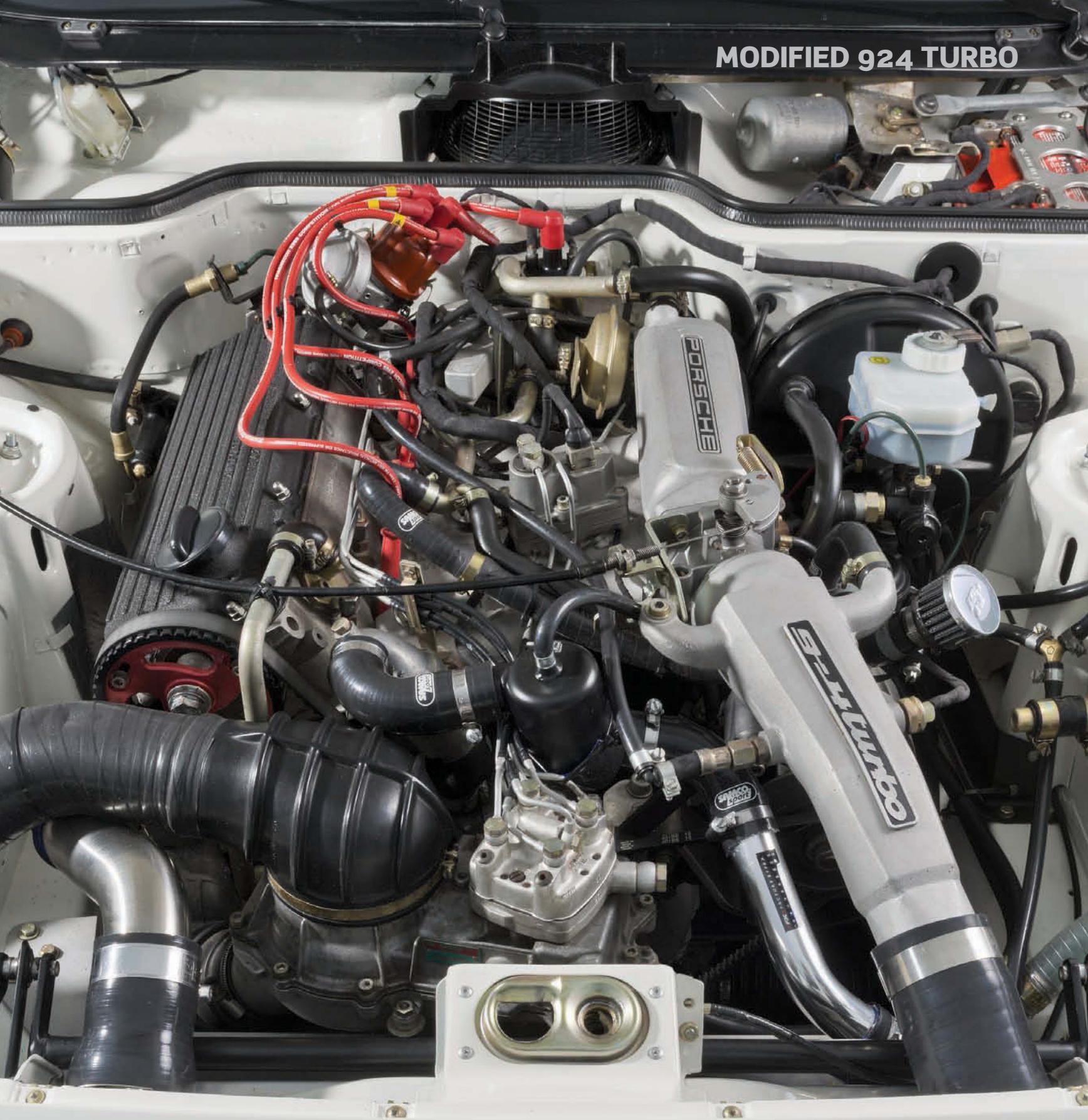
Steve's Turbo retains the factory Bosch CIS fuel injection system but you might have spotted that the plumbing under the bonnet is rather different to the standard 924 set up, particularly with regards to the inlet and plenum chamber. Steve has modified this to take air straight from the front mounted intercooler. It's a neat job and a lovely piece of fabrication to boot.

just 1100kg compared to the standard car's 1180kg.

Steve has taken as much weight as possible out of the car as possible, without getting too obsessive about it. Whilst undergoing body prep for the respray Steve removed the sound deadening from inside and underneath. He's also removed the rear seat and replaced the standard, heavy, electrically operated flag style mirrors with manual door mirrors as found on the 924 Carrera GTS and 944 Turbo Cup cars. These are ultra rare and the result of some persistent eBay searching.

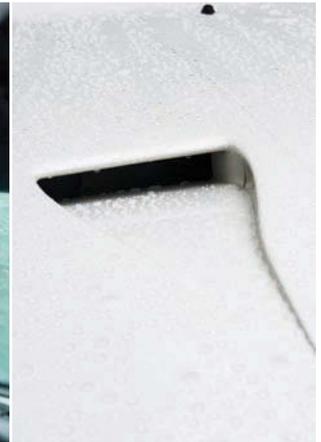
Chassis wise Steve's machine is running Gaz Gold coilover suspension and polybushes plus 968 Club Sport anti roll bars. The chassis was set up to be a good working compromise between road and track, although Steve concedes that he's still fine tuning and he would possibly not go down the full polybush route if he were doing it again. There is such a thing as too stiff for the road. The fabulous 7x16in Fuchs are shod with Yokohama A048s, completing the rolling stock.

924 TURBO AT 35
2014 marks the 35th anniversary of the 924 Turbo's UK launch. The highly active 924 Owners' Club is organising a Turbo 35 event at Donington on May 18. The aim is to gather 35 924 Turbos together. If you've got a 924 Turbo, or just want to attend, then get in touch. Equally, if you've got a 924 of any description, then you really should be in the club! www.porsche924.co.uk



We do like a good clean engine bay! Hidden under the front panel is a 944 Turbo radiator and intercooler. Inlet has been repositioned and modified to take a feed from the intercooler. Turbo is from a 924 Carrera GT. Power is up from 170bhp to 220bhp at 0.7 bar boost, but Steve is looking to run 1.0 bar and 250bhp, via a modified distributor and increased fuelling





So time for a drive. I'm no stranger to the inner sanctum of a 924, although with the twin Cobra Suzuka Pro seats and Schroth harnesses, it does feel very snug. Prime the ignition and the fuel pump whirrs and chatters and then with a quick twist of the key, the modded engine jumps to it with a fizzing, four-cylinder rasp.

Throttle response is super-sharp for a turbo and every resonance can be felt buzzing through the body. In short it feels alive, and we're not even moving yet. The clutch is light and there is the small matter of the dog-leg gearbox to acclimatise to. First is back and to the left, with the remaining four speeds in reverse of the usual conventional H pattern. It takes a little getting used to to begin with but the fact that the rebuilt

make itself known from seemingly not much more than 2000rpm. With vital fluids warmed and tyres at some sort of temperature Steve encourages some boost exploration.

So with 1100kg and 220bhp, I'm expecting fast, but with a turbo it's all about the delivery. It can come in one great explosive hit, or it can come in a controlled surge. The latter is better and that's exactly what Steve's car achieves. The boost is strong from 3000rpm to beyond 5000rpm giving a good useable powerband rather than an on off switch of boost. So civilised, yes, but not totally civilised by the standard of modern turbos. This still has a retro kick to it. It feels exciting and visceral to drive and really comes alive the harder and faster you push it.

Despite being a huge fan of the 924 Carrera GT, Steve resisted the temptation to fit a Carrera GT bodykit, and we think it looks all the better for it, particularly lowered and on 16in Fuchs

“Throttle response is super-sharp and every resonance can be felt buzzing through the body”

'box is slick and precise helps.

At just plodding speeds Steve's 924 feels lumpy and not entirely interested. The wheels tend to drop and crash into the road's undulations. It's the compromise of a stiff suspension set up, but as the pace increases, then the ride improves and the suspension starts to work. The steering too starts to lighten up. It's non-power assisted and a reminder of how things used to be full of feel, feedback and texture. It's all coming together, time to introduce the engine.

So far it's been ambling along on a trickle of boost. Frankly I was expecting old school turbo lag, but even at warming up speed it's obvious that there is a degree of flexibility as the turbo starts to flutter and

There's an edge here that only something this light and uncompromising can give you. It's not for everyone, and it's not for everyday, as Steve concedes. It is, though, perfect for the sheer interactive fun that comes with an ever-evolving project. Build it, drive it, that's what it's all about. Oh, and hopefully never finish it, because then what are you going to do?

Is this the 924 Turbo that Porsche would have built if they had developed it to Club Sport spec? Steve likes to think so and we kind of agree. Ultimately, though, it's Steve's interpretation and as such it's unique. We leave him pondering his new electronic dizzy and the next stage of the development curve. Perhaps we'll be back in another three years. **PW**

CONTACT/THANKS

Thanks to Haynes Motor Museum for use of the test track. The museum has been undergoing a £5m redevelopment which will open in spring 2014 and will be well worth a visit

White over red colour combo really works and lowered stance gives the 924 a very different visual appeal. Hard to believe the design dates back nearly 40-years!



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SPECIAL BREW

There's nothing like a nice cuppa, and this 993 is running a very nice Cuppa indeed – in fact, a genuine Carrera Cup engine, no less!

Words: Johnny Tipler
Photography: Antony Fraser



993 CARRERA CUP 3.8

High on the banking, the taut 993 chassis squats, its Manthey suspension compressed. Steady throttle, and all the while I'm looking around the long, left-hand turn to perceive the track rushing into view.

Fourth gear, 5,000rpm. We can go faster up here than around the bottom where it's flat, but even at moderate velocity the centripetal forces push the car down onto the surface. No lifting – instant oversteer would elicit a nose-dive. All too soon, the angle levels out, I grab fifth for the quarter-mile straight, then pitch left, brakes full on and drop a couple of cogs for the Snake, which is a different ballgame altogether.

We're at Chobham test track, the former MoD proving ground where, years back, you could be sharing the banking with a tank transporter, the Snake with a Saracen armoured personnel carrier. 'Moderns' specialists JZM have kindly lent us the 993, and this is one that really floats my boat. Nothing wrong with the regular model, nor indeed the Turbo. But this is a stand-alone car, a 993 with attitude, a pet project that's been pampered, lavished with the best ancillaries available, an exotic blend of high-end standard equipment and tailor-made claddings. Not least of which is the authentic 3.8-litre 993 Carrera Cup motor.

It started off in 1995 as a standard, narrow-body 993 C2 and, ten years on, the transformation began with the removal of its 100K-mile 3.6 engine. Neil Bainbridge of Buckinghamshire-based experts BS Motorsport was entrusted with rebuilding it, incorporating 3.8-litre barrels and pistons. The story goes that the 3.8 flat-six worked nicely enough, but the owner, one Giles Veitch, was inclined to seek more torque. Before BS Motorsport could tackle that task, Veitch spotted an advert placed by Manchester-based breaker's Porscha-Recycled in the PCGB club mag, offering a 993 Carrera Cup engine. It was the real deal, having been removed from a car wrecked during a Japanese trackday crash. The engine number is 63W80502, its M64/70 designation verified by Porsche GB, and an investigation beneath the cam covers revealed solid RSR rocker arms. The valve train was designed so that the engine could endure gearshifts missed in the heat of Supercup battle, safe up to 7,800rpm. So that lets us off the hook then!

And thus, another engine transplant took place. The Carrera Cup unit was mated with the five-speed gearbox that Neil Bainbridge had already rebuilt. That transmission benefited from steel synchros and a limited slip diff, incorporating an RS lightweight flywheel and clutch, the latter fitted subsequently at Jaz in Wembley. There's a Sport airbox and K&N Power air filter too, plainly visible with the engine lid lifted. The exhaust system is a work of art in itself, made up of CarGraphic manifolds and cats, allied to Roock Racing silencers with polished tips, and the scream it produces is nothing less than awesome, popping and banging even at a standstill, let alone on the overrun when it sounds like it's in full-on banshee mode.

The Cup motor provided the extra torque the owner sought, and after installation the car visited Chip Wizards in Lancashire in 2010 for a remap, where it logged 318.9bhp with 310lb/ft torque on their dyno, which translates as 155.1mph at 6,010rpm. That's a bit better than the 'normal' 1996 Cup engine, which is quoted as 315bhp at 6,900rpm, with max torque at 273lb/ft at 5,500rpm. For the record, the 993 3.8 Carrera RS





develops 300bhp at 6,500rpm and 262lb/ft torque at 5,400rpm. Its 0-62mph acceleration time is 5.0sec, topping out at 172mph. We didn't check performance figures on this car, but save to say that the 1995 Carrera Cup (and Supercup) 993 went from 0- to 62mph in 4.7sec and, depending on gearing, could reach 174mph. So it's a real blaster, dishing up instantaneous throttle response, fabulously quick acceleration at the tips of your toes, and vast reserves of power available. It seems to me almost turbo-like when, accelerating hard in third at 5,000rpm, another shovelful of boost comes into play, rushing the car harder onwards. And on the Chobham

test track you do have to row it through the gears, which is all part of the fun, and though it certainly is a torquey enough engine, to get the maximum zing out of it I'm working the box hard between third, fourth and fifth, where everything happens very quickly indeed.

The ride is firm and jiggy, as you'd expect with a car set up like this for track work, though the 993's multi-link rear set up makes it less harsh than the 964 3.8 RS. It boasts full Manthey/KW V3 coil-over damper suspension, aided and abetted by RS adjustable anti-roll bars front and rear, uniball top mounts all round, and RS lower wishbones. There's a cross-brace linking the front

Above: Lightweight door panels are all part of the lightweight ambience, although creature comforts such as carpets are retained. Leather trimmed Recaro bucket seats combine luxury with function. Dash and centre console also leather trimmed



suspension turrets too. The ride and handling were sorted by specialist Chris Franklin at Center Gravity in Warwickshire, where kinematic toe arms and new rear camber arms were fitted, and dampers, camber and roll bar settings were adjusted to apply the power more efficiently.

It's smooth as butter-icing, loping along at 90 on the motorway run back to JZM's Hertfordshire base, though these upright Recaros with their erect torso configuration are a tad unforgiving, and I'm quite close to the dished Momo three-spoke steering wheel – with its (helpful?) yellow hoop at the straight-ahead, and no airbag of course. But you can rattle along very rapidly on A- and B-roads and then your attention is well and truly grabbed. The precision with which it turns in on the backroads is beautiful, apparently viceless in the dry, with no tendency to oversteer, inspiring a feeling of harmony between car and driver. I'm falling for this one...

Within the cockpit, the Recaro Pole Position bucket seats are enfolded by sets of Schroth five-point harnesses, which are anchored off the rearmost transom of the roll-cage protecting the rear half of the cabin. Being a bolt-in cage it can easily be extended to shield the whole interior for trackdays. The door-cards feature lightweight RS thongs to pull them open, but the electric

windows are retained. Replacing electric seats with Recaros and omitting the rear ones appear to be the only weight saving measures in the RS-imitating repertoire. However, a glance in the engine bay reveals that the air-con compressor has been removed, so we don't have that hefty inconvenience to worry about. The entire cabin was reupholstered by long-established trimmers Southbound down in Hampshire, including fitting and cladding the Recaros in leather, and covering the dashboard, door cards, glove box and lower console in leather to match. It's got an Alpine stereo, which I didn't switch on, but that's a manifestation of the car's more civilised persona. And that also includes a sunroof, the better to hear the delightful exhaust note. On the other hand, some amenities took a hit, and there are no back seats, and the rear screen was swapped for an RS version, which had thinner glass and excluded the wiper.

Externally it's uncluttered, commendably restrained in appearance. A full respray in (later) Polar Silver was administered during the course of a four-week programme of upgrades at C&N Customs in Oxfordshire. The front end sports a genuine RS splitter and spoiler, RS side-skirts and RS fixed 'whale-tail' rear wing (rather than the enormous two-tier RSR Supercup wing), and there's no badge or decal embellishment, so it's only the BBS



“It’s a real blaster, dishing up instantaneous throttle response”



The 3.8-litre Cup engine is the real deal taken from a crashed Cup car. After some tweaking by Chip Wizards, it produces 318bhp and 310lb/ft of torque. BBS LM split-rims are a wheel design classic. Below: Lowered stance is spot on. Chassis set up by Center Gravity



“You have to be travelling much quicker in a 993 Turbo or GT3 to get the same buzz that’s available in this car”



wheels that suggest that it’s anything other than a 993 RS. The BBS LM split-rims are ostensibly trackday items, and look more purposeful and race-biased than the heavier, turbo-style Roock split-rims and Pirelli P-Zeros that previously adorned it. The latticework BBSs are shod with Yokohama Advans, 225/40 R18s front and 265/35 R18s rear. They’re not N-rated, but I wonder how much that matters, given the quality of contemporary tyre technology. Answers on a postcard...

There are other ways to make a standard 993 go quicker. What’s wrong with a 993 Turbo, for starters? Absolutely nothing; just that the Silverware we have here delivers in a very different fashion. A 993 Turbo is bonkers in an anaesthetised way, and once you’re over going quickly it’s not much different to a standard 993. The Cup car is sufficiently wilful that you can have fun at low speed too: it can easily be goaded into moving around at 30-40mph, and the slightest overindulgence on the throttle provokes wheelspin and the back end to come out of line. Wet and leafy as Chobham is first thing, it’s highly entertaining, especially on the Snake, curves like coils and winding hills like the Nordschleife compressed – with no barriers but the autumnal trees. Here you don’t have to be such a navvy as on the banking, more a dexterous stirrer, artfully twirling the Momo and feeling for the apexes, juggling the throttle as the back end finds its breakaway point. The 993 is a little edgy along here and I’m constantly at the ready to apply some correction. I notice my pinky fingers are even crooked, as if sipping tea from Grandma’s Spode. Mid-morning the sun comes out, and the more it dries out the more confidence inspiring it becomes, and I can start to attack the corners with greater vigour. The brakes are sourced from the 993 Turbo, 322mm cross-drilled ventilated discs, with cooling ducts for the front set, which are the same size calipers and pistons as the RS and slightly smaller in the rear, though nevertheless amazingly powerful, so that anchoring up hard in a straight line pitches me firmly into my Schroth harness. There’s a fine balance to be struck between power, traction and grip, not to mention ability, a factor compromised by prudence!

Looking around for performance parameters to compare it with, the only other Carrera Cup car I’ve driven is a 964 3.6, plus another (Des Sturdee’s) with a turbo. And this isn’t like either of those raw beasts. It’s way more civilised. No doubt, you have to be travelling so much quicker in a 993 Turbo or GT3 to get the same sort of buzz that’s available in this car. There’s a paradox in the performance versus excitement ratio: the higher up the spec sheet you get in factory-built cars, the faster you can go but the fun factor is suppressed. In a 991 it’s possible to be doing 170mph on the autobahn and still hold a polite conversation: it’s so civilised it hardly qualifies as a sports car any more, but step back a decade or two, slip in a few performance quirks, and there are thrills in abundance.

Downsides? The suspension is hardcore, ride-height 5mm lower even than an RS, so inevitably you do get thumps and bonks from both ends as you ride potholes and drain covers. Transmission noise is omnipresent too, and I’m guessing that a certain amount of sound deadening has been removed. It has a lumpy tickover, and at traffic-lights it rumbles and grumbles, and that coarse grinding sound is evident when the throttle is floored at low-ish revs. But that’s



not a problem, it's just how it is.

It's not a faithful recreation of a 993 RS; it's a one off, a combination of different parts applied in the course of a previous owner's vision, his quest for the ultimate trackday spec. We come across them regularly, modded 911s, but this one has been properly thought through and it actually works. The main mods were done over five years ago, and the car has changed hands twice since. 'It's not a faithful recreation of an RS,' says JZM sales manager Russ Rosenthal, 'it's a Heinz 57, but everything's been executed very well, and all the additions would be expensive to replicate. There are lots of different threads of DNA in it, and that makes it a unique package. For the owner, it's all about the chase and then building it, loving the project, and they live with it for a few months and then something else takes their fancy.' The sums of money involved are considerable: Russ estimates about £100K went into the creation of this car, though the Carrera Cup engine was probably cheap at £9-grand. Back in 1995, the 993 RS cost £65,250, and today could fetch up to £150K, which makes our Silver Spooner pretty good value, though of course it will never be a genuine RS. As Russ observes, 'to start now, that would be an incredibly expensive project to get into, so the next owner reaps the benefit of all that work having been done – for half the price, though no doubt they won't be able to resist the temptation to tinker with it as well, and

it'll spur off on a slightly different route; it's that kind of car!' And if, in the course of your project you hand the car over to the right people, like Neil Bainbridge and Center Gravity, the likelihood is that it will behave very nicely. As Russ says, 'over the years a number of specialists have breathed a bit more life into the car to make it more interesting. That car is a one-off, and it will always be a work in progress, constantly evolving according to the dreams of each successive owner.' The sheaf of bills that go with it identify virtually every last nut and bolt, dyno test and suspension alignment it's been subjected to over the past ten years, testimony to the fortune that's been heaped upon it.

This is the third time the car has adorned JZM's showroom, and Russ is confident it will soon find a good home: in fact he and I have a bet that he'll have sold it before you read this. It's done 57,411 miles, and it's priced at £54,900, a reflection of the appreciating values of air-cooled 911s. 'It is a niche car,' he says, 'but they're all doing well, standard cars as well as modifieds, which now have a recognised slot in the marketplace, and the donor cars are rising at the same rate.'

I love a 911 with attitude and, silver or not (sorry Jude), this one has bags of that. There's also a bit of the Doctor Jekyll and Mister Hyde about it, ruthless gladiator one minute and prim librarian the next: your call. But it is addictive: a strong brew indeed! **PW**

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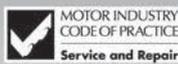


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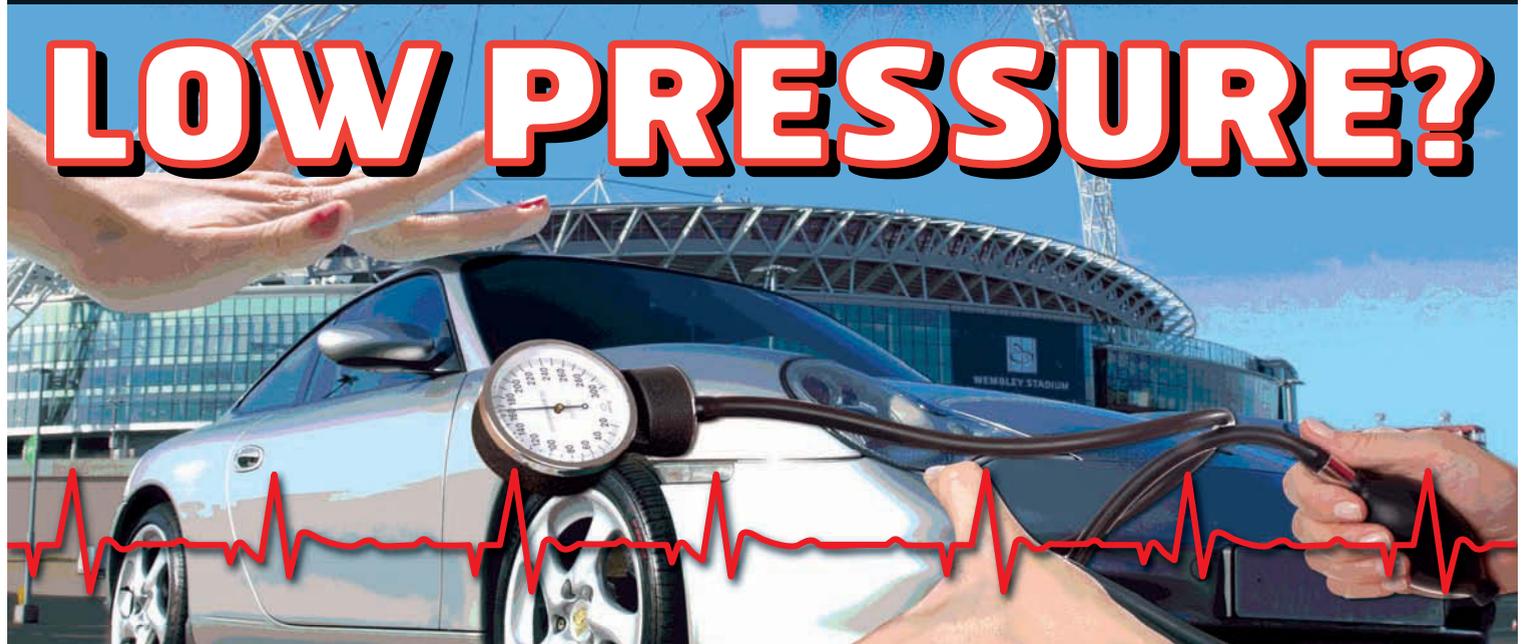
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PORSCHE ARCHIVE

BRAKING WITH TRADITION



It's pretty much taken for granted that modern cars have good brakes – after all, even the lowliest of hatchbacks is equipped with discs these days. But it wasn't always that way... Keith Seume follows the path of automotive brake design and development, and how Porsche applied it to its cars, from the earliest drum-braked 356s to the disc-braked 911s

Words: Keith Seume
Photos: Porsche Archiv and author's collection

Man has always been preoccupied with going fast – faster, that is, than he could walk or run. Who knows precisely when he first jumped on a horse's back and galloped towards the horizon, leaving his companions staring in disbelief. And who was the first person to bolt a set of those new-fangled 'wheels' onto a sled, before rolling out of control down a hillside?

The sensation of speed must have been pretty intoxicating, the exhilaration tempered only by the terrible realisation that, unless something was done pretty damned quick, there was going to be pain involved as human body met stationary object. While pulling back on the reins might work with a horse, trying the same approach with a piece of rope attached to an axle on a crude cart isn't really going to achieve very much.

The first braking systems were simple, consisting of nothing more than a wooden block being pressed against the circumference of a wheel. Interestingly, many railway wagons still use much the same set-up today – it's cheap, and heat can be dissipated in part through the wheel and into the rails of the track. This only works as a design if the wheels are solid, without tyres, or are equipped with solid hard-rubber tyres. It's not a great design as far as cars are concerned, for rather obvious reasons...

The advent of pneumatic tyres and the increasing speed of vehicles meant that such simple brakes were impractical, so automobile makers applied themselves to the development of alternative systems. Among these were brakes designed by Oldsmobile, consisting of a crude metal band acting round a solid drum attached to an axle – as the band was tightened, so the vehicle would be slowed. But the bands wore out, stretched or broke. The whole band-based system also took up a lot of space.

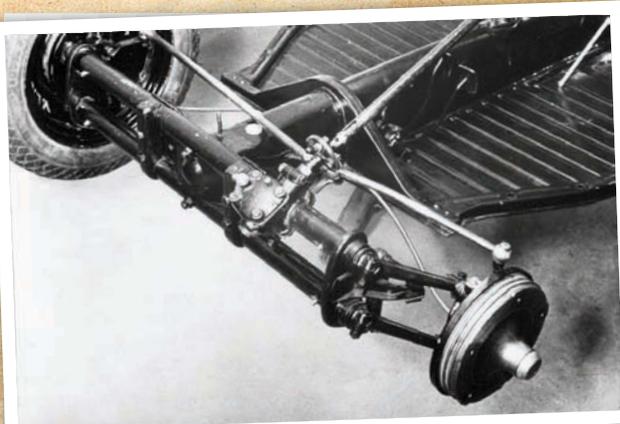
A better alternative was the drum brake. The concept dates back to the late 1800s when it was used on carriages, but its first use in an automotive application is said to date back to 1902 and the designs of Louis Renault (there is also some evidence that Maybach may have beaten Renault to it by a year, but it remains unsubstantiated).

The drum brake became the accepted norm in the automotive industry for the next 60 years, with the majority of mass-produced cars relying on four-wheel drum brakes until the mid-1960s, and beyond.

The drum brake is a clever solution to the problem of how to bring a car to a halt. In simple terms, it consists of a cast-iron drum inside which two brake shoes are forced outwards, either by cable operation or hydraulics, to rub against a friction surface. The brake shoes were traditionally lined with an asbestos-based material, but this gave way to an organic-based material once asbestos's rather nasty properties came to be fully understood.

The advantages of drum brakes are that they are – or can be – relatively compact, and are also relatively inexpensive to manufacture. However, a downside is that drum brakes are prone to fade, as they are not great at dissipating heat. Also, to

“The first braking systems were simple, consisting of nothing more than a wooden block pressed against the wheel...”



improve their efficiency, you either need to increase the diameter of the drum, or its width.

This was never a problem when cars ran large-diameter wheels, and even absurdly powerful, ridiculously fast pre-War Grand Prix cars such as Ferdinand Porsche's legendary Auto-Unions relied on drum brakes to haul them down from near-200mph speeds. In fact, take a look at almost every pre-War sports car – Bentleys, Mercedes, you name them – and you'll see they're equipped with drum brakes at all corners.

This was partly a case of braking systems taking advantage of relatively crude tyre technology – increasing the tyre diameter meant that the contact patch was correspondingly increased, giving better grip. Tyre development wasn't yet at a stage

The 'curved dash' Oldsmobile (right) was one of the first cars to tackle the thorny problem of how to slow from speed – it featured a simple metal band acting on a solid drum mounted to the rear axle

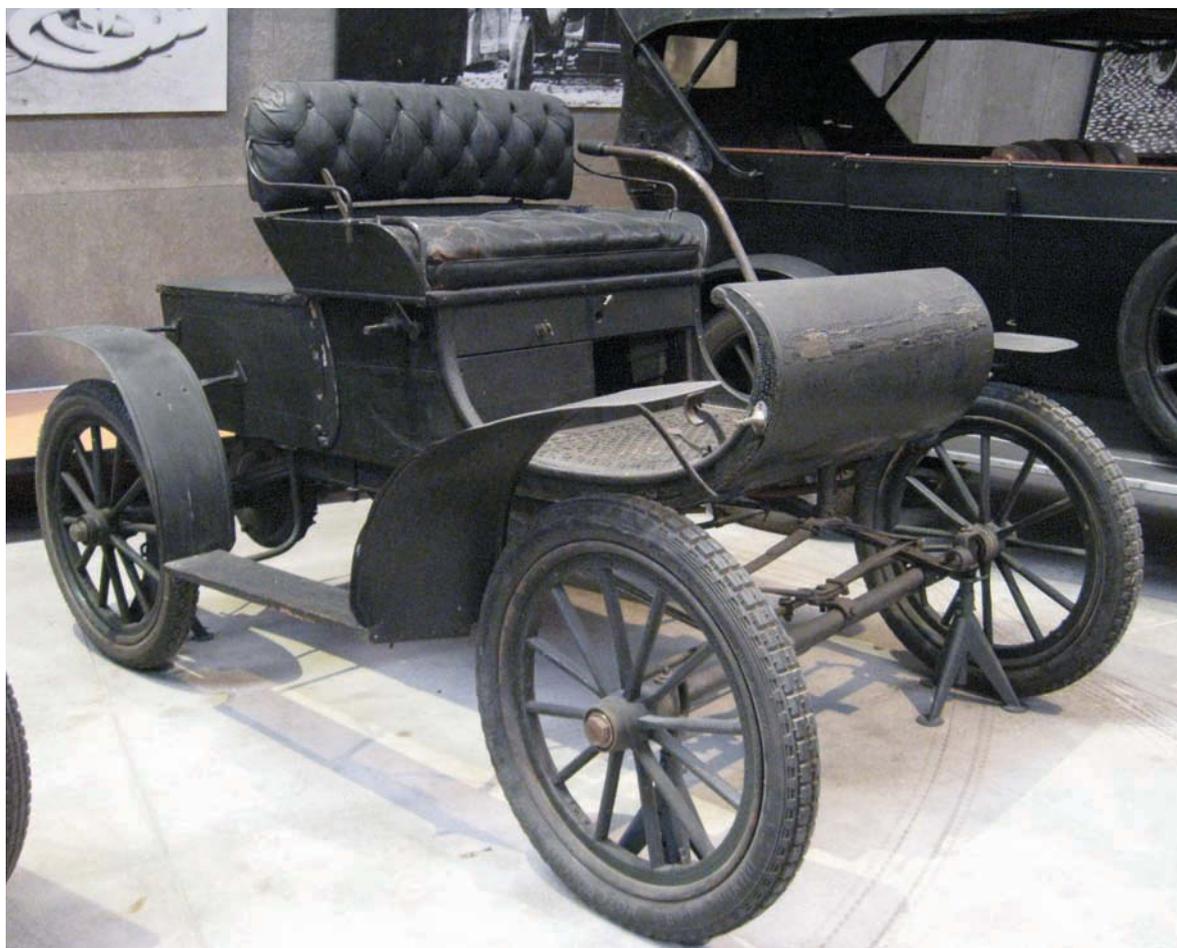
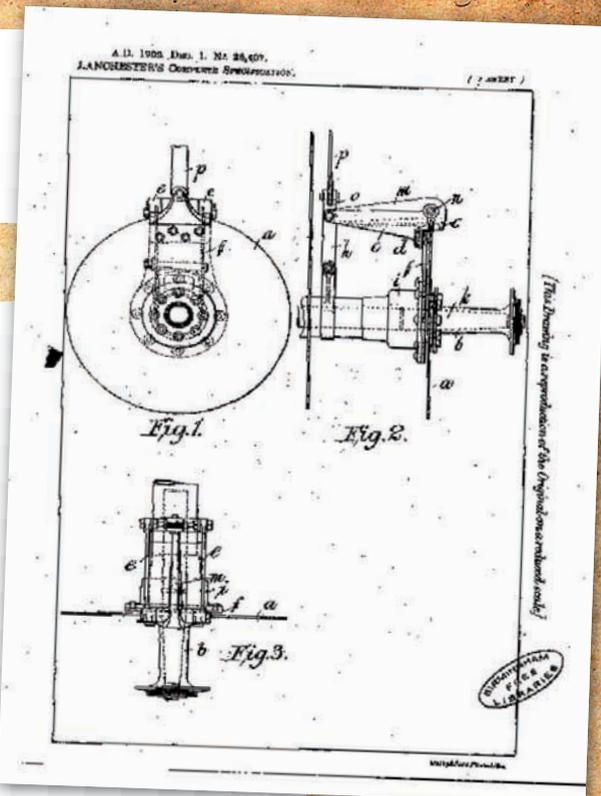
where reducing diameter and increasing the width was an option, so even racing cars were fitted with tall, skinny tyres and big drum brakes. It wasn't a perfect situation by any means, but it worked and everyone seemed happy, despite the inevitable

tyre failures as horsepower increased beyond the tyre's rather modest capabilities.

Looking back, it seems a little odd that a majority of pre-War cars featured mechanically-operated drum brakes because, in 1918, a certain Malcolm Loughead invented the four-wheel hydraulically-operated braking system.

Loughead was a member of the Lockheed family, which was primarily involved with the aviation industry. His system relied on a master cylinder being used to push fluid through a network of small-bore pipework to smaller hydraulic (slave) cylinders mounted within each

Starting point for Porsche braking systems can be said to be the first pre-War VW prototypes (above left), but the roots of the disc brake can be traced back to Lanchester's original 1902 patent (above)



brake drum, which in turn forced the shoes outwards to make contact with the friction surface.

The first car to be equipped with four-wheel hydraulic brakes was the 1918 Duesenberg but it would take another decade before they became commonplace on other prestige marques, and another decade and a half before they became the norm across all markets. In fact, it was still possible to buy a VW Beetle 'Standard' equipped with cable-operated brakes right up until April 1962...

The first Porsche prototype, chassis number 356.001 of 1948, relied on mechanically-actuated drum brakes 'borrowed' from a contemporary VW Beetle. This was purely a case of Porsche being forced to use what was readily available, but by the time the first coupé - chassis

number 356.002 - appeared, Porsche was using four-wheel hydraulic drum brakes supplied by Lockheed. These were more efficient twin-leading-shoe drums (ie, they featured two slave cylinders per drum, each operating its own brake shoe) and were clearly far superior to the VW-based cable-operated brakes.

Unfortunately, by the time Porsche moved from Gmünd in Austria back to Stuttgart in Germany, the deal with Lockheed had fallen through because of a licencing agreement between Lockheed and Alfred Teves (better known as 'ATE'). For reasons which are unclear, ATE refused to supply Porsche, so the Stuttgart-based manufacturer was forced to look elsewhere. Fortunately, in 1950 Volkswagen had



introduced its own hydraulic brake system, available on 'Export' Beetles, which Porsche opted to fit to the first Stuttgart-built 356s.

The cast-iron brake drums worked fine on Beetles but were a little overstressed when used on the faster Porsches. The problem was fade, due to heat build-up when repeatedly braking from speed, such as on a race track. Porsche attempted to get round this problem by pressing ribbed cast-aluminium rings onto the stock VW drums. It offered a simple short-term solution but didn't prove to be particularly effective.

At around this time - and pinning down precisely when certain changes were made at this point in Porsche's history is far from easy - Porsche began installing twin-leading-shoe Lockheed/ATE drum brakes, which were 230mm in diameter.

Then, in October 1952, they introduced all-new 280mm cast-aluminium drums which featured shrunk-in steel liners. These were a major improvement over what had gone before, with radial cooling fins which served not only to help dissipate heat but also to prevent distortion. The new brakes offered a 40 per cent increase in friction area yet still weighed around 1Kg less than the smaller cast-iron drums.

Porsche continued to use these radially-finned aluminium drum brakes until the introduction of the 356B model in 1959 when a new design of drum was introduced, featuring 72 lateral fins to further improve cooling.

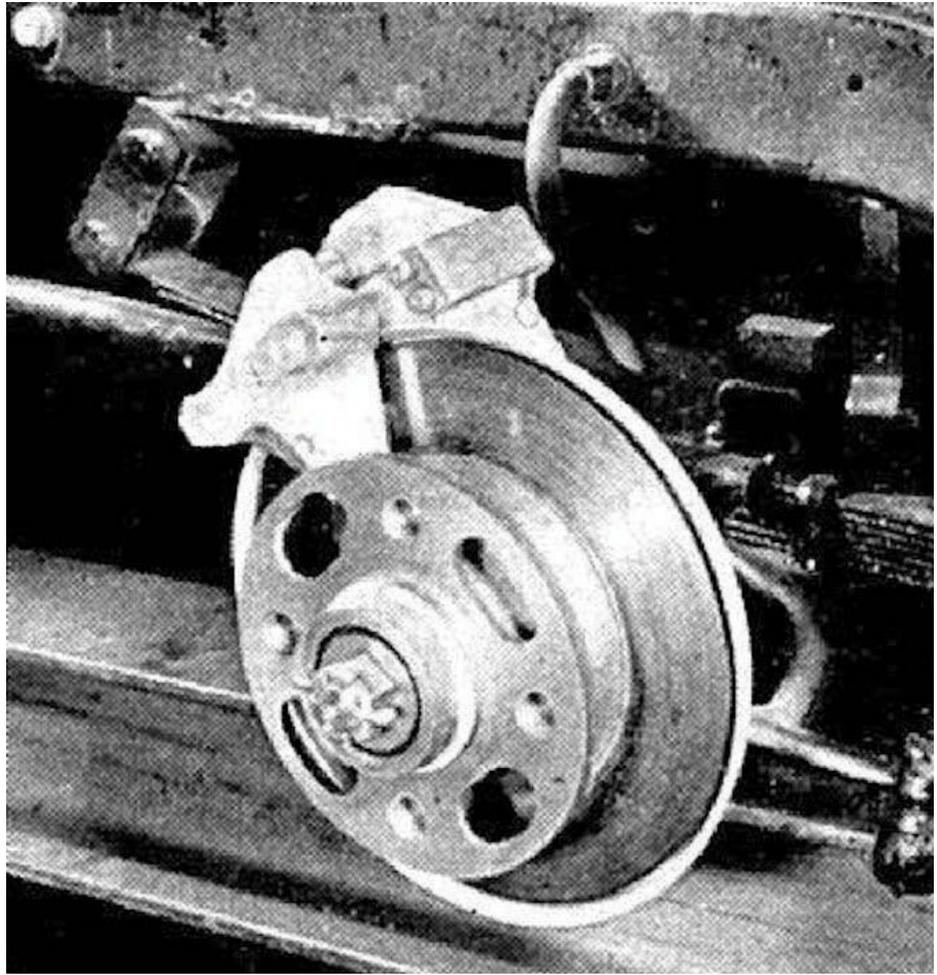
The ultimate drum brake used by Porsche was the heavily-finned 60mm-wide aluminium unit used on the 356 Carrera GT and originally developed for the 550 Spyder. Drum brakes remained in use on all 356s (with the exception of the Carrera 2, of which more anon) until the introduction of the 356C in 1963, with its four-wheel disc brakes.

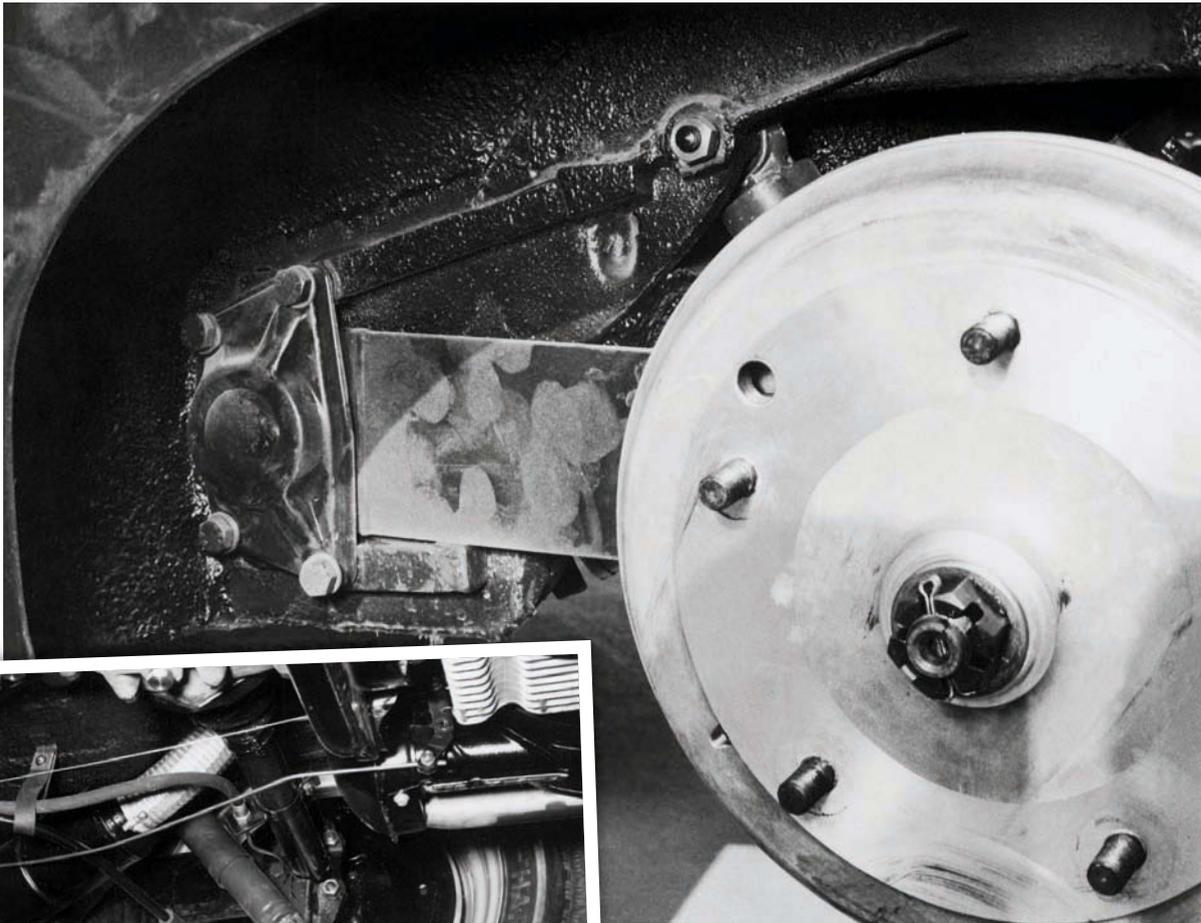
Ah yes, disc brakes... Many people are of the impression that it was Jaguar which, with the Le Mans-winning C-Type of 1952, championed the disc brake. Well, it's true, the C-Type did carry four-wheel disc brakes, but the roots of the design go back far further than that - right back to the 1902 patent registered by Frederick Lanchester from Birmingham, in fact.

Lanchester's design consisted of a steel disc riveted to the wheel hub. A simple caliper, which was said to resemble a pair of pliers, had one jaw fixed to the axle, the other connected to a bell-crank, gripping the disc using a copper-faced pad as the friction material.

Lanchester's disc brake was a promising start but

Bizarre-looking 1949 Crosley (above right) is credited as being the first car fitted with true disc brakes. Crosley's design (below) differed little to similar systems still in use today





The first major advance in Porsche braking came in October 1952 when Porsche fitted its 356 with these large cast-aluminium drum brakes, each fitted with a shrunk-in steel liner. Radial fins helped add strength and aided cooling

the idea was more or less ignored for four decades. It seems that the American manufacturer Crosley was the first to adapt a disc brake to a production car, although Chrysler also makes that claim.

The difference is that Crosley's was a true disc brake as we know it today, whereas the Chrysler design consisted of a pair of metal discs that were pushed against the inside of a drum.

Citroën is credited with the honour in Europe, as it built a small number of road cars – more correctly DS prototypes – in 1955 with disc brakes, but Austin-Healey sold 50 of its race-ready 100S with discs that year, too. Then Triumph fielded a team of disc-brake-equipped TR2s

in the ill-fated 1955 Le Mans 24-hours ahead of the launch of the similarly-braked TR3 production model in October that year.

So, the 'disc brake race' was won by Lanchester in 1902, followed by Crosley in 1949, Jaguar in 1952, and then Citroën, Triumph and Austin-Healey in 1955. But Porsche was nowhere to be seen...

Porsche could be a stubborn company, and tended to rely on tried and tested ideas in certain areas. Porsche was innovative in many ways but when it came to brakes, there was a reluctance to make changes for change's sake.

The large aluminium drum brakes used on all Porsches, both road and

track, since late in 1952 were deemed perfectly adequate. True, Porsche race cars were lighter than most rival machines, placing less of a strain on the brakes, but surely there had to be a benefit to using this new-fangled disc brake technology?

In 1958, Porsche finally embarked on a new project, Type 695 (not to be confused with the later pre-911 prototype of the same title), the aim of which was to develop a disc brake for use on both road and competition models. Much of the research was carried out by Porsche's own engineers, but they also welcomed input from Britain's Dunlop, one of the leading suppliers of disc brake systems.

Birmingham-based Dunlop provided Porsche with a complete package of wheels, brakes and tyres, much as they had for Jaguar on the Le Mans-winning C- and D-Types. Porsche, meanwhile, had been developing its own set-up, which was significantly different to the Dunlop design.

Dunlop's was relatively conventional in layout, with a cast-iron disc gripped by a hydraulically-operated caliper located at the outer edge of the disc. Porsche's was something very different, which we will come to in a moment.

To put the new Dunlop-style brakes to the test, it was decided to install them on a 356 Carrera coupé entered in the 1959 Nürburgring 1000km race, to be driven by Herbert Linge and Baron Pucci.

The car ran in practice with Porsche's own disc brakes, but these were swapped for the race to a set of Dunlop discs. Porsche's Klaus von Rucker is said to have found the Dunlop brakes to be perfectly acceptable in testing, but once subjected to race conditions, everything changed for the worse.

'Unfortunately,' recalled von Rucker, 'the result was very bad. After 27 laps, the car had to be called into the pits to have the brake pads replaced, the originals being worn down to the metal backing.' This was an unacceptably high rate of wear and the decision was made to continue using the tried and tested drum brakes, 'at least for

“Lanchester's disc brake was a promising start, but the idea was more or less ignored for four decades...”

the time being. They (disc brakes) will not be used on production cars unless our own version of the disc brake produces better results,' said von Rucker.

Porsche's own design of brake was certainly interesting. Rather than mounting the caliper outside the disc, which itself was normally bolted to the centre of the wheel hub, the Porsche set-up mounted the caliper inside the disc, which was bolted along its outer edge to the wheel hub – this design capitalised on the 'wide-five' VW-derived bolt-pattern which Porsche had used since its earliest days. This layout reflected current aircraft braking technology and had a number of advantages, not the least being that the hubs could be made far lighter, thus reducing unsprung weight.

This layout (referred to as 'annular' disc brakes) meant that the disc could be of a far larger diameter than the Dunlop design, the Porsche disc measuring 11.8in (265mm) in diameter.

This had the benefit of increasing the friction area, at the same time increasing the amount of leverage the caliper could exert. The brake caliper itself was cast from

The 356 Carrera GT used 60mm-wide drum brakes (right) which were derived from those used on the Type 550 Spyder (below right). The 356B brakes featured 72 cooling fins (bottom right). Annular disc brakes (below) were used on the Carrera 2

aluminium, helping to further reduce unsprung weight – Dunlop's calipers were made from the heavier cast-iron.

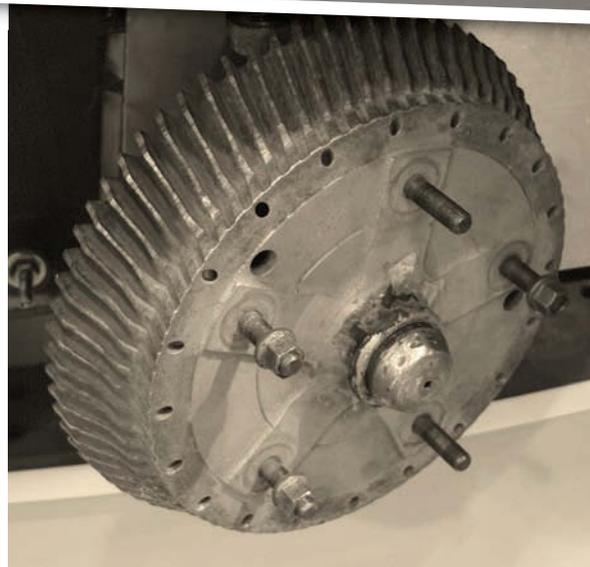
In terms of servicing the brakes, the Porsche design was streets ahead, too, as the pads could be removed quickly through the spokes of the hub. And the parking brake – always the bugbear on four-wheel disc brake systems – consisted of two expanding shoes which acted on the inside of each rear disc.

For a company so obsessed with light weight and fine handling, the Porsche-designed discs really made their mark: they were almost 7kg lighter than the equivalent Dunlop units, not only reducing unsprung weight for better handling, but also

cutting down on the flywheel effect of the revolving wheel/brake assembly which a braking system has to overcome. It was a natural choice for the current race car programme, and was adopted for the new 356 Carrera 2 launched in '62.

However, the annular brakes did come in for comment – if not exactly outright criticism – from some members of the press, who pointed out that they needed to be warmed up before becoming fully effective, unlike drums which tended to be most efficient when cold. However, this trait was a distinct benefit as far as racing applications were concerned, as the disc-braked cars tended to last the distance better than earlier drum-braked models. Indeed, a Carrera equipped with annular brakes competed in the 1960 Nürburgring 1000km and completed the event without requiring a change of disc pads, unlike the previous year. Score one to Porsche over Dunlop...

However, there was about to be a major sea change at Porsche, for the days of drum-braking were all but over. It was





The annular disc brake is a fascinating design, with the caliper mounted 'inside' the disc. This allowed a larger-diameter disc to be used. However, the 356C (and the first 911) used this more conventional disc (right), which followed Dunlop's original layout, with an external caliper. A drum was located within the rear brake disc to serve as the emergency handbrake

to be an historic moment, for the drum brakes, and the annular disc brakes, all relied on the use of the VW-derived 205mm PCD wheel bolt pattern.

However, the annular brakes were deemed to be too specialist for mass production, and because of the unusual bolt pattern, they could not be readily used on other, non-Porsche products. On the other hand, Dunlop's system, as manufactured by ATE, could be used in multiple applications,

across many manufacturers. Porsche had marched itself into a dead-end as far as further development was concerned.

By 1962, Porsche's principle advocate of the annular brake system, Klaus von Rücker, had left the company. Porsche had also decided to withdraw from Grand Prix racing, where the discs had proved to be particularly effective. All efforts were now being concentrated on sports car competition which was deemed to be of far better value with regard to sales promotion.

So Porsche turned to ATE once again who designed a more conventional disc brake (small-diameter disc with the caliper mounted at the outer edge) that would meet the demands of the German sports car manufacturer.

The result was a solid

cast-iron disc on which acted a cast-iron caliper containing two pistons – the costly to produce annular brakes featured four-piston calipers – designed to automatically align the pads and return them to the correct position after use. The other unique feature on the Porsche-developed brakes was the inclusion of the drum-type handbrake at the rear.

This became commonplace on many cars over the years, but was unique to Porsche at the time. To incorporate the drum brake, the rear discs were made slightly larger in diameter than those at the front, 285mm compared to 274mm. This change in brake design required the use of a new wheel with a smaller PCD – 130mm compared to the original 205mm, but still with five studs.

The new brakes were used first on the incoming

356C models, launched in 1963, and were so good that they continued in production, virtually unchanged, when the new 901 (which became the 911) was released. In fact, the only difference between the 356C and 901/911 disc brakes was a slight increase in diameter of the front discs (to 282mm) on the otherwise all-new model.

The cast-iron caliper/solid disc combination remained the norm until the launch of the high-performance 911S in 1966, this becoming the first 911 to feature ventilated discs and aluminium calipers. Since then, with the exception of the exotic PCCB (Porsche Ceramic Composite Brakes), Porsche braking systems have largely followed the same path, with increasingly-larger ventilated cast-iron discs 'grabbed' by increasingly-

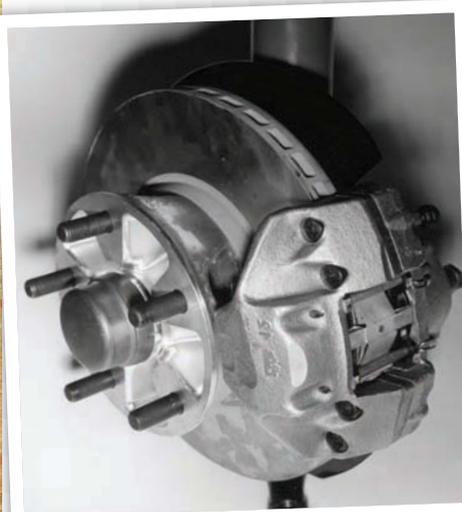
larger aluminium calipers.

It all amounts to a refinement of early-1900s thinking backed up by 1950s technology, the major improvements having been made in three areas: materials (ceramics, in particular), servo-assistance (to reduce braking effort) and anti-lock braking systems.

Oh, and let's not forget tyre technology – after all, the tyre is the final link in the chain that runs between the brake pedal and the road.

But that's another topic for another day... **PW**

The first major upgrade to the Porsche disc brake was the vented disc/aluminium caliper of the 1966 911S (below left). The mighty 917 offered up its huge disc/caliper (centre) for use on the Type 930 Turbo. In reality, modern PCCB disc brakes (below) differ little, other than through the use of materials...



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THEY GEAR UP TO LAUNCH A
NEW PORSCHE SALES
OPERATION IN LONDON

Words and photography: Brett Fraser

There's a security keypad on the door to Paul Michaels' office, which is tucked away on the first floor of Hexagon BMW, the dealership group he started in 1963. That keypad divorces the room from the rest of the corporate-branded edifice in East Finchley, north London; it somehow alerts you to the fact that something special might lurk within. Then again, so does the bloke who taps in the code – in his stripy jumper and faded jeans, Paul Michaels is the complete antithesis of the be-suited sales folk flogging BMWs and MINIs downstairs: he could hardly be less corporate.

And as the keypad beeps its acceptance of the numbers and the door swings open, the sight which greets you is a petrolhead's paradise. No wonder it's kept separate from the rest of the dealership: where modern BMWs are all about swagger and image, Paul's office shouts passion and romance, an excitement for driving and for the type of cars that engender emotion in all those who experience them either from behind the wheel or from the side of the road. Prints and posters and original artworks line the walls; there are cabinets filled with car models large and small, both mass-produced and deliciously one-off; shelves groan under the weight of countless automotive books and magazines and brochures; dotted around are car components and automobilia. At a glance there's a hint of chaos to it all, but when you look harder you can see that there is a structure, albeit one that is very personal to Paul's way of working.

But all of this – together with his handsome standard poodle – is soon to be packed up and hauled about half a mile down the road, as Paul hands over the reins of Hexagon BMW and MINI, and embarks upon a new adventure, one in which Porsches play a starring role – Hexagon Modern Classics. 'Although we won't be building concrete walls in terms of the cars we'll be trading,' Paul

THE SPECIALISTS: HEXAGON MODERN CLASSICS



Left: No, the Leyton House liveried 962 isn't for sale, it's one from Paul Michaels' personal collection and he's even got the teamwear to go with it (above)

Right: The man himself surrounded by a lifetime of automobilia collecting



Hexagon will only deal in high-end machines and with low-mileages. Paul Michaels' own enthusiasm for Porsches came in the early '60s when he took a 356 in part exchange against an E-type and ended up using it himself

explains, 'we're looking at the 993 backwards, together with the best of the BMW M cars, as well as assorted others that take my fancy. I think that the split is likely to be about 50% Porsches, and the other half a mix of M cars and others.'

It's an intriguing piece of niche marketing, because for several years now Paul has also run Hexagon Classics, based in a mews in London's fashionable Kensington district. 'The way to differentiate between the two operations is to consider that Classics generally trades cars north of £100,000, and this includes Porsches, Ferraris, Maseratis, Aston Martins, Bugattis and other rarities.'

But while Hexagon Modern Classics will deal in "cheaper" metal, Paul unapologetically points out: 'We only buy the best, and that means our prices are at the top of the scale. Often that's because the car is very low mileage and has been meticulously maintained.' And as if to prove the point, when we go to look at the fledgling new operation, Paul shows us a rare 993 Turbo S with just 11,000 miles on the clock, a (left-hand drive) 993 C4S showing a mere 27,000 miles on its odometer, and a 23,000-mile concertina-bumpered 930 Celebration. All are immaculate, like new. It's hard to believe that such low-mileage cars still exist (why on earth wouldn't you use them?) but Paul is constantly on the hunt for them using decades' worth of experience and personal contacts.

Paul's affection for Porsches stretches way back to the dawn of the 911. 'It was in about 1963 or '64, and we'd taken a 356 SC in part-exchange against an E-type,' he recalls. 'I didn't have my own car at the time and thought

I'd just run around in the Porsche until we managed to sell it. But I fell in love with that car and ended up keeping it for 18 months. And it's also the reason that we ended up with a Porsche franchise...

'We kept that going until about 1977 or '78 when we had to move our showroom out of the West End (of London): Porsche felt that it was essential that it had a central London presence, so gave the franchise to Follett's. It wasn't too great a blow, though – in our best year we only sold 14 new cars!'

Although Paul professes to being a 'Porsche man through and through,' he's concerned for the marque's future. 'My fear for Porsche is VW. Within the group Porsche represents about 2% of turnover, yet produces 25% of the profit. There's a danger Porsche will be pushed down the Mercedes/Audi/BMW route and become so prolific that secondhand values will plummet. It used to be that if you bought a new Porsche you would, of course, lose some money, but not an obscene amount: after a couple of years you could still afford to change into another new Porsche. Now I'm not so sure.'

Against that background Paul is clearly excited by the potential for Hexagon Modern Classics. 'It gives me the chance to get back to selling the products that really turn me on,' he enthuses. 'The new car business is horrible, manufacturers are only interested in numbers, and technology is everything: cars get improved on almost a daily basis. But in 10 years' time people won't be able to afford to get those cars fixed. That's why, say, a 993 will always be special, because people will be able to repair it. In contrast, we've just had to order in a new glass roof for





a 997 Targa and it's costing £4500.'

While he considers the 993 to be the last of the "real" Porsches, Paul doesn't understand why the 996 is currently so unloved. 'There's no logic to why people don't like that car. But I think that as the tatty ones become cheaper and are bought by people who can't afford to maintain them, then the tatty ones will be gradually chucked away and 996s will become rarer and prices will climb. In 10 years' time we'll regret not putting 20 of them in a barn right now.'

Paul cites the 964 as another example of an unloved 911 derivative with a potentially bright future. 'There seems to be some undeserved negativity towards the 964 at the moment. But I believe that the 964 RS is a potential flyer. Values have been edging closer to £100,000, and when they do reach that point then they may start to accelerate.' And if that happens for the RS, the values of good examples of other 964s seem certain to follow.

Despite being close to retirement age, Paul crackles with drive and energy, and you can sense his frustration that work on the Hexagon Modern Classics building has been delayed – an early October completion date was shifted to the beginning of December. The building currently houses Hexagon BMW/MINI's new vehicle preparation centre, as well storing a few of the older cars Paul trades in, but there are signs that changes are afoot. Already a sophisticated indoor car valet system has been installed that prepares cars to showroom standards, and there's a car-sized photographic studio (that will also be available for hire), where cars for sale will get their beauty shots done.

Paul promises that buying from Hexagon Modern Classics 'will be an experience quite unlike a regular car dealership,' with neatly painted floors, good lighting for all

the cars to be viewed under, comfortable sofas, stylish décor and evocative memorabilia, while an outside sales area will be bordered with trees and shrubs to give it the feel of a private garden. And yet the real awe is likely to stem from the quality of cars for sale.

'With Hexagon we don't really want to get involved with the mechanical side of things, nor restoration work. We can do them, of course, and through Hexagon Classics we have a trusted portfolio of outside specialists, but we'd prefer just to buy the very best cars in the first place. Inevitably that means our cars will seem expensive compared with some, but let me explain something.

'Say we have an immaculate Porsche for £60,000, but you have gone out and found a similar model for £40,000 that requires some work. To make the car right you spend £20,000, but what you're unlikely to have at the end of it is a £60,000 Porsche. In that context our car no longer seems so expensive.'

Before we leave, Paul shows us a room that once housed some of his personal collection, and there, nestling alongside a 356 coupe and a 'marvellously restored' Speedster, remains one of his Porsches – a 962 C, no less, in Leyton House livery: there are matching overalls hanging up in his office. The car raced only once, at Le Mans in 1987 where it came fourth, and Paul acquired it in 2006.

Although he won't ever be racing the 962, Paul has been involved in motorsport since the early '70s, and even ran his own privateer F1 team back in 1974 with John Watson as his driver. Indeed, Watson still has the 911 2.7 RS that Paul sold him in 1974. But his racing exploits are, as they say, another (and quite lengthy) story; chances are that if you drop in to Hexagon Modern Classics to buy your next classic Porsche, you'll get to hear at least some of it. **PW**

Above: The 993 Turbo S has just 11,000-miles on the clock, while the 993 C4S a not quite so paltry 27,000-miles. This is typical of the sort of cars that Hexagon Modern Classics will stock and the cut off point will be 993s, so no water-cooled cars here

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Red. 43,000 miles.



1986 Porsche Carrera Cabriolet
Ivory. 44,000 miles, FSH



1989 Porsche Supersport Targa
Blue. 14,000 miles.



1996 Porsche 993 C4S Coupe
Blue. 55,000 miles. FSH



Porsche 993 C4S
Silver. 27,300 miles. LHD



1993 Porsche 928 S4 Automatic
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SEPARATOR WAYS

Your Boxster's – or your 911's – heavily smoking exhaust might be far less serious a problem than you think. It's not the easiest task in the Porsche world (see photo below), but possibly all you need is a new air/oil separator for the crankcase breathing system. It's worth a try, anyway



Poor Wes Thomas. So far, he and your correspondent have collaborated on two of these *911 & Porsche World* how-to stories, and both have at times required of him the kind of physical dexterity worthy

of a keyhole surgeon. They haven't always been too easy to photograph, either.

On the first occasion we met, it was for Wes to replace the main alternator/starter-motor cable in a 997 Carrera – see the December 2013 issue. This time

it was to change the so-called air/oil separator in a 1997 986-model Boxster 2.5 – although the procedure is much the same for all subsequent 986s, and the

basic principles broadly similar for the entire 987 range, including the Cayman. Both the 996- and 997-model 911s, with their engines mounted the other

Primary access to separator (arrowed) is via the lift-out cover inside the cabin, but you'll also need long arms and small hands to reach in from behind the right-hand rear wheel (above). Main vacuum pipes (bottom row of pics) released by squeezing together the two serrated areas, and gently pulling and/or levering with screwdriver. Don't forget rather less visible lower connection (arrowed, far right)



HOW-TO: 986 BOXSTER AIR/OIL SEPARATOR



way round in the chassis, are sufficiently different to be beyond the scope of this story, certainly as far as accessing the separator is concerned. (Although both the background information and theory hold good.) Some other time, perhaps.

Can you – should you – do the job yourself? Yes, of course – if you want to. And, well, possibly no. There is no heavy lifting involved, not much needed in the

way of tools or spare parts, and in both Boxster and Cayman relatively easy access to the upper part of the separator, via the lift-out engine cover inside the cabin. (In the 996, realistically the only way to get at the offending device is to remove the gearbox, although some say that you can fight your way in from the left-hand side of the engine bay.) You will, though, need access to the underside of

Difficult to see, and harder still to photograph: the lower end of the separator body is connected to an upward-facing port on the crankcase by a short, bellows-style rubber hose, in this (entirely typical) example badly distorted and perished, after long exposure to oil and combustion fumes. Won't be a problem to disconnect; just pull. Lower clip, and remaining pieces of rubber, can then be removed quite easily. First, though, you have to undo the two M6 screws physically securing the separator to the engine – 1/4-inch-drive socket set is essential – and they can be surprisingly tight

With the two M6 screws dealt with, it's back up top again gently to lift the separator away from the engine, simultaneously easing it sideways to release the rigid stub at its base from another port on the crankcase – see photo of complete unit on next spread. If it feels like it won't come easily, check that the area round the mounting-screw holes isn't simply caught up below this pipe (arrowed). The large-diameter hose behind arrow can get in the way, too: that's the connection to the oil filler



HEAVY BREATHING?

Any engine will by its very nature allow some of the high-pressure gases generated within the combustion chambers to escape past the piston rings and into the crankcase. To begin with this leakage may be as little as five per cent or even less, but in badly worn units it can reach as much as 25-30 per cent, with an obvious effect on both fuel-efficiency and performance.

Until about the early 1960s this blow-by was considered to be of little significance, and in most cases the accumulated gases (and the oil mist from the crankcase itself) were simply vented straight out to the atmosphere. Many older competition cars retain just such a so-called total-loss crankcase breathing system, their only modest concession to the environment – or the surface of the circuit on which they are racing – a so-called catch-tank in the engine bay to trap liquid oil.

Eventually, though, it was realised

that the unburned hydrocarbons and other combustion by-products released in this way were a major pollutant, and car makers began to fit closed-circuit breathing systems. In the early days this meant little more than a pipe from the crankcase back to the induction system in order to collect the fumes, and thereafter burn them in the combustion chambers with the rest of the incoming fuel/air charge. But modern systems have become increasingly sophisticated, and as a consequence increasingly prone to blockages and other failures, themselves often leading to other potentially major problems.

For a somewhat fuller explanation of precisely how these modern crankcase ventilation systems actually work, see http://en.wikipedia.org/wiki/pcv_valve. We can't vouch for the complete accuracy of the relevant article, but it will certainly give you a pretty good overview of the situation.

THE KNOWLEDGE

Confusingly, but not untypically for a machine as complex and as sophisticated as a modern Porsche, there are several theories to explain why these air/oil separators fail – and a number of no less confusingly random ways in which those failures then appear to manifest themselves.

Modern engines' crankcase breathing systems use the vacuum naturally present in the induction system to draw potentially harmful oil fumes and/or waste combustion gases out of the lower part of the cylinder block – the sump, basically. Those fumes and gases can thereby be burned off with the fresh fuel and air entering the cylinders with each revolution of the crankshaft, and so at least partially cleaned by the catalytic converter, rather than simply vented direct to the atmosphere.

But that vacuum varies according to the throttle position (it is at its highest with the butterfly fully closed, and at its lowest when it's wide open), and so in order to maintain it at the more or less constant level required for this vital process the air/oil separator has built in to it a device not unlike a scuba-diving demand valve – which, as anyone who has ever used one will know, cleverly (and reliably) delivers the required amount of air regardless of water depth and thus ambient pressure.

At the heart of the air/oil separator – and there are several different types for these Porsches, depending on precise application and model year; there is even an upgraded Motorsport item – is a flexible diaphragm made of some sort of synthetic rubber material. It acts as a simple two-way valve, essentially, controlling and regulating the aforementioned pressure differential between the crankcase and the inlet manifold. There is also a condenser to trap liquid oil and make sure that *does* find its way back to the sump, and not least a flame-trap to prevent a backfire in the induction system igniting the inherently explosive fumes in the crankcase.

Like any such item the diaphragm inside the separator can perish and split, although here it seems the problem is as likely to be its partial or complete seizure, possibly as a result of becoming covered in condensed oil fumes. Perhaps significantly the 996's separator, located in a relatively cold position down by the left-hand rear wheel, has a connection to the engine's cooling system – presumably to keep it warm rather than cool, and so minimise this condensation problem. There is no such link in either the Boxster or Cayman, however, in both of which vehicles the separator is high up on the right-hand rear corner of the engine, well away from the elements.

Either way, say the experts, the result of that diaphragm failure is much the same: in simple terms usually far too much 'suck' through the breather system. That pulls an excessive amount of engine oil through the separator into the intake system, and then, when you corner quickly and/or accelerate, the oil will be drawn into one or more combustion chambers – causing first the detonation (ie 'pinking') and then the dense clouds of exhaust smoke that between them lead you to assume (usually entirely wrongly) that the engine has blown – or is about to. Indeed, we know of at least one 986 Boxster 'S' that several years ago came very close to having its power unit condemned, when in truth literally all it needed was a new separator.

You may also experience high oil consumption and/or oil leaks, or in some cases an excessive negative pressure (ie partial vacuum) within the crankcase that will make it difficult, if not impossible, to remove the oil filler cap or the dipstick when the engine is running. This may be accompanied by air whistling in through tortured seals and hose joints, and perhaps a rough idle that improves when the cap is off. In all these scenarios the check engine light, or CEL, will most probably switch itself on, too.

Whatever the precise scenario, swift action is required. Never mind the obvious aesthetic considerations – and the possibility of being black-flagged on a circuit, or out on the road being pulled over by the police because of excessive smoke in the exhaust. Oil in the combustion chambers will dramatically reduce the engine's efficiency, and might even permanently contaminate the catalytic converters. It is quite feasible, too, that oil will leak out of the inlet-trunking connections, and then down on to the engine. It might also drip down to ground level and (particularly in the Boxster and the Cayman, with their essentially hidden power units) lead you to suspect a wholly spurious RMS problem.

The other primary indications of the health – or otherwise – of the air/oil separator are time and mileage. Its precise design life is not something Porsche is likely to reveal any time soon, but anecdotal evidence suggests that it is going to be well past its best – if not completely and utterly knackered – after as little as five years or 50,000 miles. Indeed, this 1997 Boxster 2.5 appeared to be on at least its second separator – and even that, as you can see from several of the photos, also had a completely perished lower connection to the crankcase that would have been causing all manner of driveability and exhaust-emissions issues.

The moral of the story, then, is simple. If in doubt, change your Porsche engine's air/oil separator without question and have done with it. It cannot possibly do any harm, and it almost certainly won't be a moment too soon.



It's possible that a perished 'bellows' may be the primary cause of your air/oil separator problems, but plainly there's very little point in replacing that alone, since realistically you have to remove the separator to do so. Second photo shows more clearly the lower of the two vacuum ports on the side of the separator body, and the third the stub at its lowest point, which you had to ease out of the corresponding hole on the side of the crankcase (far right). Easy when you can see what's what

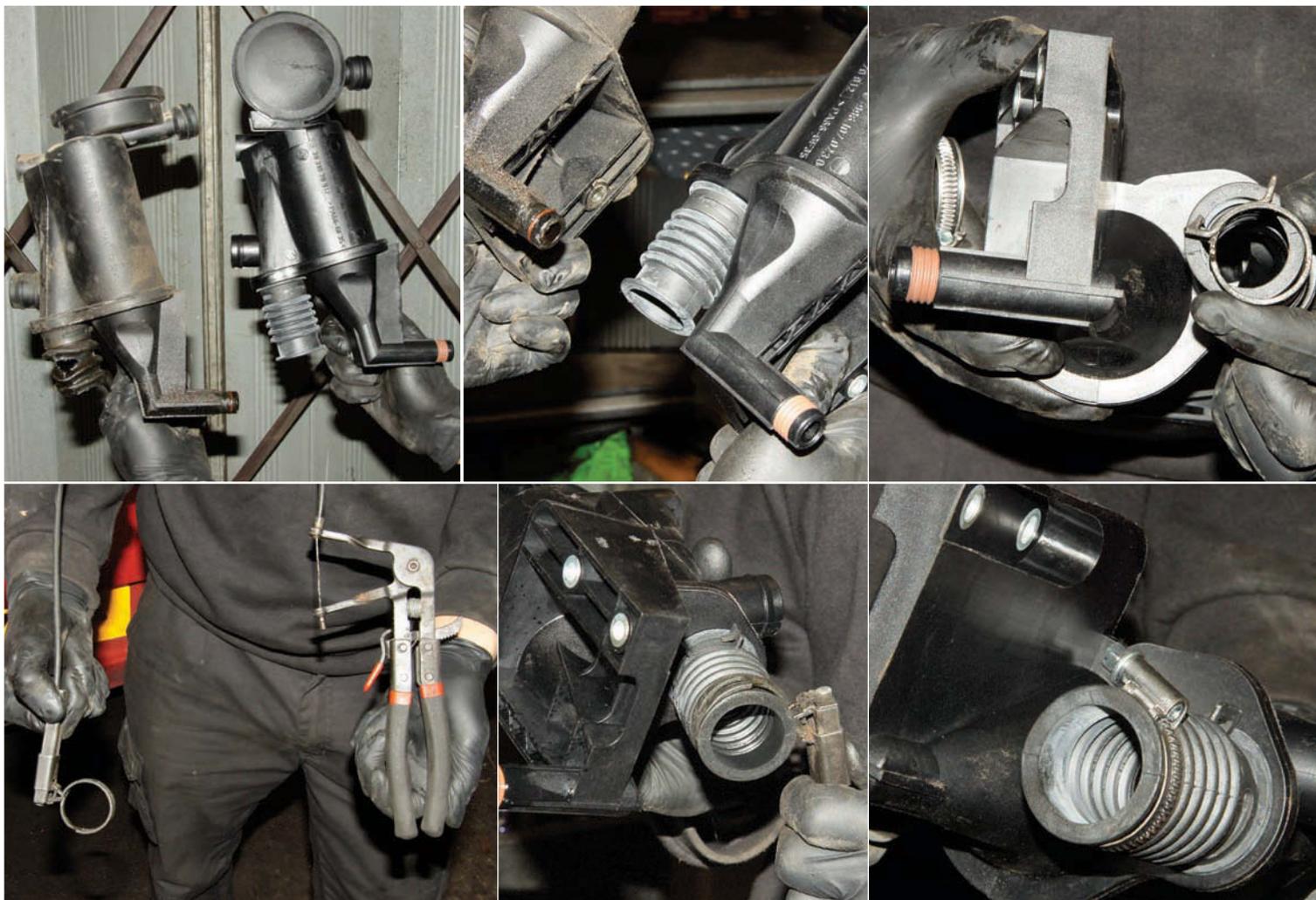
the car – in the case of the 986, anyway, if not the 987 – and while axle-stands might suffice (observing all the usual safety precautions, naturally), it's always going to be a lot more convenient and comfortable – and quicker – to raise the entire vehicle on a garage lift.

Personally, even I would take quite a lot of persuading to tackle the job on one of these earlier Boxsters, especially at this time of year – who really wants to crawl around on soaking-wet or even snow-covered Tarmac? – and not least because the labour charge at a

good independent like Northway, or any of our other usual suspects, is unlikely to exceed £200 for the roughly three hours or less needed by someone who has done it before. As ever, though, it's your call – and at

least by seeing how Wes Thomas approaches the task you will not only be in a position to judge for yourself, but also to understand precisely what is necessary, if and when you *do* decide to get stuck in. Enjoy! **PW**

Replacement separator shows a couple of obvious differences over the original. Diaphragm seems to be mounted on its side, presumably in an attempt to stop it becoming gummed up with oil and blow-by condensate: time will tell if that is successful. Stub at lower end, too, has what amounts to four 'O'-ring oil seals instead of the previous one – although this can make it harder to slide the new separator into position. Bellows-style hose is secured top and bottom at the factory by usual VAG-pattern spring clips, but such is their location that you'll need one of these special cable-operated tools (bottom left) to deal with them – and certainly to refit them. Obvious answer, if you don't mind losing a little originality, is to use worm-type clips and then tighten with a flexible driver



HOW-TO: 986 BOXSTER AIR/OIL SEPARATOR



Ever the perfectionist (and naturally he has the necessary special tool), Wes Thomas elected to use the genuine spring clips - but even then it took him several tries to align them to his satisfaction (second photo, top row; third pic, lower row). Note that he has first engaged the tool's business end on the lower clip, and then passes the remote handle down through the engine compartment, ready

to access from under the car. Silicone spray will help quad 'O'-ring oil seal slide into place, but still requires care to line everything up so that M6 screws can be fitted. Whatever you do, don't simply force the issue. Last job is to reconnect the two vacuum pipes, but separator redesign requires a new one (996 107 145 06; £22.01) at the top: hadn't yet arrived when the final photo was taken

JUST FOR THE RECORD

All of the Mg6/Mg7 engines in the g11 and Boxster/Cayman family of cars have both the external air/oil separator discussed here (in some form, anyway), and also two internally mounted devices (arrowed, right). The latter are accessible only from within the sump.

Each of these separators forms the lower end of the return from the oil extraction pump mounted at the front end of one of the cylinder heads, and at the rear end of the other. (Thus the pumps' precise position within the car is determined by whether it's a rear-engined g11, or a mid-engined

Boxster/Cayman.) Via a small-bore external pipe these 'scavenge' oil from within each camshaft cover. They are not known to give any trouble, however, and so for the purposes of this story can safely be ignored.

Note, too, that it is only the mainstream Mg6/Mg7 water-cooled engines that have either those internal separators or the potentially troublesome external device. The GT3, the Turbo and the GT2 all have the older air-cooled 993/964-style crankcase, and their breathing arrangement is, as a result, completely different.



FURTHER READING & CONTACTS; PART NUMBERS & PRICES

To find out what is involved in replacing a 987-model Cayman's air/oil separator, see the October 2009 edition of *g11 & Porsche World* (pages 94-97). To buy a PDF copy of the story, please go to www.g11porsche.com.

Thanks for their help in the preparation of this feature to Ray Northway, Wes Thomas and Paul Stacey at Northway Porsche (01189 714333), and to Nick Fulljames at Redtek (01280 841911) and Ollie Preston at RPM Technik (01296 663824). Also to Kelvin Clinch, parts manager at Porsche Centre Reading, for the information about part numbers, applications and retail prices (all excluding VAT) shown below.

986 & 987 Boxster/Cayman

986, 1996-2003	996 107 023 04	£69.53
986 & 987, 2003-2009	996 107 026 01	£50.39
987, 2009 on	9A1 107 042 00	£49.55

Motorsport air/oil separator for Boxster, Boxster 'S' & Cayman (from 2003)

996 107 926 00	£397.32 (separator)
996 107 947 00	£59.95 (vent line)

996 Carrera

Mg6 01/02/03	996 107 023 55	£83.08
Mg6 04/05	996 107 026 51	£69.53

997 Carrera

All Gen 1 cars have the primary element of the separator on the upper, middle part of the crankcase (part number 997 107 038 00, £97.94), and an additional element on each of the two camshaft housings (997 107 138 00, £25.97 apiece). We have

deliberately not concerned ourselves with that system here, primarily because it seems - so far, anyway - much more reliable.



Separator on the left in this shot is the standard 987 Boxster/Cayman device, clearly somewhat different to the Boxster 2.5 unit shown in the main step-by-step photos. Next to it is the plainly far larger Motorsport item for 2003-on cars: costs nearly £400 plus VAT, though



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THE TEAM

JOHNNY TIPLER

964 C2 'PEPPERMINT PIG'

A milestone moment as the Peppermint Pig just notched up 330,000 kms, going stronger than ever on its 911Motorsport engine. Now considering D90 wheel refurbishment and the impending switch to its Nokian winter tyres, about to enter their third winter, while Cup rims shod with Falkens could be the interim measure.



PETER SIMPSON

996 C4/CARRERA 3.4 TARGA

Project 3.4 Targa Jenvey is on the road to recovery. I've got the panels and they look good. I need a few more bits and pieces so if anyone has any of the following then please drop me an email: Pre-'73 headlights, front indicators, horn grilles and bumper mounts, as well as Targa roof seals for a GTS roof conversion.



CHRIS HORTON

944, 924S

Progress on the 944 has temporarily halted, while I work out how to extract the remains of the broken water-pump screw without wrecking the cylinder block. But the car's brakes are going back together - and I'm hoping, weather permitting, that the Christmas break might even give me the chance finally to get the 924S back on the road



STEVE BENNETT

944 LUX

The 944 tuning project is still ongoing, with yet more injector work undertaken since last month's report. One way or another, we'll have a conclusion in the next issue. A year after replacing the engine mounts, I've done what I should have done all along: bought some O/E mounts. More when fitted.



BRETT FRASER

BOXSTER S

Some might claim that the Boxster's handling isn't a match for the 911's, but on Suffolk and Norfolk's slime-slathered back roads, I'm thankful for its benevolent balance when an extra-slippery surface catches me unawares. My only winter wish is that the heater had a setting between fridge and furnace.



THE GT3 LIVES!

Fraser's GT3 hasn't been 'resting' you know. It's been hard at work and shredding its tyres for good measure. Here's the latest...

Well now, it's been pretty quiet on the 'project' part of Project GT3, but that's not to say it's been sitting in the garage, alone and unloved. The old girl gets taken out for special trips, and the occasional job, if the camera equipment manifest runs to less than six pages. I've even been known to press it into service for the school run - much to the delight of my daughter, who inexplicably doesn't seem to appreciate the more muted joys of my ageing Passat (an 'ageing Passat' is the car of choice for g11&PW operatives, with both Seume and Horton running one too). Perhaps if I fixed the bum-warmer in the passenger's seat...

But more fun than any of that are the trackdays at Abbeville that we've been lucky enough to enjoy while pretending to do actual work for this very publication. Organised by our Belgian friends at g11Motorsport, these are small-scale, cosy affairs - and all the better for it. Mrs Fraser was even able leave her cows with the babysitter, and come along on one such jaunt, and felt quite

relaxed about hammering around for a while, without feeling paranoid about faster drivers. Abbeville's a compact, tight circuit, so it's not one for your balls-out top speed merchants, but it's just the job for exploring life beyond the limits of grip, without too much of that sky-grass-sky-grass-sky action that tends to colour one's memory of a good day out.

No sane man would show up to a trackday - especially abroad - with marginal rear tyres and no back-up plan, and I'm not the type to trailer a car to these events (it makes the claim to be working seem even less plausible), so the practical option is to take a spare set of wheels. A bit tricky, I have to say. The fronts will go behind the seats, but the enormous rears demand the more radical roof-rack option. Not something you see every day - and not exactly quiet - this is, nonetheless, a far better option than trying to limp home on tyres that have reduced themselves to a kit of parts. Having said that, I can't think of a more appropriate (or amusing) way of waving goodbye to my faithful

ANTONY FRASER

996 GT3

Occupation: Freelance photographer
Home town: Chichester, West Sussex

Previous Porsches owned: 1

Car: 911 GT3

Year: 1999

Mileage: 73,000

Owned for: 24 months

Mods/options: Fuchs alike wheels and Yokohama tyres, plus Cargraphic exhaust system and DMS remap

Contact:

antonyfraser@mac.com

THIS MONTH IN BRIEF:

Some tyre shredding action at Abbeville and a 24,000-mile service courtesy of RPM Technik

Yokohamas. They'd been loyal companions for some time now, but the final onslaught of drifting overwhelmed them. As I reached the Channel Tunnel on the way home, the passport man took a look at the wreckage of rubber and canvas on the roof-rack, and asked if I'd had an accident. Cruel.

Lessons learned from all that drift-tastic fun? Well, it's not an easy car to slide in the slower corners, just because of the sheer level of grip. You really have to tip it in hard under the brakes and be super quick with the steering correction, because it's much less progressive (but faster) than on the standard wheels' Pirelli P Zeros. Interesting, but I suppose not surprising. I know it's a sweeping generalisation, but very





high grip levels very often seem to go hand in hand with snappy handling at the limit.

The brakes, I have to admit, are not perfect. They're good, don't get me wrong, but not as good as they could be, and certainly not as good as the second series cars' six-pot grabbers. Abbeville's only real straight is a little over 115 mph in my car, and ends in a pair of hard rights. Repeated stops from that kind of speed eventually leave the brakes begging for mercy. In the end, it's what limits the fun; the rest of the car would cheerfully carry on until the tyres burst. (And very nearly did!)

The good news is that plans are afoot to improve the stopping situation, but not before we've

attacked the suspension – the key to everything. I don't want to hurt my car's feelings, because I love it like a favourite dog, but the truth is that, well, it's a bit old-fashioned below decks. I drove the UK press car when these were new, and I remember thinking what a sharply-honed, focussed thing it was for a road car. That remains true, but the world has moved on quite considerably in the intervening decade and a half. Drive a 997 GT3 3.8 or, better still, a 4.0, and that progress really makes itself felt; it plays on my mind every time I get behind the wheel of my car. So – and I can feel the originality police twitching their trigger fingers – we're going to ditch the springs and dampers, in favour of a

much more sophisticated system from Bilstein. And, as part of the process, we'll be exploring the science of set-up. We may even go up to 19 inch wheels, mostly because it now seems that 18 inch is laughably small, in the world of high performance tyres. It really is amazing how many new and interesting tyres are unavailable (especially for the 285/30 rears) in an 18 inch fit. It's a situation I can't see improving, so I'm tempted to make the jump. But not before taking advice from people smarter than me – I don't want to ruin a perfectly decent car.

So, at last it looks like some exciting times lie ahead for the old girl, so a 24,000 mile service has come around at the perfect moment. I took

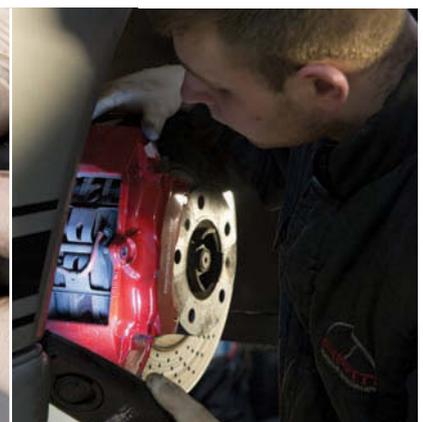
the car to RPM in Tring, and I wasn't disappointed by the job; all very thorough, and a pleasingly clean bill of health. The only issue of any note was a cracked coil pack, which was replaced from stock. The engine had been running smoothly, but it's best to address these things before they turn into a late-night 'uh-oh, what was that?' moment. Good to see the brake pipes inspected too, after Mr Horton's prophecies of doom in these pages a while ago. All good, and all now liberally squirted with protective wax.

Looks like Project GT3 could be back on track; stand by for action...

Breaking news: Mrs Fraser is soon to be the proud owner of a Porsche tractor! That should give the cows a fright. **PW**

Project GT3 in the company of Tipler's 964 and a feature trio of Club Sports. We were going to say: 'note the trackday tyres on the roof,' but you can hardly miss them, really. Check out the ragging they got though. We're surprised he bothered to take them home really!

Below left: On-track action at Abbeville. Brake and fuel lines get the protective wax treatment. Split ignition coil was replaced by RPM. Brakes are effective, but Fraser is hankering for some 996 GT3 Gen 2 six pot calipers



GOTTA GET MOTIVATED!

Anyone who's ever built a project car will be familiar with that feeling of inertia when nothing seems to get done, and the light at the end of the tunnel seems to grow dimmer by the day. Well, guess what? Seume reached that stage about a month ago...



I knew it would happen at some point: that feeling that I wasn't getting anyway fast – or even slowly, for that matter. After the elation at seeing *El Chucho*, my hot-rod 911-motored 912, finally in paint and (temporarily) back on its wheels, I soon sank back into the depths of despair when I took stock of all the work that still lay ahead.

Everybody reckons that the moment you get a car back from the paintshop, it's all plain sailing from

there on. But it isn't – well, not in my case it isn't! Maybe it's just that I've never taken over two years to complete a project before – maybe it's because I've never started with a car that needed as much work doing to it to put right the wrongs inflicted by past owners?

But hey-ho, the donkeywork of repairing floors and sills is all behind me now, as is the paint prep and bodywork. Must keep positive. I really *must* keep positive...

No, in all seriousness, I am fine (I'm sure you're relieved to hear that...) but my enthusiasm had temporarily stalled as I grew tired of endlessly (and metaphorically) writing cheques to pay for little bits and pieces that I didn't realise I'd either lost or didn't even have in the first place.

Tear a car to pieces and you'll be amazed at how many pieces go missing in the course of two years! Also, little odds and ends that I thought would be

easy to sort out turned out to be harder to find than the Holy Grail.

Thank heavens, then, for people like Alan Drayson at Canford Classics who kindly offered to keep a box in the corner of his workshop marked 'Parts for Keith'. I'd given Alan a whole list of seals and other similar parts that I realised I'd need as I built the car back up again. As Canford Classics' *raison d'être* is restoring early 911s, they have accumulated a vast range

KEITH SEUME

EL CHUCHO 912

Occupation: Editor, *Classic Porsche*
Home town: Lostwithiel, Cornwall
Previous Porsches owned: Carrera 2.7; 928; 912; 914/6; Junior Tractor
Car: 912
Year: 1966
Owned for: Over two years!
Mods/options: Six-cylinder engine conversion, etc.
Contact: classicporsche@chpltd.com
THIS MONTH IN BRIEF: Hanging body panels...





of parts, big and small, which helped bail me out of my despair. I still need a catch for the driver's side quarter-light, but I'm sure one will turn up. I've also bought parts months ago – I know I have – which I can no longer find.

The root of my problem is that I do not have a garage of my own, so the car sits (and very grateful I am, too!) 60 miles away in the workshops of R-to-RSR in Devon. There, I have all the facilities I need to complete the build but it's not like I can just wander out to the garage in the evening and tinker with my car. I miss that. What it does mean is that I have to plan ahead, writing out a list of tasks to get done on my next visit across the River Tamar.

On my last visit, I

managed to spend a couple of days at R-to-RSR hanging the front wings, bumper and bonnet. They'd all been mounted accurately prior to paint, but needed to be removed so they could be sprayed properly. Of course, those once-perfect panel gaps are proving to be a pain in the proverbial to achieve again – anyone who's ever hung body panels will know that it can be a trying process. A small degree of adjustment at one end of a panel can have a disastrous effect on the gap at the other.

It took two full days before I was happy with the bonnet, bumper and one front wing, but the right-hand wing is still a millimetre or so too close to the door. Many might live with it, but I can't, so

the wing will have to come off again so I can strategically insert some thin washers to even up the gap, front to rear.

The front bumper took a while, as I was working single-handed for most of the time, but it's done and looks good. Now, of course, I'm looking more critically at the back bumper and realise it needs to be raised slightly on the left side. Sigh...

Over Christmas and New Year I plan on spending as much time as I can on the car, two of the main jobs being to seam-seal and stone-chip the entire underside, then fit the brake lines and the brakes themselves. I also have to work out what to do about the fuel lines and fuel pump. The fuel-injection system requires a return

line, so that's two new lines from front to back that I need to make, and then attempt to run through the tunnel.

Other jobs include installing the headliner and then the glass. After that, I can fit the carpets, finish the dashboard and fit the newly-refurbished gauges I've just got back from Julian Reap at Reap Automotive Design. And very nice they look, too!

Julian really does a fine job and I can't understand why so many people send their gauges abroad when we have such talent on our own doorstep! After that comes the wiring, which I am definitely not looking forward to.

Oh no, that light at the far end of the tunnel is growing dim again. Time for a beer, I think... **PW**

My Cornish tartan seats have been mounted, but I think they're a little too high. Julian Reap did a fantastic job of the gauges

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Hanging the body panels has been a nerve-wracking job, but not as scary as drilling the holes to mount the NOS Talbot door mirror...



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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



PETER TOGNOLA
Tognola Engineering



PER SCHROEDER
Stoddard Imported Cars



OLLIE PRESTON
RPM Technik

MEET THE TEAM

WRECKED BOXSTER 'S' ENGINE? NICK WILL FIX IT - AND MOST OTHER PORSCHE POWER UNITS, TOO

I recently bought privately, for £11,200, what I believed at the time to be an excellent 2005 987-model Boxster 'S'. Within five days of my purchasing the vehicle, however, and before I had even taken out an after-market warranty, it broke down. Significantly.

The car was being driven gently, simply cruising along a motorway, when some sort of internal engine failure occurred. I noticed an amber warning light for a couple of miles, and then a master caution light, with increasing vibration at low rpm whenever the engine was under load. I stopped immediately, and had the car recovered to the first available service area, by which stage the power unit was completely and utterly dead.

The car had previously been maintained almost exclusively by official Porsche Centres, and had been serviced just 1000 miles previously, at 66,000 miles. The only work that had not been carried out by a Porsche Centre was the replacement of the ignition-coil packs, after a misfire issue. This was a recent change, just two months and very few miles previously. Several coil packs were at that time found to have cracked insulation, and all six were replaced as a precaution.

My engine failure turned out to be a major event. Internally, the unit is all but destroyed. Porsche Centre Colchester recovered the car via Porsche Assistance, who were extremely helpful. They discovered what they described as a hole in piston number five, cause unknown. They did not know if this was heat damage, or a mechanical failure, but apparently there was a record of a misfire in cylinders five and six. But my understanding of a detonation-type event is that it would

have been obvious, and additionally I really do not understand how it could have happened without any warning, and not least with the engine running at a constant 4000rpm at motorway cruising speeds.

Do I have any legal rights in this matter? I have effectively just lost £11,200, and repair costs within the official Porsche network are apparently going to be at least £14,000 for a replacement engine - and they want £4500 just to strip my wrecked engine for inspection, before the replacement of any damaged parts. But this seems unbelievably risky, if a misfire in cylinders five and six turns out to have been the cause, because potentially another four cylinders are in imminent danger, too. It seems far more likely to me that this is a mechanical, engineering failure. What are your thoughts? Is there a history of this sort of problem with other low-mileage Boxster 'S' models?

I wonder about the experiences of other Porsche owners in this context. Is Porsche aware of an issue with these engines? I query this because fixed-price servicing for older Boxsters stops short of being offered on 2005 cars, which to me seems suspicious. I would like Porsche to take some responsibility and investigate this problem at its own cost because it is a potentially dangerous issue, the cause of which could lie in an engineering defect. What are your thoughts?

Mike Taylor

Chris Horton, *g11 & Porsche World*: As you know, Mike, I e-mailed you immediately for a little more information on this clearly very distressing situation, and we subsequently

discussed the matter on the phone. We didn't touch on any possible legal aspects of the case, but I did recommend a number of independent specialists whose innovative engineering I thought might be able to get your car running again, for a fraction of the costs you had already been quoted. From that shortlist you chose Redtek in Brackley, Northamptonshire (01280 841911; www.redtek.co.uk). I went there myself after you had had the car delivered there and the engine stripped, and shot the accompanying photographs (see opposite page).

The mechanical carnage inside the engine is such that it's very difficult to say precisely what happened, but proprietor Nick Fulljames reckons - and I'm happy to agree with him - that it was almost certainly caused by the head dropping off one of the two now broken valves; probably the inlet. This then flew around inside the combustion chamber, taking out the other (exhaust) valve, before eventually punching a hole in the piston (or more accurately splitting it in two), and biting a large chunk out of the cylinder bore. What initially prompted that chain of events is unknown, but interestingly (if that's the right term in the circumstances) probably not the localised overheating and bore-scoring that seems to have become the most common cause of somewhat less cataclysmic failure in some of these later engines.

Nick's initial prognosis, as you also know, wasn't encouraging. So extensive was the damage to the block that it was beyond even him to repair, and you were plainly going to need one cylinder head, too. In the end, however, he sourced a good, standard,



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second-hand 3.2-litre block complete with pistons, and with new rings – and all the other obvious consumables such as gaskets, seals, timing chains and tensioners and so on – this has effectively been fully reconditioned. For cost reasons it was decided not to use the steel cylinder liners that Nick favours for his later 3.6- and 3.8-litre engines, but by the same token, he told me, bore-scoring in these 3.2-litre units remains mercifully rare.

As I write this, then, you are facing a total bill for around £7550 including VAT and refitting the engine to your car. Still a gargantuan sum of money for something that by rights ought

not to have been necessary in a vehicle of this age, mileage and not least high quality, but none the less a fair reflection of the parts, labour and skills that have gone into your new engine, and as a result its likely longevity.

Whether you will want to keep the car and put that theory to the test is another matter, but I do sincerely hope that your experience hasn't put you off Porsche cars for good.

The only other point I ought to make, without wishing to rub salt into your financially deep wounds, is that had you bought the car from any sort of independent specialist, or even a bona fide motor trader, you would

almost certainly have had some recourse in law. Purchase privately, though – as many others have discovered to their cost, with cars of this sophistication, complexity and value – and you are effectively on your own.

Major damage inside this Boxster 'S' engine (below) was almost certainly caused by a 'dropped' valve. Cylinder block, one cylinder head, and many other smaller items were either wrecked or rendered suspect, but Redtek sourced sufficient parts from another motor to build one good unit for minimal cost. Private purchase of the car means the unfortunate owner has no legal redress. Had the motor failed this catastrophically so soon after buying it from a trader he might well have been entitled to a replacement - or even a full refund



BRACE YOURSELF: FIXING CAYENNE'S COOLANT LEAK COULD MEAN TAKING THE ENGINE OUT

My 2008-model Cayenne GTS is leaking quite a lot of coolant from somewhere at the rear of the engine. I know that in earlier cars there was a fairly widespread problem with some plastic pipes that run the length of the power unit, between the two banks of cylinders, but as I understand it mine would have been built with better-quality and stronger aluminium pipes. So do you have any idea where the leak could be coming from, and obviously how I could fix the problem? Thanks!

Charles Farrow

Paul Stacey, Northway Porsche: There are several possibilities here, none of them an exactly enthralling prospect.

Your particular Cayenne, as you suggest, would have been built with the later aluminium coolant pipes between its cylinder banks – as shown in the photographs below of an early engine in the process of being converted – and so I think this possibility can be ruled out in your case.

Unfortunately, this leaves as a prime suspect the roughly inverted-'U'-shaped 'bridge' linking the two halves of the cooling system across the rear face of each cylinder head – you can just see it in the photos. It's made from the familiar aluminium alloy, and has shrunk and/or somehow bonded into its far left-hand end a single steel stub to which is attached a common-or-garden rubber hose.

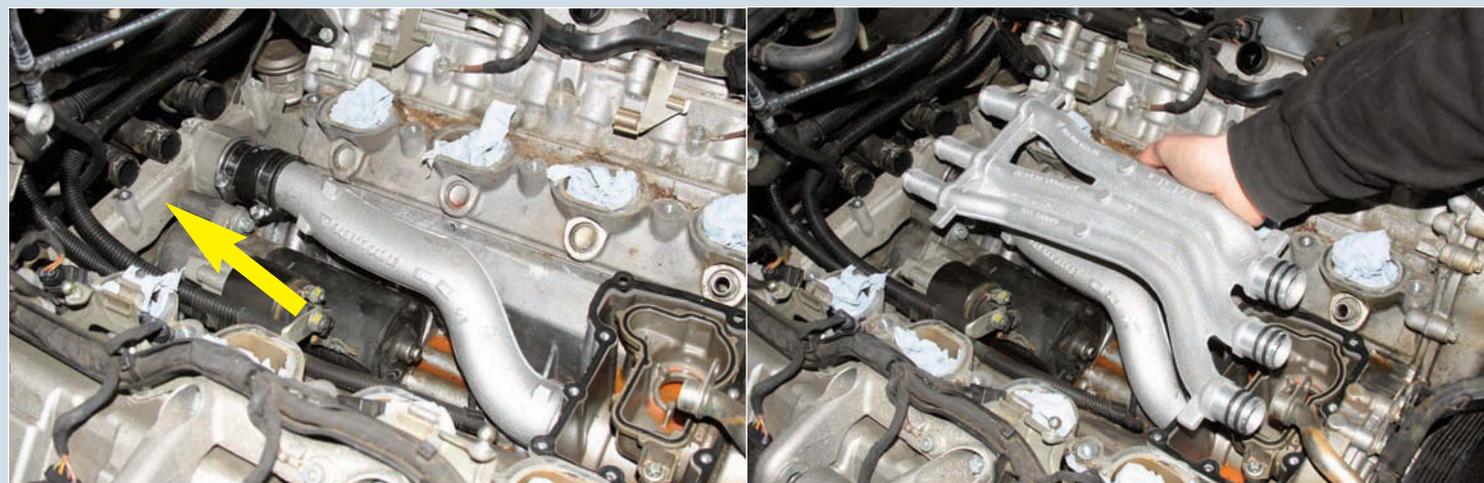
These stubs can eventually work themselves loose – presumably because of the continual heating and cooling of the casting – and although we have had some success in sealing them back into the aluminium, the job is very difficult to do with the engine in situ. The best long-term solution would be simply to take out the engine and transmission and fit a brand-new (and again presumably improved) bridge pipe. The part number for that is 948 106 061 06, and from Porsche it costs £161.26 plus VAT. Reckon on paying for up to around 20 hours' labour, though.

The other (slight) possibility is a cracked 'T'-shaped plastic pipe linking a further three rubber coolant hoses, again at the rear end of the cylinder block. Some people have argued that this is because the hose clips were over-tightened at the factory, but I would suggest that's unlikely. It's probably just another case of the pipe becoming brittle after prolonged exposure to heat and pressure – and these days seems to affect only very early models, in any case. I'm guessing that Porsche might quietly have improved the specification, just as it did for those once troublesome longitudinal pipes.

Replacing the 'T'-piece means removing the inlet manifold – as it does for those older-style longitudinal plastic pipes, of course – but that is potentially a DIY prospect for those with time, patience and a little bit of determination and aptitude. The only other way to reach it might be from beneath the car, but that's very awkward, too, and obviously you will need to be able to raise the vehicle sufficiently. Even on our lift the job is a real pain.

The only relatively good news in all of this is that the offending 'T'-piece (part number 955 106 323 50) is priced at just £17.79 plus VAT from Porsche, plus the cost of three hose clips – and, of course, the various gaskets and clips that you will need in order to remove and refit the manifold.

The first cooling-system issue to affect the Cayenne was cracking of the plastic pipes running in the 'V' between the two cylinder banks, which because of its location tended to wreck the starter motor, too, but that was solved by replacing them with a much tougher light-alloy casting (below). Now it's the 'bridge' piece (arrowed) at the rear of the block: a single steel pipe stub (hidden behind the left-hand head) loosens within the alloy and then leaks. Only cure is to replace bridge piece – and that means taking out the engine



'TRANSAXLE' BRAKE AND FUEL LINES: A PERENNIAL FAVOURITE - AND EASY WHEN YOU KNOW HOW

When you mentioned 924/944 automatics here in Q&A a few months back, you said that in order to assess the level of the gearbox fluid it is necessary to check the sight tube on the side of the unit, and then to top up as required. Does this check/fill procedure cover the differential, as well, or is that an entirely separate unit?

I bought my fifth Porsche in 2011, after an eight-year gap. So I missed your how-to articles on replacing corroded fuel and brake lines in these 'transaxle' cars. My rear brake lines are rusted, though, and booked in for replacement soon. Do you have any information on the work required for this job? I love the magazine, by the way!

Alan Smith

Chris Horton: The automatic transmissions used in the 924 and 944 have a combined gearbox and final drive, both lubricated by the same ATF, or automatic transmission fluid, and a single sight tube that allows you simultaneously to check the fluid level in both. Would that all transmissions were as easy.

Any good high-street motor factor should be able to supply the correct fluid if you provide full details of the car. Alternatively, go to www.millersoils.co.uk/whicoil, and there you should be able to obtain both the necessary information specific to your car, and the address of your nearest Millers stockist. (And in case you are wondering, yes, we are big fans of Millers here at 911 & Porsche World.)

The replacement of your brake lines should be a straightforward task for any general garage with a lift - and I have done the job with the vehicle no higher than on four axle-stands. All I would suggest is that you have the rigid lines made from a rust-proof copper-based alloy, and ideally replace the two flexible hoses, as well. (And, assuming you trust their judgement, anything else that your garage tells you is required.) Personally, I have for a long time favoured the copper brake pipe available from Automec in Buckingham, and although not everyone is a fan of their silicone-based brake fluid I have used that for many years, too. Full details - and lots more really useful brake and hydraulic products - at www.automec.co.uk.

Some people will tell you that the big transverse tube housing the torsion-bar rear springs needs to be lowered in order to pass the new brake pipes between it and the body (and that's a major undertaking, if only because of possibly corroded fixings), but again I have always managed to do the work with the tube in situ. PDFs of those two how-to stories are available for a very modest fee, by the way, via our website at www.g11porscheworld.com.



In both 924 and 944 the fuel and brake lines pass between the rear end of the floorpan and the transverse tube housing the torsion-bar road springs. Only way of replacing original-style rigid pipework is to lower the tube, away from the body, but corroded bolts mean that is often impossible. Solution is to use flexible braided fuel pipe and thread it through - and that technique works for new rigid brake lines, too, especially if you leave off one union until later. Full details of fuel-pipe replacement in the August 2010 issue

M96 LUBRICATION-SYSTEM IMPROVEMENTS ANALYSED AND EVALUATED

Like many other owners of modern water-cooled Porsches, I am constantly thinking about potential engine failures. I have the oil in my car, a 2004 996-model Carrera 3.6, changed every 12,000 miles (and usually at slightly more frequent intervals than that), but I do tend to drive it quite hard, with one or two trackdays a year thrown in, and I would like to improve the lubrication system if possible. Would you recommend a deep-sump kit, and if so which one? And is there anything else I can realistically do (or fit) to maximise the engine's lifespan?

Simon Aldred

Chris Horton: I have rather mixed feelings about these so-called deep-sump kits for the M96/M97 engine in its various forms. Not because they don't 'work', as such, but primarily because I tend to question whether even a hard-driven trackday car genuinely needs one. Are you really going to subject your essentially road-going vehicle - and yourself, of course - to the sort of sustained high cornering forces routinely encountered in a full-on race car? Personally, I doubt it.

But there can never be any harm in increasing the size of any engine's oil reservoir (other than the higher cost of an oil change, of course), and several manufacturers now offer sandwich-style extension plates to increase the depth of the sump, and thus its overall capacity. We shadowed one such installation in the August 2009 edition of the magazine.

The main issue with most such devices, though, is that although the sandwich plate around which they are invariably based is no more than about 1.5cm thick, by definition that still places the bottom of the sump about 1.5cm nearer the road surface - and rather surprisingly, I think, also makes it much more visible from behind the vehicle. So I was particularly interested in this new system (right) from US manufacturer Bodymotion Racing of Ocean Township, New Jersey.

Designed for what is claimed to be easy installation on all of the mainstream flat-sixes from 2000-2008 (but not on the Turbo or GT2/GT3 variants, which have the essentially air-cooled-style crankcase), it is said to increase total oil capacity by around three litres.

Significantly, though, this comes primarily from lateral extensions to the sump, or what Bodymotion calls 'wings', and the company claims that overall chassis ground clearance is not reduced. A system of baffles and flap-type one-way valves extends to the bottom of the sump pan (much as in the standard

Porsche set-up, it has to be said), significantly slowing the dispersal of the oil from the immediate vicinity of the pickup pipe, even through very long, fast corners. Apparently the device has been tested on a special rig allowing the crankshaft to be 'powered' externally at up to 6000rpm while the entire engine is then rotated through 90 degrees. The standard Porsche set-up lost oil pressure within four seconds, the other after-market systems tested within five, but Bodymotion's solution maintained a safe level for more than 20 seconds.

Other features include new (and presumably improved) swirlpot-style internal air/oil separators to reduce aeration and the consequent foaming of the lubricant as it is returned from the camshaft housings - again the standard Porsche system has two such devices; see also page 95 of this issue - and even two threaded holes to aid removal of the pan, when it is sealed against the crankcase with the standard Porsche RTV product, by screwing in a couple of M6 bolts to push against the metal above. More details are available at www.bodymotion.com.

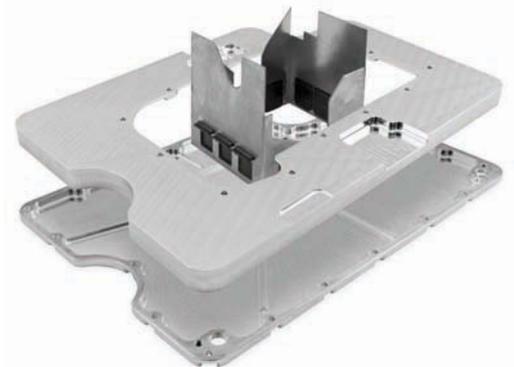
As for other measures to improve your engine's longevity, the most obvious has to be the regular oil and filter changes that you seem to be carrying out already - and it goes without saying that you should use only the very best oil. Porsche recommends Mobil 1, but again I feel you won't go wrong with the equivalent product from any of the other big-name brands. It might also be worth trying Millers - their still relatively new NT (for nano-technology) lubricants are used by many successful race teams, and by significantly reducing friction are said to boost power (and presumably longevity) accordingly. More information - and even a handy product selector - at www.millersoils.co.uk.

Hardware-wise, I am quite taken by LN Engineering's US\$149 ingenious filter adaptor - allowing the use of a full-flow, spin-on (and usually cheaper) filter instead of the inherently messy paper cartridge (details at www.lnengineering.com/spinonfilteradapter.html), and prudent independents now fit a magnetic drain plug to trap any metallic particles from a failing IMS bearing - and which, of course, won't be spotted unless you not only retain the original plastic oil-filter housing, but also take the trouble to look inside it whenever you change the element. I believe Euro Car Parts (eurocarparts.com) now sells those for just a few pounds each.

You might also want to renew the external air/oil separator that is a vital part of the crankcase breathing

system (an upgraded Motorsport unit is available for the Boxster and Cayman; see also pages 92-95 of this issue), although since in the 996 this means dropping the gearbox at the very least you might want to synchronise that with, say, a clutch change, and/or attention to the IMS bearing or crankshaft oil seal. (The Boxster and Cayman, again as shown in this month's how-to story, can be tackled from above.)

Beyond that, I would suggest that reliable cooling remains one of the most important weapons in the battle against M96/M97 engine failures. Low-temperature thermostats are favoured by some, including LN Engineering and UK-based Hartech (www.hartech.org.uk), but I feel those could risk also reducing the engine's combustion efficiency under certain circumstances, and for that reason - and several others - would first recommend PowerCool 180 from Evans Waterless Coolants in Swansea (www.evans.co.uk). For the full story behind that see our June 2013 issue. Back issues or PDF copies available at www.g11porscheworld.com if you missed it then.



Ingenious M96/M97 sump from Bodymotion increases capacity by means of lateral 'wings' - and not by the usual added depth that necessarily reduces ground clearance. Whether its built-in baffles are any more effective for road use than standard Porsche system is debatable, but company says testing on a special rig shows resistance to oil 'surge' way beyond anything likely to be encountered, even in racing

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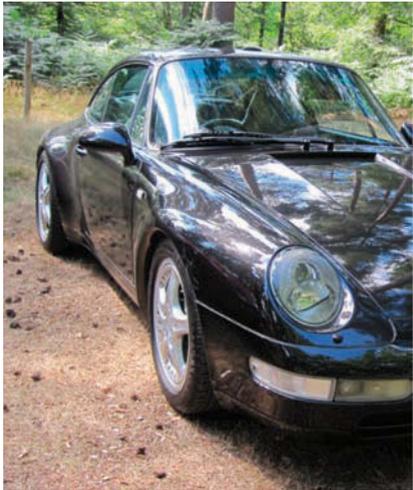


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PORSCHE 996 C2 1997-2002

The arrival of the water-cooled generation of 911 was a game changing moment for Porsche. The fact that they pulled it off so spectacularly says volumes for the men from Stuttgart

Words: Steve Bennett Photography: Antony Fraser



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 Top speed:174mph
 Price when new:..£65,000

Time waits for no man or, indeed, car. By the time the mid '90s rolled along, time for the air-cooled 911 was up. Legislation had caught up with the air-cooled flat six and, not only that, it was complex and costly to build too. Not surprising really given that the last of the air-cooled 911s – the 993 – was still very much based on the original 911 of 1963. That the new age 911 would be water-cooled was a given. The purists could agonise all they liked, but in order to meet targets for noise, efficiency, economy and emissions, a water-cooled,

flat-six was the only option.

The new car had to be cheaper to build too. There was a pretty big clue as to the direction that Porsche were heading with the new Boxster, launched in 1995 to huge acclaim. Indeed, as is now the form in modern car manufacturing, the new 996 model 911 used much of the Boxster's architecture including pretty much the whole front end and the doors. The engine too was based on the Boxster's, albeit larger at 3.4-litres as opposed to the mid-engined car's 2.5-litres.

Faced with a clean sheet of paper, Porsche's designers and

engineers could have deviated from the path of the rear-engined concept, but sensibly they stuck with the script, not least because the rear engine location makes the 2+2 911 layout possible and practical. A mid-engined 911 would just have been a Boxster with a roof, or Cayman as it became.

They could, though, have dramatically restyled the 911 silhouette, which itself dates back to the 356 in terms of its influences. Again they resisted that temptation. So the 996 was recognisably a modern interpretation of the 911 shape and typical of its '90s design

gestation, it was smooth and ever so slightly bland with it, particularly in silver, which seemed to be the default option for any Porsche of that era.

However, that is to nitpick slightly. Porsche essentially did a good job of modernising a 30-year icon, and that's before we even get on to the dynamics.

The 3.4-litre engine produced 300bhp, enough to propel the 996 to nearly 180mph. It was hooked up to a precision six-speed gearbox (or a five-speed Tiptronic) and if you were so inclined to crawl underneath you would be impressed by the cast aluminium suspension



WHAT TO PAY

Early 996s dipped under £10,000 some time ago, and there's plenty of decent cars around at this sort of money. Most will be of 1998-2000 vintage, probably under 100,000-miles and be either private or trade sales. However, not all Porsche specialists will operate at this price point, so beware the shiny 996 blinging up the otherwise dowdy stock of a secondhand car lot.

The cheapest 996 that we could find was with Midlands Porsche specialist PCT – a 1999 car with 199,000-miles on the clock. Sounds scary. Well no, not with a rebuilt gearbox and a new Autofarm built engine.

The most you need and should pay is around £15,000. This will get you an extremely good low to mid-mileage 2001-2002 car from a specialist dealer, that should want for nothing. A bargain in other words.

components that abounded. All this was bolted to a bodyshell that was both lighter and torsionally rather more rigid than the outgoing 993, despite being larger.

The result? Quite simply sensational. With passive suspension, wonderfully tactile steering and powerful and charismatic engine, plus sensibly sized 17in wheels, the first 996 C2's were light and agile and pretty much the fastest thing point-to-point that you could buy. On typical Brit B roads only an Impreza would get close. The 996 makes the current 991 feel bloated and blunt.

And the 996 arrived at just the right time, not just for Porsche, but for the world economy too. Here was a Porsche that more people could access, not just because they could afford it, but because it was more inclusive. Gone was the 911's stubborn quirkiness, this was a car that more people could enjoy more of the time. Quite simply Porsche couldn't build them fast enough.

And this has been the double-edged sword for the 996. Lots of cars means lots of choice and the sort of pressure that drives prices only one way: down. Consequently the 996 is the Porsche bargain of the moment and prices have been driven even lower by the well documented engine issues that can strike for seemingly no rhyme or reason, which makes buying a 996 something of a risk. Or not.

Knowledge is power and all that, and there are a number of fixes, some of which are as simple as just changing to a different kind of coolant.

Many cars on the market have already received new or rebuilt engines, and these are the cars to aim for if possible. But in the meantime here's the lowdown.

ENGINE AND TRANSMISSION

That the Mg6 water-cooled engine, that made its debut in the Boxster, was new goes without saying. Light, modern and powerful it was a much simpler engine to produce than the outgoing air-cooled engines. So what are the issues? Well, firstly there are plenty of 996s out there that haven't and probably never will suffer the 996 engine issues, and these will just wear out naturally and then probably be rebuilt utilising the various fixes on the market.

We haven't got room to go into massive detail here, and if you want the full 10-page lowdown, then head to our back issues department and the Oct 2011 issue of *g11&PW*.

Briefly, though, the 996's engine woes can be split between IMS bearing (intermediate shaft and bearing) failure and cylinder liner problems. The bearing, which is at the flywheel end of the engine can fail and thus spread swarf and metal fragments around the engine, which is usually enough to destroy the crank or, worse, allow so much up-and-down movement in the end of the shaft that either the primary chain or the camshaft chain will jump one or more teeth, which will almost invariably lead to valves hitting pistons.

There are a number of fixes on the market and most specialists have their preferred solution, which will generally involve an uprated bearing of some description. Acknowledged experts in the field of 996 engine repair are Bolton based Hartech and Oxfordshire based Autofarm.

On the cylinder liner front, there are two problems of note. On some engines the cylinder liner has been known to break

up, usually at the top of the bore, and causing untold damage. That problem seems to have passed and perhaps was a metal fatigue issue affecting certain engines. What is now far more common is scoring of the bores, which then leads to piston damage. This usually occurs on the piston and bore at the furthest reaches of the coolant system.

Again there are various solutions, but all revolve around replacing the cylinder liners and modifying the coolant system. Against the likes of Hartech and

Autofarm, plus Wigan based Cath Burrows have various fixes, which have proved to be very effective.

Talking of coolant, most specialists have now adopted Evans Waterless Coolant for use with the Mg6 engine. Its higher boiling point is thought to eliminate hot spots in the system.

So scary stuff? Yes, in that it's impossible to know when these issues will strike, but the percentages game would suggest that issues are still the exception rather than the rule.

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Porscheshop

www.porscheshop.com
A great range of O/E and quality pattern parts, plus good value 996 tuning parts under Porscheshop's EuroCupGT range

PorschApart

www.porsch-apart.co.uk
New and second hand parts

Design 911

www.design911.co.uk
Servicing and tuning parts from a comprehensive stock list, plus Design 911's own Designtek tuning parts range

Hartech

www.hartech.org
996 engine rebuilds, trouble shooting and future proofing a speciality. Prices start from £2200, so not quite such a disaster!



WHAT THE PRESS SAID

Anyone worried about a water-cooled g11 not having sufficient performance or character compared with the old air-cooled 3.6-litre model can bin their concerns right now.

Autocar, Oct 1999

We can't think of any other sports car that feels this complete. Every element has been honed. You can feel the quality and consistency of engineering in every control surface - steering, throttle, clutch, steering, brakes. There's a synergy here. Every component works together to create an exquisite, seamless whole.

EVO, Jan 1999

If you can just forget the old car, then this new Porsche presents itself as an almost absurdly attractive proposition. Think of it, instead, as a crushingly able sporting GT, a super-fast, all-purpose missile that provides more pure ability than any competitor.

Car, Dec 1981

Oh, and what about the gearbox? Well, you'll be pleased to hear that there are no particular problems transmission wise, although being the purists that we are we would, of course, go manual. Clutches usually last up to 80,000-miles, more if you're really light on it, or don't do too much town work.

SUSPENSION, STEERING, BRAKES

After the engine woes, you'll be delighted to hear that there are no big problems with the rest of the running gear. The suspension itself is conventional MacPherson strut at the front and multi-linked at the rear.

As already intimated, all the suspension arms are in lightweight aluminium and it combines handling with an almost exquisite poise that makes the 996 an incredibly involving drive.

In early 996 C2 form, there's no complicated electronic suspension systems to worry about, it's all passive.

Aside from the usual wear and tear of replacing dampers and bushes, the lower suspension arms (or coffin arms as they're known, for obvious visual reasons), do wear out. Listen out for various creaking noises. Replacements are easily available from any of the main Porsche parts suppliers.

BODY, INTERIOR AND ELECTRICS

Rust has yet to be a problem on 996s, but only time will tell as to whether it will rear its oxide head. Not strictly bodywork, but situated at the front of the car, the cooling and air conditioning radiators sit low down and at either side of the front air dam. Both are open to the elements and prone to damage from

stones and accumulated muck and grime, which collects in the corners and rots the radiators out. Don't be surprised to have to use this as a bargaining tool.

The 996 interior will feel and look very spartan and basic compared to the current generation of g11. It is very much of its time, with a swooping dash top and instrument pod and rather fussy door cards. All will have varying degrees of leather and other interior trinkets, such as aluminium and carbon trim. Early sat nav systems are unlikely to still be working.

As to condition? Well, like most things in life the 996's interior won't respond particularly well to neglect, and there are some truly scruffy examples out there with badly cracked leather seats and scuffed trim, particularly around the sills where the levers that open the front and rear hatches reside. A car with a good interior almost always comes with decent exterior and a full and encouraging service history. In other words you get what you pay for. Oh, and look out for some truly colour-blind interior colours too. You may despair at the sheer number of silver/grey 996s with black interiors on the market, but after you've seen some of the more imaginative colour combos out there, don't be surprised if that's what you end up with! **PW**

IN THE CLASSIFIEDS

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199,289 miles
Ocean Blue
Graphite grey leather interior
FSH
www.pctcars.co.uk
£8250

1998 996 C2

94,000 miles
Ocean Blue
Dark blue leather interior
FSH
www.rpmttechnik.co.uk
£11,995

2000 996 C2

104,000 miles
Silver
Black leather interior/sports seats
FSH
Trade: www.halo-cars.co.uk
£13,995



'I BOUGHT ONE' TONY LAWRENCE

Of course I'd heard the horror stories of engine meltdowns, either IMS bearing related or cracked or worn bores, but the prices of used 996s were just too tempting. After all, here was a car that, when new, cost the best part of £70,000+ new, with a few choice extras, and now £10,000 was ball park for a pretty solid example. Who says depreciation is a bad thing? And that was pretty much my budget a couple of years ago. At that money I knew I was going to have to be looking privately. A dealer would be marking up a £10k car by £2000-£3000 so I needed to be beating them at their own game.

It's surprising how few private cars there were around, presumably because they were being part-exed, or dealers were beating me to it. I saw a lot of dross too. Patchy service histories, tired cars that had been neglected and some awful colour combos that made you wonder if the original buyer had been colour blind.

But I struck lucky. A 1999 Basalt Black 996 C2, with a reasonable 60,000-miles on the clock at £11,000. It was a private sale and the car had obviously been well looked after, with a full history, and an engine rebuild by Hartech, so mechanical peace of mind included.

There was some room for negotiation. The front water and air con rads were starting to rot at the corners, so we agreed on £10,000. The tyres were getting a bit threadbare, too.

I don't mind getting my hands dirty, so I tackled replacing the rads myself. With the front apron off, access is very good and the job was straightforward, helped in part by a step-by-step, how-to guide from this very magazine.

A new set of N rated Continentals followed and since then I've just driven it and enjoyed every minute. It's hard to believe that such a thoroughbred car can cost so little. I really can't imagine either a 997 or even 991 being that much better, although I'd like to find out!

PARTS PRICES

(Prices supplied by www.grouptyre.co.uk and www.carparts911.co.uk)

Tyres (each)	£145.00 front, £177.00 rear (Continental)
Front pads (set):	£107.00
Front discs (pair):	£113.60
Ignition coil (each):	£27.60
Ignition lead set:	£74.70
Exhaust system:	Rear L&R Silencer, £622
Dampers:	
Front damper:	£319.73
Rear damper:	£364.46
Clutch:	£312.00

SERVICING

(Prices supplied by Northway Porsche www.northwayporscheltd.co.uk)

12,000-mile service:	£175.00
24,000-mile:	£285



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REBORN 911, Singer inspired custom built 964 Targa, full specification available see www.reborn911.com, 68K orig miles, full history, £85,000. Tel: 07887 702725. Email: info@reborn911.com (E.Yorks). P0214/022



PORSCHE 911 C2 PDK, June 2009, Sport Chrono, sat nav, heated seats, 19" alloy wheels, mileage 1100 (eleven hundred miles), Meteor Grey, warranty and MoT until May 2014, £48,000. Tel: 07860 350985. Email: andrew.m.knight@btinternet.com (Staffs). P0214/027



911 (997 GEN 2) CARRERA 3.8S PDK 2009/09, 35,000 miles, immaculate condition, Aqua Blue, Ocean leather, paddle shift, PCM2, Bose, Bluetooth, USB/IOS, heated seats, Xenon LED lights, FOPCSH, tax/MoT April '14, £36,995. Tel: 01789 751207. Email: mailboxjka@gmail.com (Warks). P0214/029

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1977 911 3.0 SPORT COUPE, no sunroof, is an RS backdate nearly completed! V/nice car, £17,500, no offers, worth £30K+, RH drive, full history, UK car. Tel: Terry, 07973 371179. Email: terryfoubister@aol.com. P0214/028



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2005 997 CARRERA 2 S MANUAL £23,995
Basalt Black Metallic with Black Leather interior 47,000 miles

6 speed manual	Heated Leather Sports Seats	AirCon & Climate Control	Bose Multichanger
PSM	Sunroof	Litronic Lights	19" Alloys



2004 996 CARRERA C4S WIDE BODIED COUPE £16,495
Basalt Black metallic with black Leather interior 98,000 miles

Tiptronic	CDR-23 stereo	PSM	18" Turbo Monoblock Alloys
AirCon & Climate Control	Chrome Interior Pack	Cruise Control	



1998 996 CARRERA 4 COUPE TIPTRONIC £9,495
Basalt Black Metallic with Grey Leather interior 112,000 miles

Comes with personalised registration	Comfort Seats	CD-11 Stereo	PSM
AirCon & Climate Control	Onboard computer	18" GT3 Alloys	



2006 997 CARRERA C2 MANUAL COUPE £19,995
Basalt Black metallic with black Leather interior 91,000 miles

Heated Seats	SatNav & Phone	PSM	19" Multispoke
AirCon & Climate Control	6 speed	Home Light	Porsche Design Alloys
		Multichanger	



2002 996 C4S TIPTRONIC COUPE £18,995
Basalt Black metallic with Black Leather interior 46,000 miles

Heated Seats	Headrests	Parrot Phone Module	Rear Park Assist
Porsche logo increased in	AirCon & Climate Control	PSM	18" Alloys



1999 996 C4 TIPTRONIC COUPE £8,995
Ocean Blue metallic with Tan Leather interior 123,000 miles

Comfort seats	PSM	Front and Rear discs and pads	18" 5 spoke Alloys
AirCon & Climate Control	Rear Park Assist	just replaced	



2003 996 CARRERA 4 CABRIOLET MANUAL £16,995
Basalt Black metallic with Grey Leather interior 70,000 miles

Heated Comfort seats	Porsche logo increased in	AirCon & Climate Control	Part Carbon Fibre interior
PSM	Headrests	CDR-23 Stereo	18" GT3 Alloys



2001 996 CARRERA 2 TIPTRONIC COUPE £14,995
Rainforest Green metallic with Beige interior 56,000 miles

Soft ruffled Savanna Beige interior	Comfort Seats	CDR-22 stereo	18" GT3 Alloys
AirCon & Climate Control	PSM	Electric sunroof	



2007 BOXSTER 3.4 MANUAL £14,990
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PORSCHE 911 (996) CARRERA 4 CABRIOLET , 1999, S-reg, black, Savannah	PORSCHE 911 (964) CARRERA 4 TARGA , 1990, G-reg, 199K miles, Slate Grey	PORSCHE 944 S2 3.0 COUPE , 1989, G-reg, 1990MY, 98K miles, Grand Prix White, blue logo interior, in alloys, electric memory black leather, extensive full service history
£8,995	documented full service history	£6,495
PORSCHE 911 (996) CARRERA COUPE MANUAL , 2003, 03-reg, 3.6 Facelift, 81K miles, Seal Grey, black leather, full service history, sat nav, sunroof	PORSCHE 911 (996) CARRERA COUPE TIP-TRONIC , 1998, R-reg, 92K miles, Vesuvius, black leather, digital sound processor, grey leather, 18-in alloys, full electric heated memory seats, electric sunroof, Park Assist, traction control, full service history	PORSCHE 911 (996) CARRERA COUPE MANUAL , 2001, 51-reg, 81K miles, Meridien Silver (grey metallic), service history, new clutch, discs & pads
£15,000	£11,000	£12,995
PORSCHE 911 SC 3.0 COUPE - Weissach Limited Edition LHD , 1983, Y-reg, 85K miles, metallic grey, cream leather and red carpets, documented full service history	PORSCHE 928 GTS , 1993, L-reg, 131K miles, engine rebuild by Paul Anderson at 129K, silver, blue leather, full service history	PORSCHE 911 CARRERA 3.2 SUPERSPORT COUPE , 1986, D-reg, Guards Red, black leather, 100K miles, factory Supersport M491, FSH, bodywork restored, new full black carpet set, Cat 1 alarm fitted
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TRIED&TESTED

WITH 911 & PORSCHE WORLD'S CONSULTANT EDITOR, CHRIS HORTON

993-MODEL 911 CARRERA 'S' ■ 1997/'P' ■ 80,663 MILES ■ £32,995

I drove to Cameron Sports Cars eagerly expecting to assess, as arranged, a 991 – it would have been the first example of this most recent of 911s to appear within these *Tried & Tested* pages. By the day of my visit, however, it had not only been sold – hardly surprising given both its mileage (just 2403) and price (£20K off list, basically) – but also physically paid for. And so although it was – very temptingly – still on the premises, co-proprietor Simon Cockram had to ask me to choose something else from their usual large stock.

But what, though? Plenty of clearly good 996s and 997s (at least five Cabriolets among them) and 987 Boxsters – even a 981, as well – but nothing that in this context really caught my eye. And then I spotted this 911 Carrera 'S'. Potentially under offer, too, suggested Simon, but fresh out of a very light restoration – based upon the removal of a Turbo rear spoiler in favour of the distinctive standard set-up – and entirely typical of the 993s that, although naturally increasingly rare occupants of the showroom, both he and business partner Ian Cameron are always very happy to retail. 'I enjoy the modest challenge of preparing these slightly older cars,' said Simon, 'and they really are as tough as their reputation suggests. What's more, we know we could quite easily sell each one several times over.'

Registered in March 1997 – so only a few months before the launch of the first 996 – this one has all the right attributes to find a new home very soon. Arctic Silver paint, black leather trim, a 285bhp and 340Nm Varioram engine, a sliding steel sunroof, and not least the subtly different – and tastefully attractive – 'wide' body of the Turbo. No doubt it was this last feature that had prompted a previous owner to have installed a genuine Turbo engine lid and fixed rear wing, but both of those have now been replaced, as I've said, by the standard self-raising affair with its unique 'S'-pattern twin grilles. 'That alone cost us around £1500 by the time we had bought all the necessary parts and had everything painted,' adds Simon.

Transmission is Tiptronic four-speed automatic rather than the generally favoured six-speed manual (not that you'll notice any appreciable reduction in performance), and you also get air-conditioning (fully functioning, I am assured), Porsche Technik white-faced dials, and an Alpine CDA-7873R radio/cassette player – hardly the most modern piece of audio kit, but easily upgraded if required.

There is in addition a rear-windscreen wiper, an 'eyebrow' spoiler over the high-level third brake light, and a battery cut-off (correctly fitted to the positive terminal of the now necessarily slightly smaller-than-standard but new Bosch accumulator), a full set of overmats, and not least two brand-new and hence squeaky-clean number plates. The only absentee, if such it can be called, is the tiny rubber buffer designed to prevent the front wiper blades knocking together at their higher speed setting – but that, too, could be sourced easily and reasonably cheaply. (For more on that see Q&A in the November 2013 issue.)

No complaints on the condition front. There are some light scuff marks on the underside of the front apron, and a single small scrape on the clear tape protecting part of the right-hand rear wheelarch, but by and large the paint is very good to excellent. I spotted a tiny spider's web of corrosion on the black-anodised edge trim for the left-hand rear window, but that's not uncommon for a 993. Likewise what looks to be a repair to the right-hand door's check-strap mount on the 'A'-post – but at least it appears to have been done professionally, and to a high standard.

Inside, all the trim is in good order, although such might have been the creasing and wrinkling on the recently 'Connollised' front seats that they will probably need further care to keep them looking as good as they do now. Both engine bay and front compartment are tidy enough, without being spectacularly so – both lids have new struts – and no obvious dramas beneath the car, either in terms of damage or oil leaks. All four wheels are in very good shape, with deep-treaded tyres – Continental at the front, Falken at the rear – and although it's hard to see the brake pads the front discs are nearly new. The rear discs are rather gnarled, though, and may need replacing soon.

A short drive shows the car to be in fine mechanical fettle, and the Tiptronic gearbox, while not as intuitive as the 996's and still later devices, reassuringly effective. The history file – now in strict chronological order in one of the A4 binders Cameron Sports Cars uses for the purpose – shows stamps from a number of Porsche Centres and latterly reputable independents, with the most recent attention (and a number of worthwhile replacement parts) in May 2013, at Cameron itself. There is no road tax, but the MoT runs to May 2014, and Cameron's normal warranty for three months. Sounds good to me. **PW**

CHECKLIST

Background: A standard 993 Carrera 'S' – so one of the last of this iconic and now increasingly sought-after range. Has the wide-wheelarch, Turbo-style body (but ordinary C2 running gear, of course), and the previously fitted 911 Turbo rear wing has been replaced – by Cameron Sports Cars – with the standard twin-grille set-up for authenticity. Further light refurbishment has been carried out, but basically as bought in

Where is it?

Cameron Sports Cars is less than a mile from Junction 18 (Bath and Stroud) of the M4 motorway: 01225 892244; cameronssportscars.co.uk

For: Beyond the fact that it's a 993, you mean? How long have you got? Colour, condition, history, provenance, the added cachet of that wider body – and not least its everyday usability

Against: Tiptronic automatic gearbox might deter some (but not us), and it's not exactly inexpensive – but by the same token the interest being shown in it suggests it won't take long to sell. And that this time next year it will most likely be worth just as much, if not more

Verdict: Even an average 993 remains an impressive machine, and while not 100 per cent perfect this one is not far from that desirable state of affairs. It certainly makes a thoroughly convincing ambassador for the entire model range



Value at a glance

Condition	✓✓✓✓
Price	✓✓✓
Performance	✓✓✓✓
Overall	✓✓✓✓✓
✓ Poor ✓✓ OK ✓✓✓ Fair ✓✓✓✓ Very good ✓✓✓✓✓ Excellent	

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997-MODEL 911 CARRERA ■ 2008/08 ■ 37,116 MILES ■ £34,900

It is a well-documented phenomenon that time seems to pass more quickly the older one becomes. Even so, it still comes as something of a shock to be reminded that this so-called Gen 2 997 is rapidly approaching what you might term its sixth 'birthday'. To me, at least, it seems like no more than a couple of years since the M97 engine received the thorough redesign that appears finally to have given it the longevity it so desperately needed – and the car itself an arguably rather less effective makeover with (among other features) LED lights. But then I recalled, with no less a jolt, that it is now the best part of two years since the 991 arrived on the Porsche scene.

It's an easy trap to fall into. The 997 range as a whole still looks thoroughly contemporary – even when parked immediately adjacent to the very latest 991 – and this 3.6, with little more than 37,000 miles recorded in the hands of just two previous and clearly fastidious owners, could pass for a two- or even a one-year-old any day of the week.

There are a few inevitable blemishes on the front apron, but none of the usual nasty scrapes beneath it – the especially vulnerable lower lip spoiler is entirely free from abrasions, and likewise the remainder of the floorpan – and the rest of the eye-catching Guards Red paint is both seemingly original and practically unmarked. Smooth as glass, too. It's a similar story inside the cabin: a couple of very minor indentations in the leather on the back of the left-hand front seat, and the not unusual faint scuff marks on the right-hand sill kickplate, but that apart pretty much as new. More on all that in just a moment, but first let's take a look at what you actually get for your money.

The engine, as I've suggested, is the standard 3.6, with economical direct fuel injection, or DFI. It's mated to the equally standard six-speed manual transmission driving the rear axle only. Wheels themselves are matt-black 19-inch Carrera 'S' multi-spokes with crested centres, and the Bridgestone Potenza tyres a beguiling mix of almost new at the front, and at the rear so literally brand-new that they still have the thin, coloured bands on the tread area. Brakes – yellow calipers notwithstanding, usually a sign of insanely expensive PCCB ceramics – are common-or-garden steel discs, all in great condition, and although it was hard to see precisely how thick the pads are, I would be surprised if they were more than about a third worn.

Inside, there is black leather with matching carpets (the latter protected by Porsche overmats), plus – in no particular order – PCM3 with touch-screen sat-nav and Bluetooth phone 'preparation', as it's called; red Alcantara fabric on the handbrake grip, plus the lid of the small storage compartment at the rear of the centre tunnel; a Sports steering wheel with its rim covered in black Alcantara; and not least an on-board trip computer. Both of the front seats are entirely manual in operation. Additional features controlled or experienced from within the cabin include Bi-Xenon headlights, rear Park Distance Control, a rear window wiper, and not least a switchable Sports exhaust – a 'loud' button, basically. Perhaps unusually, given such a combination – but reflecting what is in some respects a very carefully chosen overall specification – there is no PASM, and no Sport Chrono.

Mechanically the car seems as good as it looks – and I think you'll agree that it does look very good. There is a handful of dead leaves at the base of each air-con condenser – although both those and the engine-cooling radiators are reassuringly clean and dry – but the engine compartment is predictably tidy, and no less unsurprisingly there is not a trace of an oil leak beneath. No overspeeds are recorded within the management system's memory. Up front, there's a newish-looking Porsche-branded battery, and I'm told that one previously very slightly noisy suspension arm has recently been replaced. The car has had a new clutch within the last few hundred miles, too – although precisely why that should have been necessary remains something of a mystery – and the minor service due next June has been carried out, as well. Apparently that also included a brake-fluid change.

The car is exceptionally good to drive – as you have every right to expect at this mileage. It may have 'only' the entry-level 3.6-litre engine, as opposed to the 3.8 of the Carrera 'S', but with 345bhp and 390Nm it is never going to be anything other than electrifying – with the added appeal of that switchable exhaust, if that's your thing. (It's not mine.) It feels taut and precise, with pin-sharp steering and brakes, firm but supple suspension, and a superb gear change – a tactile fluidity from the nicely weighted clutch pedal, too. Factor in the full year's MoT, road tax to the end of next October, and not least two clean, fully functioning keys, and I think you will agree that it's a stunner. **PW**

CHECKLIST

Background: A two-owner and relatively low-mileage early 'Gen 2' Carrera 3.6, registered in August 2008, and in excellent condition both cosmetically and mechanically. Full year's MoT; road tax to next November. Looks very good – and drives beautifully. Full history, with a recent service and brake-fluid change – and a new clutch was fitted little more than 200 miles ago. New tyres, too

Where is it?

Dove House Motor Company is at Crown Way, Rushden, Northamptonshire NN10 6BS; tel: 01933 354144; www.dovehousecars.com

For: Condition, colour, history, provenance: all the usual obvious factors, basically. Matt-black Carrera 'S' wheels add a welcome touch of glamour, while new tyres and clutch – and a pre-emptive service – make it good to go for the foreseeable future

Against: Colour, perhaps – Guards Red might be a bit too unsubtle or even old-fashioned for some – and the options list is perhaps a little idiosyncratic. That certainly wouldn't deter us, though. Don't be put off by the fact that it's 'only' a 3.6, either: it's still darned quick!

Verdict: Pretty much any Gen 2 997 is the best combination of chassis and engine this side of a GT3 or Turbo, and this one both looks and no less crucially feels right in every significant respect. We liked it a lot



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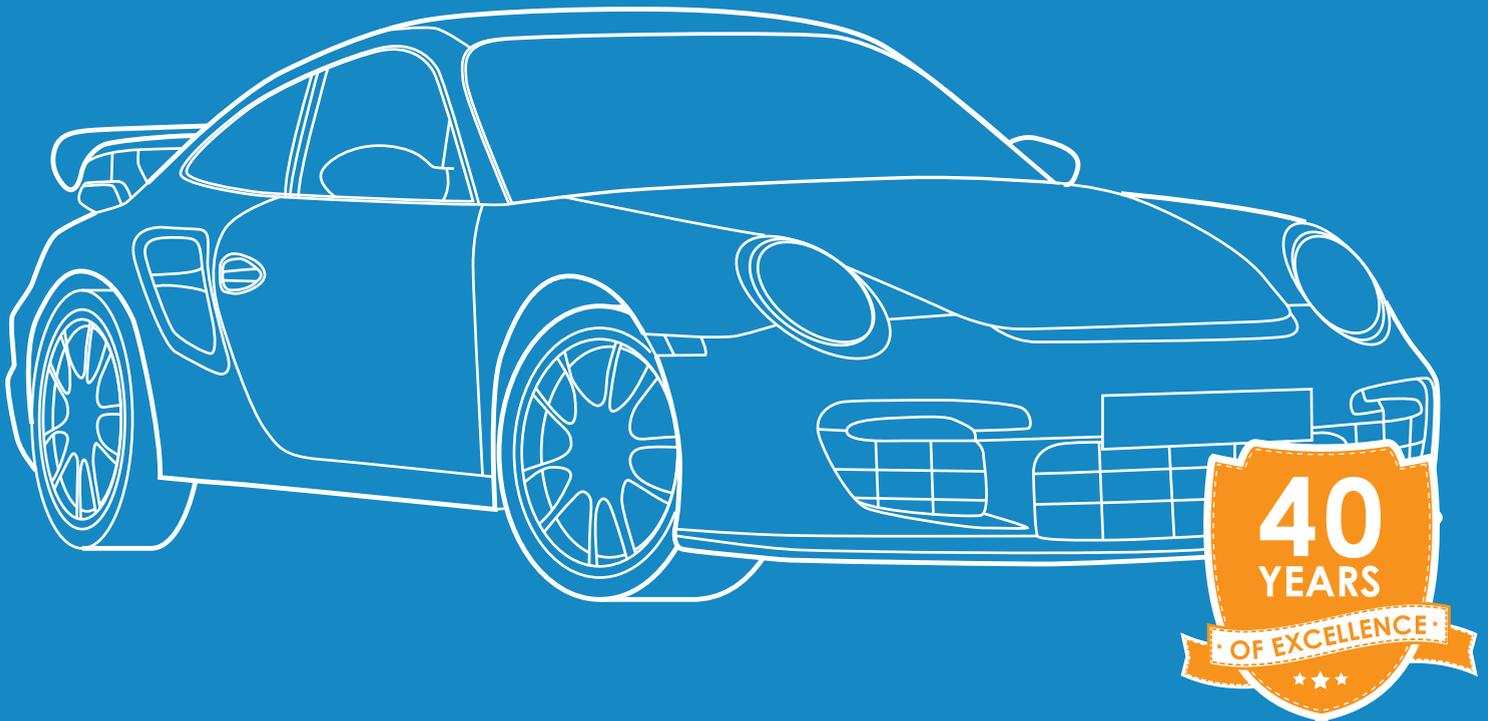


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924 Owners Club	64	GT One	102	Paul Stephens / PS AutoArt	83	Specialist Vehicle Preparations	25
Aase Sales	16	Guard Transmissions	56	Pelican Parts	39	Sportwagen Eckert	57
Addspeed Performance Cars	64	H&R Suspension (Euro Car Parts)	15	Performance Direct Insurance	120	Stoddard Parts	13
Adrian Flux Insurance	119	Hartech Automotive	75	PMO	96	Tech 9 (TechArt UK)	124
Akrapovic (Design 911)	11	Hayward & Scott	84	Porsch-Apart	75	The Wheel Restorer	96
Ashley Insurance	108	Hendon Way Motors	49	Porsche Cars GB (Aftersales)	7	Tipeac	107
Auto Umbau Porsche	38	Heritage Insurance	108	Porsche Centre Portsmouth	6	Yorkshire Classic Porsche	91
Braunton Garage	28	Hexagon Modern Classics	89	Porsche Club GB	102	Zims Autotechnik	74
Brey-Krause	6	HP Motorsport	28	Porsche Torque	107		
Cargraphic/Parr	123	Jasmine Porschalink	73	Porscheshop Euro Cup GT	90	CLASSIFIEDS	109-118
Cavendish Porsche	48	Jaz Siat Porsche	74	Portiacraft	97	Eporsch	
Churchill Insurance	120	JMG Porsche	90	Prestige Salvage	96	Brian Miller Motors	
Classic & Sports Finance	16	JZM	73	ProMax Motorsport	90	Car Cover Shop	
Classic Additions	96	LA Dismantler	64	Ramus Porscha	32	Car Inspections	
Classicline Insurance	120	LN Engineering/Fast Forward		Reap Automotive	102	CMS Porsche	
Design 911	31, 108	Engineering	56	RennAire	91	DSD Motorwerks	
Douglas Valley Breakers	91	Marque 21 Racing	107	Rennline	23	Finlay Gorham	
Dove House Motor Company	37	Mayfair Performance Insurance	121	RGA	32	Hillcrest Specialist Cars	
Elephant Racing	29	Millers Oils	76	RH Classic Insurance	107	Karmann Connection	
Elite Garages	21	Nine Excellence	38, 96	RPM Specialist Cars	85	Motorfarm	
Elite Motor Tune	84	Ninemeister	38	RPM Technik	97	Peter Morgan Media	
Engine Builders Supply	33	Northway	56	RS 911	97	Prestige & Performance Cars	
Fabspeed	65	Numeric Racing	48	RSJ Sports Cars	24	Roger Bray Restoration	
Fearnspout	28	Ohlins (Design 911)	19	R-to-RSR	102	TJS Sportscars	
FVD	2	Paragon GB	47, 85	Segal Motorcar	76	Williams Crawford	
Gaz Shocks	63	Parts Heaven	24	Southbound Motor Trimmers	74		
GMG Racing	17	Patrick Motorsports	85	Specialist Cars of Malton	97		

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