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chp**Printed in England**

Garnett Dickinson Print Ltd; tel: 01709 768000

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UP FRONT

Turbocharged 911s and an electric future with the Mission E, these are exciting times for Porsche and those of us along for the ride

We've seen the future and it's turbocharged. No surprise there. Porsche confirmed some time ago that the 911 was going to be turbocharged across the range, bar the GT models. We know the reasons: Emissions, economy etc. It's the way the industry is going and, in the short term, it's the only way that these objectives can be met. Beyond that and we enter the world of the hybrid, which is strongly tipped to arrive with the next generation of 911. And now, thanks to Porsche's grand unveiling of the Mission E concept at Frankfurt, we can see even further into the future, where there will be no combustion

“ The 911 had to evolve and we've had 53 years of the aspirated car ”

at all. Just batteries and electric motors.

But sticking with the immediate future and the turbocharged 911 range, sure, the loss of the normally aspirated flat-six is going to be a great shame, but the 911 has to evolve and we've had 53 years of the aspirated car. Having ridden in the new car, and heard it in anger, we're greatly encouraged. And let's not forget the extra power and torque, which will make the new turbo 911s effortlessly fast on the road. The base 991 C2 in normally aspirated 3.4-litre form was/is a car that you have to work very hard to access its performance. The new 3-litre turbo C2 will be a very different animal with 369lb ft from 1700rpm–5000rpm compared to a meagre 324lb ft at 5600rpm. That's called having your cake and eating it.

STEVE BENNETT
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Performance 9





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Metallic Blazing Grey full leather. Upgrades - Ninemeister conversion No 4, KW lifting suspension. Only 8,400 miles.



1995 PORSCHE CARRERA 993 RS 3.8 - LHD
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1995 PORSCHE 993 3.6 TURBO - RHD
Guards Red. Black full leather interior. 18" Hollow spoke alloys. Electric Sun Roof. Air conditioning. Only 31,300 miles.



1989 PORSCHE 930 FLACHBAU TURBO - LHD
Metallic Silver. Black full leather interior. Factory LE Edition. Rear Wiper. Rear Spoiler. Excellent condition. Only 17,800 miles.



1997 PORSCHE 993 CLASSIC 3.6 CARRERA 2 TIP - LHD
Metallic Polar. Grey full leather interior. Front & rear spoilers. RS Side skirts. A/C. Excellent Condition. Only 15,600 miles.



1997 PORSCHE 993 CLASSIC 3.6 TURBO - RHD
Ocean Blue. Grey full leather interior. Upgrades - 3rd Brake Light. Green Tinted Windscreen. FSH. Only 59,500 miles.



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NEWS

We thought the new turbo 911 range would be the big news from Frankfurt, but we hadn't bargained on the Mission E concept. Elsewhere, Porsche opens its Le Mans driving centre and Mark Webber gets a 918, lucky chap

ALL-TURBO 911 CARRERA RANGE IS GO

Full details of the second-generation 991 Carreras revealed at the Frankfurt show



We knew it was coming. Now it's official. In a move aimed at improving efficiency at the same time as boosting performance, the new second-generation 991 Carrera range has been revealed in all its top-to-bottom turbocharged glory at the Frankfurt motor show.

For a fully forensic look at the new cars, head to page 44 for Chris Horton's in-depth feature. In the meantime, here are some key highlights of what represents the beginning of a new turbocharged era for all Porsche sports cars, not just the iconic 911.

The new turbocharged engine is the most obvious part of a package of tweaks and upgrades for the Gen II 991 Carreras. Both the standard Carrera and the Carrera S share essentially the same 3.0-litre twin-turbo flat-six engine. However, the Carrera runs a 365bhp tune to the Carrera S's beefier 414bhp output. In both cases, those figures are up 20bhp over the outgoing naturally aspirated models.

Performance-wise, we're talking PDK and launch control-assisted zero-to-62mph sprints of 4.2 seconds and 3.9 seconds for the Carrera and Carrera S, respectively.

Top speeds creep up to 183mph for the Carrera and 191mph for the Carrera S. Meanwhile, Porsche says the Carrera S can lap the hallowed North Loop of the Nürburgring in just 7 minutes and 30 seconds. That's 10 seconds faster than the old 'S' and quick enough to put the mainstream Carrera S into true supercar territory.

The raw numbers don't tell the whole story, of course. The big unknown is the impact turbocharging will have on the feel and character of the new engines. There is, however, one very conspicuous clue buried in the official stats. The new engines produce peak torque from just 1700rpm. The outgoing atmospheric engines need 5600rpm dialled up for maximum twisting force. Safe to say the power delivery of the new engines will be very different. For the record, a manual gearbox remains the standard transmission with PDK remaining an option, albeit one likely to be chosen by the vast majority of buyers.

As for efficiency, this is arguably where the really big on-paper gains are made. Overall, fuel consumption improves by a scarcely credible 12 per cent despite significant performance increases. CO2

emissions dwindle to just 169g/km for the PDK-equipped Carrera and 174g/km for the Carrera S PDK. To appreciate just how incredible those CO2 numbers really are, try this for size. The original 2.5-litre Boxster cranks out 239g/km in return for all of 201bhp.

Elsewhere, the revised 991 has been upgraded with a number of tasty techno tweaks. Porsche's continuously adaptive PASM active suspension is now standard across the range, with the Carrera S now optionally available with the rear-wheel steering system already seen on the 991 GT3 and Turbo models.

Finally, there's the sordid matter of money. The fun starts at £76,412 for the Carrera and £85,857 for the S, both coupés. For the drop-top versions, the investment is significantly stiffer. You're looking at £85,253 and £94,698, respectively.

The new Carreras in both coupé and cabriolet form are already on Porsche's UK website. In fact they're available for tweaking on the glorious time waster that is the Porsche Car Configurator. We'll take a manual Guards-on-black S with 20-inch RS Spyder rims and a set of buckets. Over to you.

The evolutionary process continues. New front and rear aprons, lights and, most notably, vertical vanes in the rear engine cover. Right: The full story, though, is under the skin of the Gen II 991, where new turbo engines lurk



CARRERA SPOTTING

There are big technical changes with the new Gen II 991 Carreras, but how do you spot them visually? Along with new front and rear bumpers, both the front driving lights and rear clusters have been tweaked, the latter receiving a new '3D' effect. But the most obvious changes are at the rear courtesy of more centrally located exhaust outputs when the PSE option is ticked and vertical rather than horizontal vanes in the engine cover.

IT'S IN THE DETAILS

The change to turbocharging is the big news. But the 991 has been tweaked in almost every area. Here are some of the detailed highlights.

First up, brakes. The Carrera carries over its 330mm diameter discs, but they're now 6mm thicker and 17 per cent larger pad surface. The Carrera S's discs are up by 20mm to 350mm and now sport two-piece construction. The ceramic PCCB option is now the full 911 Turbo solution.

On the transmission side, Porsche has slightly elongated the ratios from third gear upwards for the manual gearbox. For the PDK option, Porsche has finally buckled to pressure and reversed the actuation of the PDK lever in the centre console. Pushing forward now changes down, pulling the lever grabs the next gear up. It's a welcome change and a long time coming, even if it may be confusing for owners of multiple PDK Porsches.

Finally, the PSM stability control system now has an optional 'drift' mode. It allows significantly more slip and helps the driver maintain a sustained angle of dangle rather than merely a momentary loss of rear-end stability. It's part of the optional new Sport Chrono package that also includes a mode selector on a new 918 Spyder-style steering wheel. For the full story go to p44.



ELECTRIC SHOCKER

Porsche steals the show at Frankfurt with radical Mission E concept



Quite apart from anything else the Mission E looks absolutely sensational. Why couldn't the Panamera have looked like this?

The hum of electric motors dominated this year's Frankfurt motor show. And joining the swooshing throng was Porsche, making a big noise, figuratively speaking, with the unveiling of the Mission E. The four-door concept – slightly larger than a 911, slightly smaller than a Panamera – is fully electric, has the equivalent of 600bhp and will travel up to 500km (310 miles) on a single charge.

The Mission E's launch during the Volkswagen Group's pre-show gala evening came as a surprise to many of those present, although it dovetailed nicely with the mothership's all-pervasive message that the world is moving inexorably towards hybrid and electric propulsion. Even for sports cars. Even for Porsche.

And the 130cm-tall Mission E is definitely a sports car. To look at certainly – Porsche's design heritage can be seen in many of its alluring curves and detail shapes – and also in its performance: zero to 60mph in less than 3.5 seconds and with a computer-predicted Nürburgring lap time of under eight minutes.

Powered by a pair of latest generation lithium-ion 'permanently-excited synchronous motors' (PSM), similar to those found in the 2015 Le Mans-winning 919 hybrid LM P1 racer, the Mission E is four-wheel drive, with the prodigious torque of the twin electric motors distributed between the individual wheels via an adaptation of Porsche's existing Porsche Torque Vectoring technology. The car's battery packs are positioned as low

as possible in the aluminium, high-strength steel and carbonfibre-reinforced plastic floorpan and are spread evenly inside the wheelbase, thereby keeping the centre of gravity low and helping with the front-rear weight balance, all to the benefit of the handling.

The Mission E's drive system has an 800-volt rating (most existing electric cars run at 400 volts) and is also claimed to overcome the chief drawback to many electric cars – it's quick to recharge. At least, it is if you have an 800-volt charging station, when you'll be able to bring up the batteries to 80 per cent of their full charge in just 15 minutes: Porsche calls it – wait for it – 'turbo charging'. It's also possible to recharge the batteries using an existing 400-volt quick-charge system. And to





THE NEXT PANAMERA?

While there was much speculation at Frankfurt that the Mission E would make a great Panamera replacement, there was also a rumour that the Panamera Sport Turismo concept – a sort of ‘estate’ Panamera with tidied up details that debuted at Frankfurt three years ago – might have disappeared from public view for a reason...

The Sport Turismo, which was based on a hybrid drivetrain, didn’t hugely overhaul the Panamera’s lines, yet made it look genuinely desirable. Here’s to hoping the rumour comes true.

further boost the convenience of the electric Porsche, you can embed an electro-magnetic plate in your garage floor, park over the top of it, and recharge your Mission E wirelessly.

According to Porsche’s head of R&D, Wolfgang Hatz, another key benefit of the 800-volt system is that ‘there is no dramatic drop-off in accelerative ability like there is with existing electric cars. Our driveline can reproduce the claimed performance over and over and over.’ Which is a bonus, for instance, when you’re overtaking vehicle after vehicle in a line of traffic.

Inside, the Mission E showcases a number of future advanced electronic technologies, including holographic controls and sophisticated 3D instrumentation, as well as an eye-tracking system that can

determine which instrument the driver is focussing on and pull it into the foreground. And while even your basic hatchback can these days boast ‘connectivity’, the Mission E even allows you to download software updates to your tablet or laptop as you sit indoors, and then transfer the information to the car in the garage. Meanwhile the absence of a transmission tunnel has allowed the interior designers to incorporate four individual sports seats and improve cabin space.

So, just a concept car? Of course not. It’s not the Porsche way. Besides, the Mission E’s styling – envisioned by a small team headed by the company’s design boss, Michael Mauer – is such an elegant advance over that of the awkward Panamera, that we’re likely to see an

iteration of its sleek lines in a four-seater Porsche within the next five years or so. Whether it’s an all-new Panamera or a smaller four-door – perhaps even all-electric – remains to be seen. Chances are that it will be the latter. Already one in five Panameras sold in the UK are the hybrid version and sales of Cayenne hybrids are picking up; plus, Tesla has already proven that the market exists for expensive, luxurious and quick electric cars.

A production version of the Mission E would seemingly make commercial sense as well as being an attractive addition to the range. And you can be sure that some of the technology that the concept car showcases will be used to good effect in a ‘green’ variant of the next generation 911 range.

Porsche CEO, Matthias Mueller, presented the Mission E concept at Frankfurt. Is this the future? Well it’s most certainly a nod to it





TURBO: TAKE TWO

With the announcement of turbo engines for the core 911 models, attention inevitably shifted to the range-topping GTS cars. Rumour has it, the 991.2 GTS will retain the classic naturally aspirated flat six. Intriguing, but does it actually make sense?

When you think about it, probably not. The GTS has always been a collection of the best bits of the Carrera range sold for a price that's less than the sum of its parts. That makes it a great deal for buyers and likewise easy to bring to market for Porsche. But a GTS with what would effectively be a one-off engine would be a completely different proposition in terms of production costs.

Then there's the positioning problem. A GTS that's outperformed by the Carrera S is surely a tricky sell. But with 420 turbocharged horses from the Carrera S (and even more from the optional Power Kit), you'd essentially need the 475hp motor from the outgoing 991 GT3 to get the job done. It just doesn't add up, however you slice it. The final nail in the coffin comes from Porsche itself via senior engineer Dr Erhard Mössle.

"There will never be another series production normally aspirated 911," Mössle says. "But maybe we will do some special edition cars." Case closed? We think so.



WEBBER'S SPYDER

Everyone's favourite true-grit Aussie and Porsche works driver du jour Mark Webber has gone and done the decent thing. He's snagged himself a 918 Spyder.

"I've always been a Porsche fan and customer even before I started driving the racing cars," said Webber when picking up the Spyder from Zuffenhausen. "But racing drivers are very fussy about this kind of high performance car," he revealed, explaining that he'd nevertheless heard good things about the 918 from other pro racers.

"So I decided to drive the car for myself and then knew I had to have one for my

own private collection," Webber said. Always one to blaze his own trail, Webber went for a unique 'Salzburg red' paint job which harks back to the graphics on the 1970s Le Mans winning 917 race car. "It's a timeless paint scheme, full of Porsche DNA and Porsche history," reckons Webber.

And who are we to disagree? That said, we can't help wondering if Webber had to wait in line with your average paying punter or indeed had to pony up the £650,000 base price. Free to those who can afford it, very expensive to everyone else? We may never know.



Mark Webber takes delivery of his 918, complete with Le Mans winning 917 inspired livery. How much did he pay for it, or even did he have to pay for it? These are probably mysteries we will never know



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PORSCHE'S GOODWOOD-STYLE INSPIRATION

Zuffenhausen is where the Porsche 911 story began when the first example rolled off the production line in 1963. So where better to celebrate the launch of the very latest and greatest iteration of an icon with a spectacular sculpture exploding right out of the Porscheplatz roundabout in front of the Porsche Museum in Zuffenhausen?

Actually, you could be forgiven you're looking at something from much nearer home. The new sculpture, entitled "Inspiration 911", looks an awful lot like the show-piece installations that sit front and centre of Goodwood House at the Festival of Speed every summer. That said, with the glass facade of the Porsche Museum immediately behind used as a huge projection screen plus a laser light show, Porsche has taken the basic idea of cars plonked on huge vertical plinths to the next level.

The cars in question are an F-Series 911 from 1970, a G-Series from 1981 and the new turbocharged 991.2 Carrera. At a launch event for Inspiration 911 Porsche's most senior suit, Matthias Muller, said, "The sculpture that we present today is more than a work of art. It is also a symbol for our company's close ties with Stuttgart."

Porsche says it has invested more than one billion euros in Zuffenhausen and other facilities in the local Stuttgart area and expects to invest a similar amount again in the near future. Meanwhile, Porsche is set to shift more cars in 2015 than ever before, with total sales well north of 200,000. Inspiration 911, indeed.



PORSCHE DOMINATES AT THE 'RING

Porsche's 919 Hybrid clocked up a dominant win at the Six Hours of Nürburgring instalment of the World Endurance Championship (WEC). The win puts Porsche in a strong championship points lead heading into the second half of the WEC season.

The number 17 car driven by Mark Webber, Timo Bernhard and Brendon Hartley won by over a lap from the sister 919 piloted by Jani, Lieb and Dumas. The second placed 919 suffered a series of stop-go penalties for fuel-usage violations.

The 919 ran the race in a new high-downforce configuration and easily had the

measure of its main competition, Audi's R18 e-tron quattro and the Toyota TS040 Hybrid. Since its debut in 2014, the 919 has now won three races, Interlagos in 2014 and Le Mans and the Nürburgring in 2015.

In 2015, meanwhile, the pure pace of the 919 has been unbeatable and enough to secure pole position for every instalment of the WEC season. Porsche now leads the championship with 184 points. Second-placed Audi has racked up 151 points with Toyota in third on 89 points. The WEC now heads Stateside for the fifth race of the season in Austin, Texas at Circuit of the Americas.

We don't want to be premature, but Porsche is looking good for lifting the 2015 WEC crown, following victory at the Nürburgring



Porsche and Le Mans? The two go hand-in-hand, so it's symbolic that Porsche should open its latest driving centre at the famous Le Sarthe track



PORSCHE'S LE MANS EXPERIENCE

Take perhaps the most evocative race track in the world. Add arguably the greatest brand in motor racing. Oh yes, Le Mans and Porsche are a match made in motoring heaven. But we're not talking about the result of this year's 24-hour race, though that certainly adds to the allure.

Instead, it's the opening of a new Porsche Experience Centre at the heart of the historic circuit that had us road tripping to Le Mans recently in a 991 GT3. To say that expectations were high is the understatement of the decade.

One of six planned Porsche Experience Centres (PEC), Le Mans joins Silverstone, Leipzig, Shanghai, Los Angeles and Atlanta in what is now a global lineup. PEC Le Mans actually opened just in time to see Porsche's 919 reign supreme at this year's 24-hour contest. It's since been host to many Porsche owners and prospective customers, 4000 of them already, to be precise.

The basic idea for PEC Le Mans is modelled on our very own experience centre at Silverstone. Features like the 2.9-kilometre dedicated handling circuit, which uses a section of the 24-hour race circuit, low-grip surface complete with automated kick-plate and off-roading course for

Porsche's SUVs to strut their stuff are carried over more or less wholesale. From there, however, the French facility takes the Porsche Experience Centre concept to a whole new level.

The big difference is the partnership Porsche has struck up with Automobile Club de l'Ouest (ACO), the organisation that owns the bordering Bugatti Le Mans international race circuit and runs the 24-hour race proper. The PEC facility and building is actually owned by ACO. Porsche is a lessee with a long-term contract.

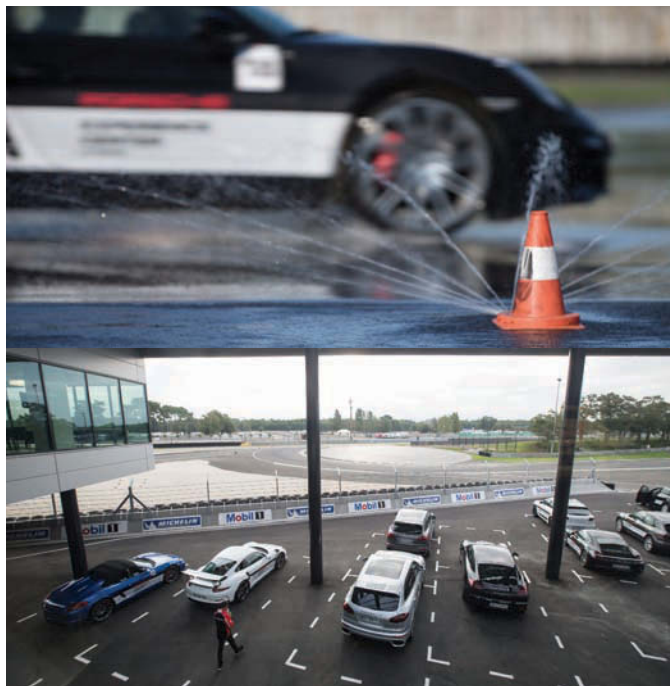
The two most obvious and immediate impacts of that relationship involve the precise location of PEC Le Mans and the access it has to the Bugatti circuit. The main building is situated just metres from the circuit proper at the intersection of the Le Mans Bugatti and Maison Blanche courses. It's so close to the track, we're told that during the race you can see the driver's eyes as they approach the building at well over 100mph. For sure, it's incredibly atmospheric even when it's empty.

The race is long since finished when we pitch up for our serendipitously sunny September Le Mans sojourn, of course. But the whole place reeks of racing heritage

and for any fan of both Le Mans and Porsche, it's almost too much to process as you motor out directly onto the Bugatti circuit in your choice of Porsche's latest and greatest sports cars.

For our visit, everything from the new Boxster Spyder and Cayman GT4 to the mighty 991-generation GT3 RS are on offer. It doesn't get much better than this. In that regard, PEC Silverstone with its more occasional access to the relatively flat and featureless Grand Prix circuit simply cannot compete, even if the relatively low-speed and technical nature of the Bugatti circuit doesn't offer quite the same big-speed thrills as Silverstone.

Ultimately the difference between PEC Silverstone-style and the new centre in Le Mans comes down to this. Silverstone is great at what it sets out to do, namely give customers a safe and fun venue to get to know Porsche's full range. It's the cars that provide the memories at Silverstone, not the location. But PEC Le Mans is simply a stunning experience all round and one you won't readily forget. It's hard to imagine a better showcase for Porsches of all kinds and it should be right at the top of every Porscheophile's bucket list.



Like the UK's Silverstone Porsche Driving Centre, the new Le Mans facility features a circuit for high-speed lapping, plus a number of low-grip surfaces and an off road area for putting the Cayenne and Macan through their paces

An M97 engine being sleeved at Hartech's Bolton premises, just one of 25 engines going through the Hartech rebuild process at any one time



FIVE TO FEAR?

The five 'classic' water-cooled engine worries according to Hartech's engine guru Grant Pritchard

1. Bore scoring

Most common on larger M97 engines in 997.1 and 987.1 Caymans

2. Cylinder cracking

Hitherto predominantly a 996 problem, 997s may soon succumb

3. IMS bearing failure

At one time the great fear, but in reality was never very common

4. Crankshaft bearing wear

Usually only a worry on very high mile engines

5. Snapped chains

Another one that falls into not-very-often-category



HARTECH REVS UP ENGINE REBUILDS

Whether it's the dreaded bore scoring bogey or the worry of IMS failure, engines woes are a hot topic for owners of water-cooled Porsches made between 1997 and 2008. With around 25 engines going through its rebuild process at any one time, Bolton-based specialist in engine repairs Hartech is rebuilding more Porsche powerplants than ever. Arguably nobody knows more about this controversial subject.

But what, exactly, does it take to repair modern Porsche engines to a high standard and what are the latest trends in water-cooled engine rebuilds? To find out, we caught up with Hartech's founder Barry Hart.

Aside from being a card-carrying Porscheophile who bought a 356 coupé aged 22, Hart's background is in hardcore race engine and aerospace engineering. It's this, he says, that has informed everything Hartech does. What started out as a few rebuilds on the side in response to a handful of intermediate-shaft bearing failures in early Boxsters has since grown into what Hart says is now a "mini production line".

Luckily for Hart, the expertise he'd built up in a career developing racing engines for bikes just so happened to apply neatly to the alloy cylinder bore problems that were emerging in water-cooled Porsches.

"Over 10 years, we invested in more and more machinery. We now have everything from a £40,000 CNC machine to ultrasonic cleaners," says Hart. Hart now runs his workshop like an aerospace engineering outfit, including fault recording and tracing. All told, Hartech now has seven to eight people working full time on engine rebuilds across multiple rooms.

What's really interesting is the mix of engines undergoing rebuild at any one time. Of the 25 engines Hartech typically has going through the process, around 20 are in for bore scoring

problems. What's more, most of those are 3.8-litre 997.1 engines, with early 3.4-litre Cayman engines the next most common.

The remaining five are a mix of other problems, including cracked bores, snapped chains and failed IMS bearings. What's really interesting to learn is that there's typically no more than one IMS failure going through the process at any one time and quite often none.

Given the mini industry that's built up, especially in the US, around products and services aimed at remedying the perceived IMS problem, it's more than a little surprising. As for the future, Hart suspects the bore distortion and cracking issues that are commonly more common in older 996s will begin to blight 997s. After all, the first 997s have the same unsupported open-deck bore design.

"Normally, the turn around time is one to two weeks for bare blocks and three to four weeks for a full engine rebuild," Hart says, "but we're currently running a little behind that schedule thanks to down time over the summer break."

As for pricing. Repairing one scored piston via Hartech's drive-in, drive-out service is £4250 plus VAT while a package with all new closed-deck cylinders, timing chains, a head overall and much more is yours for £7500, again plus VAT. If that doesn't exactly sound cheap, it's worth remembering that fancy rebuilds for air-cooled classics can stretch to many 10s of thousands. It's all relative.

To find out more about Hartech's services, how it goes about rebuilding engines and also its lifetime maintenance plan, head on over to hartech.org and check out their new video detailing their facilities and the whole engine-rebuild process.

For a full investigation into M96/M97 engine woes, we will be revisiting this thorny issue in the very near future.





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CLASSIC PARADE

The garden party atmosphere of Classics at the Castle continues to draw the crowds and cars to Castle Hedingham

It was more of the same, thank you very much, as the Classics at the Castle show nears its 10th anniversary. And why not. The classic Porsche scene is in rude health and there's nothing quite like a garden party atmosphere and, it must be said, good weather to generate a convivial gathering of like-minded Porsche enthusiasts. Rumour had it that most folk were only there to see if Keith Seume had finished his project 912 at long last, but we feel that perhaps the organisers' decision to celebrate the 60th anniversary of the very first production Porsche 356 Carreras might have more to do with it.

Porsche AG pulled out the stops to get a number of significant cars along, including the Fletcher Aviation 550 Spyder and the Caminos 356 Carrera Panamericana machine, which was paraded by Jurgen

Barth, who seems to spend more time in the UK than Germany these days!

A healthy trade village assembled to promote the wares of what is now a significant market place, and sister title *Classic Porsche* was also in attendance. We were rather taken with EB Motorsport's fuel injection throttle bodies and inlet 'stacks' (see below).

Coys chose Classics at the Castle for its grand Porsche Auction event, although it must be said that a number of cars went unsold as they failed to reach reserve. A sign that prices have levelled off, perhaps, or was it just one auction too many in a summer of similar sales? Whatever, most folk were at Hedingham to browse and mingle, not to spend a significant fortune, and to that end Classics at the Castle continues to deliver. We're looking forward to next year already. **PW**







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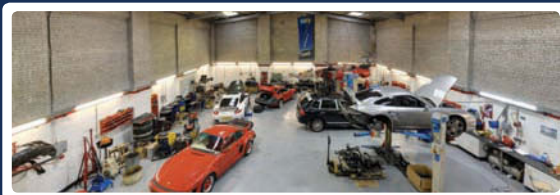
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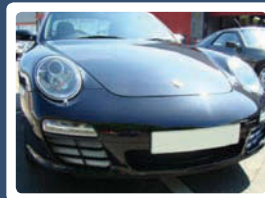


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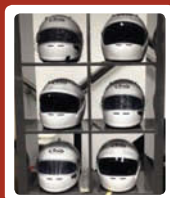
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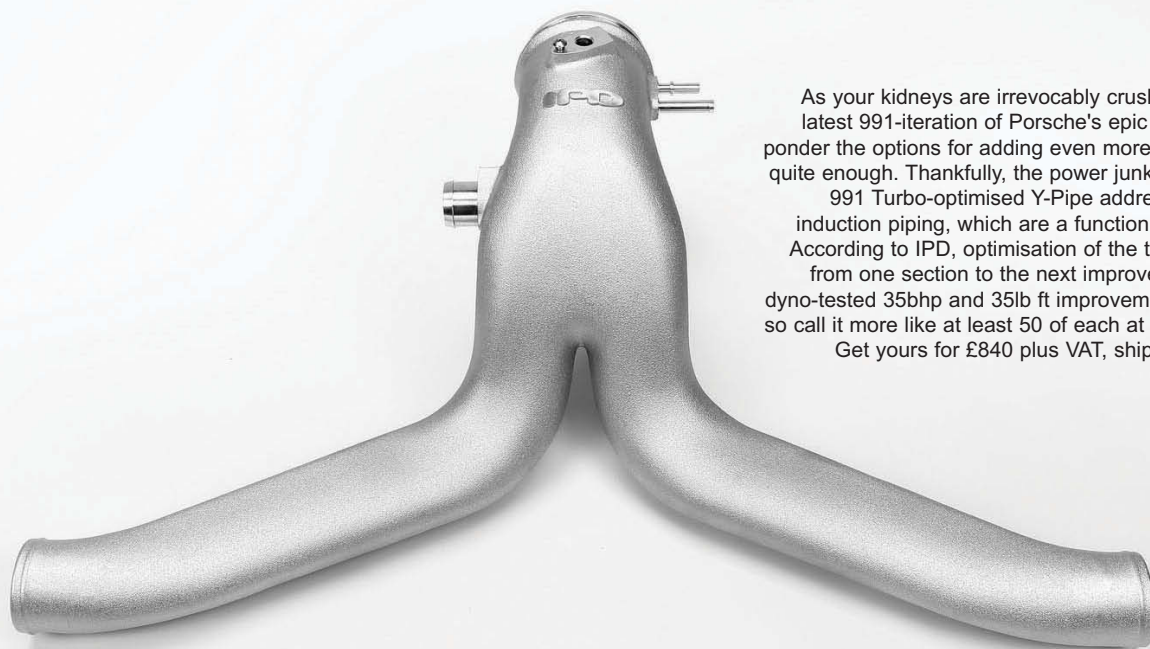
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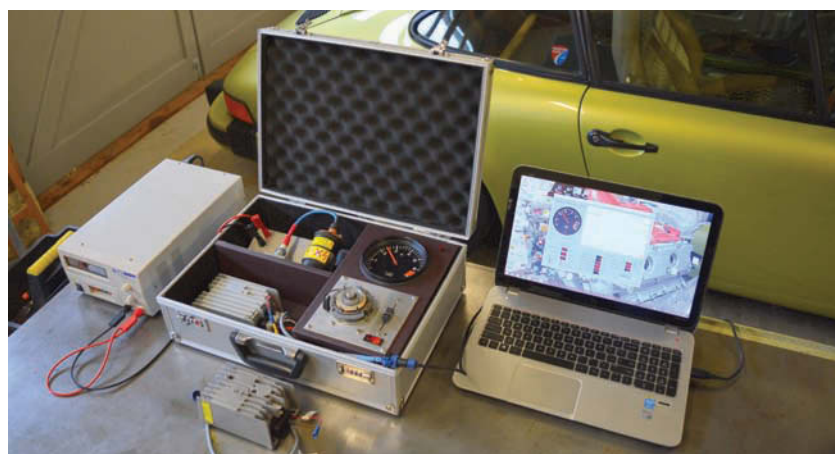
ESSENTIALS

The tempting trinkets that enhance Porsche ownership



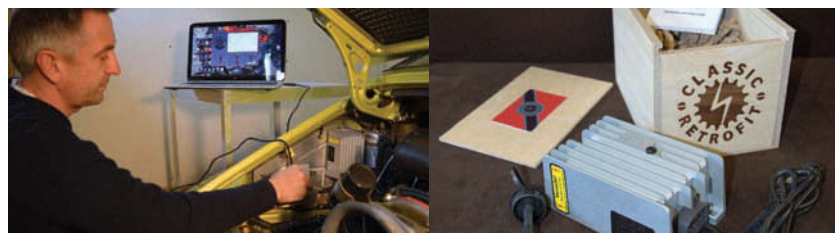
POWER PIPES

As your kidneys are irrevocably crushed by the monumental torque of the latest 991-iteration of Porsche's epic 911 Turbo, you may not immediately ponder the options for adding even more power. And yet, somehow, it's never quite enough. Thankfully, the power junkies at IPD are here to help. The new 991 Turbo-optimised Y-Pipe addresses limitations in the standard car's induction piping, which are a function of tight packaging in the engine bay. According to IPD, optimisation of the tube cross section and the transitions from one section to the next improve airflow. The upshot is a proven and dyno-tested 35bhp and 35lb ft improvement. Those figures are at-the-wheels, so call it more like at least 50 of each at the crank. Not bad for a bit of piping. Get yours for £840 plus VAT, shipping and duty from ipdplenums.com.



NO SPARK, NO FUN

As CVs go, previous gigs with Airbus, Williams F1 and the MoD don't sound too shabby. That's reassuring when the context is the unavoidably flaky electronics of old cars, even Porsches. Enter Classic Retrofit's team of experienced electronics engineers. They've come up with a completely re-engineered replacement for the capacitive discharge ignition (CDI) system found in models like the 911SC. The product of no less than two years of R&D and several iterations of circuit board design, the new control board is the same dimensions as the original, and thus fits the standard enclosure. It's a plug-and-play replacement for the 30-odd year old Bosch unit and includes microprocessor-controlled and mappable parameters for ignition timing, rev limiters, tachometer calibration and more. Prices start at £954 from classicretrofit.com.



SUSPEND YOUR DISBELIEF

The current 991-generation GT3 model is a veritable 475hp, 9000rpm race-track refugee. But believe it or not, some still crave yet more focus, yet more precision, yet more feedback. It's for these most hardcore of GT3 pilots that the BBi Porsche 991 GT3 Street Cup Suspension Upgrade Package is designed. It's a comprehensive solution that starts with tweaked linear-rate springs all round. Next up are new 'Cup' arms and linkages with solid spherical bearings. Adjustable roll-bar links round out the package. The full price is £4080 plus shipping from the USA, VAT and duty. However, the springs, arms and roll-bar links are each respectively available as a separate package, allowing you to decide between fine and full-on tuning. The complete package or individual items are available now from bbiautosport.com.



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TWO IN ONE

We all love a bargain, so here's two for the price of one. Two jackets, that is. The latest entry in Porsche's 911 Collection, the 2-in-1 Men's Jacket is pretty much the 911 philosophy made manifest in outerwear. In other words, it's both stylish and functional thanks to an outer jacket and inner gilet. Both windproof and water-repellent, with respective water column and breathability specifications of 5000 mm and 5000 g/m²/24h, the jacket sports a hood that can be tucked away into the collar. The reversible gilet also has an extremely lightweight artificial down lining with outstanding heat retention properties. It's easy to fold away, too, so it can even be stored in the side pocket. Fabricated from 100 per cent polyester in black and red and yours for £380 from porsche.com/uk.



RENNSPORT FOR WRITERS

If there's a single model from Porsche's back catalogue that captures and distills the very ethos of the brand, it's surely the Carrera 2.7 RS. It's purity of purpose personified. Perhaps that's why it has also become one of the most valuable classic 911s in recent years. Happily, however, we can all have a little RS in our lives with the RS 2.7 notebook. It's a full A4-sized item with some typically thoughtful features. A ballpoint pen is integrated into the margin and the pages are perforated for easy tearing. Then there's the paper's 90g/m² weighting. If we said that achieves a classically RS trade off between robustness and mass, it would probably stretch the Rennsport riff to breaking point. But for just £20 from porsche.com/uk, why not find out for yourself?



THE TYRE DEPOT

Continental's latest SportContact tyre borrows 'Black Chili' bike tyre tech

Continental's SportContact range is a stalwart of the performance tyre segment, so the arrival of the new SportContact 6 is big news.

The new tyre will be available in no fewer than 41 sizes, with the bulk of models in the Porsche-relevant 19-inch to 21-inch range. The first SportContact 6 to be homologated helped Honda to break the Nürburgring lap record for a hatchback with the latest Civic Type-R. Sounds promising, eh? Porsche N-spec variants are currently being finalised. According to Continental, the big news with the '6' is an improved combination of grip and precision, qualities that aren't always easy to achieve in a single tyre. The secret involves Continental's so-called 'Black Chili' compound material. Originally developed for its bicycle and motorbike products, it combines synthetic rubbers, natural rubbers and nanometric carbon soot particles, the latter optimised in shape and surface properties. The net result is both a 14 per cent improvement in steering precision and an 11 per cent overall uptick in dry road grip while maintaining the same wet road grip as the SportContact 5P. Pricing is currently TBC for the various Porsche fitments, but you can find out more in the meantime at continental-tyres.co.uk.



IT'S MARTINI TIME

Rounding out our trio of official Porsche products this month is this Martini Racing Limited Edition Chronograph. Dare we suggest it's perfect for those of you with a penchant for Porsche's partnership with Martini but also fancy something with a shade more sartorial subtlety than the obligatory Martini jacket. Indeed, the Chronograph comes with both a Martini-liveried nylon strap and an even more low-key black leather alternative with contrasting (let's not call it deviated) blue stitching. If the £500 pricing isn't exactly a bagatelle, nor is it too painful given the overall specification of this Swiss-made 44mm effort. There's a 13-jewel Ronda quartz movement, satin-finish stainless casing and super-hard sapphire glass. You also get a screw-down crown, metal dial, stop-watch functionality and limited edition number engraved on the base. Order now from porsche.com/uk.



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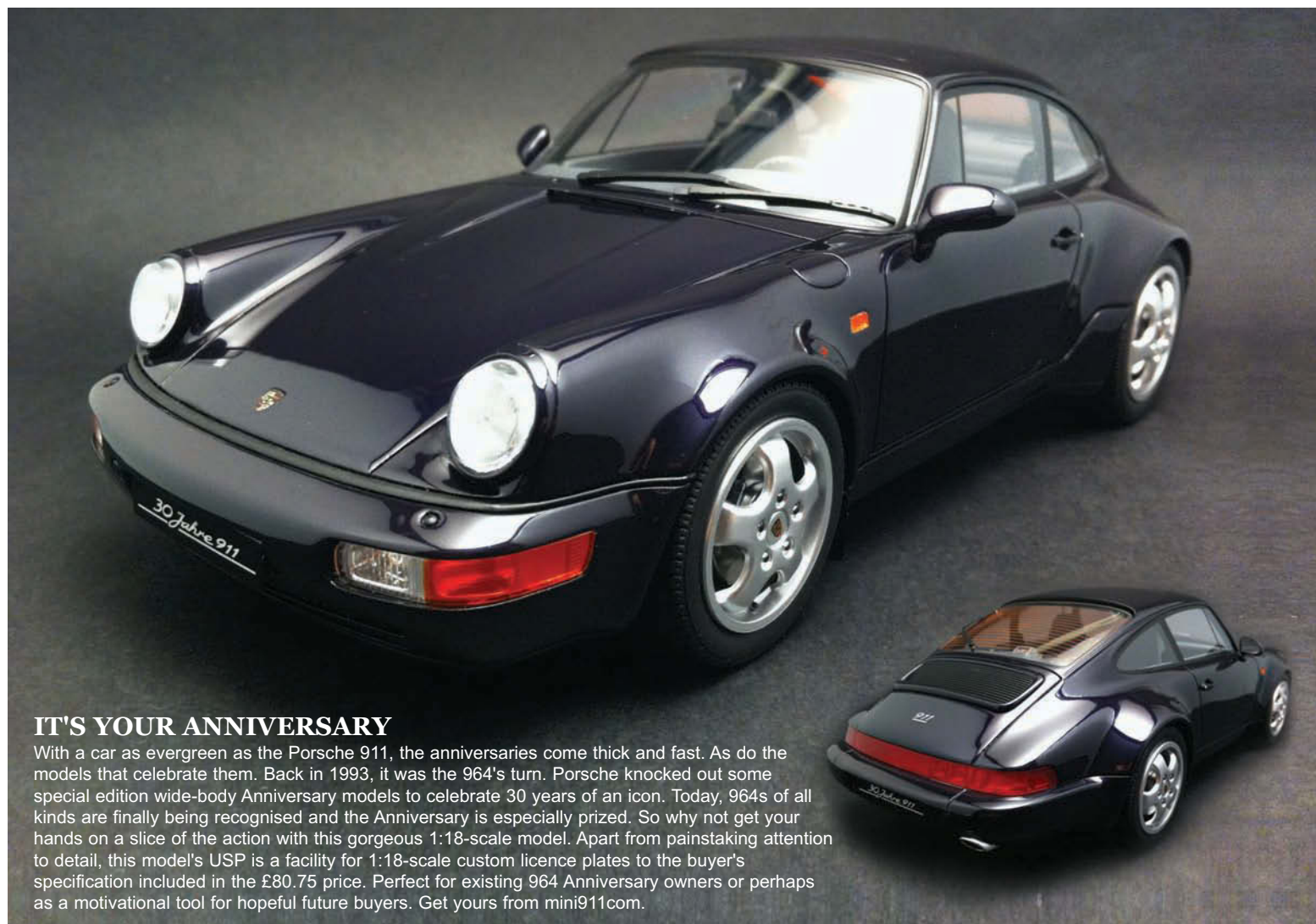
SMALL TOY FOR BIG BOYS

Are Porsches glorified toys for scarcely grown up boys? Perhaps, though if there's any sports car brand that concentrates as much on practicality, reliability and real-world usability as driving frivolity, it's surely Stuttgart's finest. But never mind, because here's a real toy for actual boys (and girls!). Suitable for ages one and up (they like to start 'em young in Stuttgart), My First Porsche is a 10cm wooden toy that will help familiarise the little ones with the classic 911 silhouette. Fitted with a ducktail spoiler, you might say the beginnings of a life-long Rennsport fascination are built in, too. Of course, there's absolutely no question you'd order one for £16 from shop.porsche.com/uk and amuse yourself setting imaginary lap records around your very own Nurburgring, complete with flat-six sound effects. That would never happen.



A SINGULAR RSR

Scale models of period Porsches are not exactly in short supply. But what if you want something super specific. Like a reproduction in full forensic detail of, say, Kinnunen and Haldi's 911 RSR, the ultimately third-placed entry for the Targa Florio of 1973? And definitely not Steckonning and Pucci's RSR, which placed first but was actually a T-car? Obviously there's zero chance of finding something quite so singular in a scale model. Actually, there is. Hand built by Eidolon – Vision, this precision-painted resin model is accurate right down to the differing rear spoiler treatments run by the RSRs in question. At £153, it's getting on a bit for a 1:43-scale model. And it's a six-to-eight week special order from grandprixmodels.com/. But then some things are worth the wait.



IT'S YOUR ANNIVERSARY

With a car as evergreen as the Porsche 911, the anniversaries come thick and fast. As do the models that celebrate them. Back in 1993, it was the 964's turn. Porsche knocked out some special edition wide-body Anniversary models to celebrate 30 years of an icon. Today, 964s of all kinds are finally being recognised and the Anniversary is especially prized. So why not get your hands on a slice of the action with this gorgeous 1:18-scale model. Apart from painstaking attention to detail, this model's USP is a facility for 1:18-scale custom licence plates to the buyer's specification included in the £80.75 price. Perfect for existing 964 Anniversary owners or perhaps as a motivational tool for hopeful future buyers. Get yours from mini911.com.



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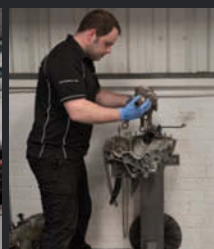
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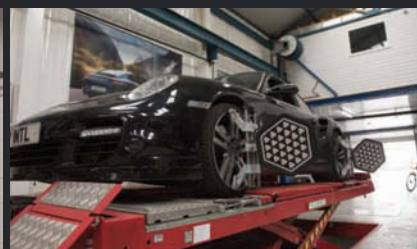
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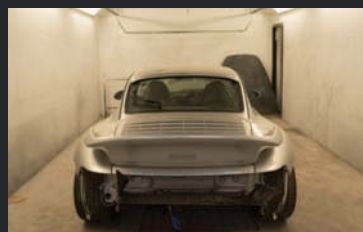
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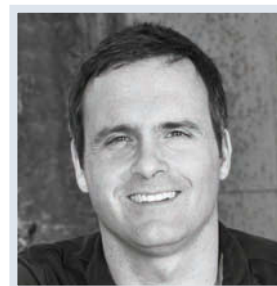
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THE USUAL SUSPECTS

Towler lets his imagination run at a tangent as he plots Porsche's new entry-level coupe and replacement for the 924. Well, we can all dream. Elsewhere it's a familiar tail of what might have been, plus race legend, Stefan Bellof, is remembered



ADAM TOWLER
The Porsche enthusiast

A NEW 924

If Porsche were to make a new 924, what would it be like? Forget the VW Group hierarchy for a moment, and its assorted politics, and let's just fantasise that Porsche are once again a small, family-owned sports car company looking to increase their market share by selling larger volumes of an entry-level sporty car (I know, that last sentence is absurd in the age of the 'SUV' and 'premiumness', whatever that actually means. But still. Humour me here).

In this make-believe world, the Porsche 'baby' sports car starts life as an after-hours project, its gestation led by a mad keen group of engineers burning the midnight oil as they plot their masterpiece. Once at prototype stage, the top brass 'accidentally discover' the car – you know how these stories go – and the engineers have to come clean, their bacon saved by the fact that the CEO drives the thing and can't stop grinning.

But what sort of car should this new baby Porsche be? Mid-engined? Or does that tread too clumsily on the Boxster's toes? Moreover, small, mid-engined cars have their positives, but they're rarely very practical: witness the Mk3 Toyota MR2 for a start. No, if this is a car at a lower price point than anything else in the range then it's quite likely it will be the owner's one and only car. To that end, it needs to offer at least some practicality.

A classical front-engined configuration will allow for some reasonable luggage space and potentially a cramped rear bench, too, promoting the illusion that this could be a 'practical' purchase, and therefore, more likely

to be justifiable under pressure. You know what I'm getting at.

If the Porsche engineers did some research of the present market they could do worse than consider the Toyota GT86 and the freshly launched, all-new, Mk4 Mazda MX-5. Although the latter is a roadster, and for differentiation sake and in the name of ultimate handling this little Porsche coupe, I have decided in dictatorial style, will be a coupe.

This is all at the forefront of my mind, as I happen to have spent a fair chunk of time with both those cars recently while working for a mainstream enthusiast car magazine. Unlike many reviewers, I've been left slightly underwhelmed and more than a little disappointed by the little Mazda: in my view it's a wonderful concept but not a brilliant car, merely a good one. Still, its ethos of removing as much weight as possible, reducing the footprint on the road and placing driver thrills at the centre of the equation are all extremely applicable to our new 924. We'll definitely take inspiration from the Mazda's gearshift quality.

The GT86 is perhaps even more interesting. Again, it's a concept that – marginally in the Toyota's case – outshines the end result, but it's still a car I really enjoy simply being with. The size of it is just right for UK roads and the ergonomics of the cabin are superb: it's one of those cars you immediately want to drive flat out from the moment you open the driver's door. Nevertheless, one of its weaker aspects is the Subaru Boxer engine, which is coarse and could use more torque lower down in the rev range to make

the chassis really come alive. Thankfully, Porsche are about to unleash a series of turbocharged flat fours in the Gen 2 Boxster and Cayman, so perhaps we'll take one of those in unblown form, with the turbocharged version reserved for an 'S' model at a later date. Surely this Porsche flat four will be a cracker?

The inclusion of the Boxer engine is important, not just because it gives our entry-level car a clear bloodline and a link to the more established members of the Porsche family, but also because it should allow for a similarly low bonnetline enjoyed by the GT86 (and its sister car, the Subaru BRZ). In an era where pedestrian impact regulations make packaging an inline engine tricky, this should mean the same sort of low-slung proportions for our car.

It would have to be small and light, and minimal in its specification. In many ways it's a spiritual successor to the 356, rather than a car that picks up the 911 bloodline, particularly so given the flat four engine. Unavoidably it will have electric power steering, but so does the GT86, and that steers quite nicely. I'm sure the Porsche engineers can do a decent job on that: the GT3 and GT4 have excellent systems, and Jaguar's new XE and XF show just how finely tuned the latest generation of EPAS software can be.

So, there you have it: a 200bhp, rear-wheel drive, 2+2 Porsche with a starting price of, say, £30,000? I think I'm going to get the crayons out now.

Why don't you write into the mag and share your thoughts?



When plotting a sub £30,000 replacement for the 924, it's hard not to be influenced by the Toyota GT86, reckons Towler

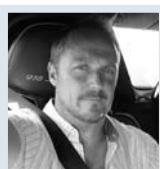
Say what you like about them, but *911 & Porsche World's* elite squad of journalists and Porscheophiles have opinions aplenty on all manner of automotive matters. And this is where they get their two-pages' worth



KEITH SEUME



STEVE BENNETT



BRETT FRASER



PAUL DAVIES



CHRIS HORTON



JOHNNY TIPLER

THIS MONTH'S 'IF ONLY'

There are so many 'if onlys' in the current Porsche market. If only I'd bought a 964 RS when they were £25,000, if only I'd bought a decent SC for £10,000, and on it goes, seemingly without end. This month I seem to be obsessing over 964 Carreras, for so long the ugly duckling of the 911 family but now in seriously high demand. Still, prices have not reached such a level that they're completely out of reach for some folk, and perhaps that's why I seem to have come across a good number of modified examples lately. Some of these have really intrigued, not least due to their serious specification and energetic use. For me, that's a breath of fresh air. I feel like I've been to far too many 'lawn events' this year: as the classic car world has expanded, these have popped up everywhere. I'm not going to rubbish them, as car enthusiasm is a broad church and there's room for everyone, but I do feel like too much of the Porsche scene is now spent polishing and checking values, and not enough in actual driving. That's why it's heartening to see a new wave of modified, track-honed water-cooled cars appearing as well, and you can look forward to a number of these appearing in these very pages over the coming months. The Porsche scene may be mutating, but there are lots of exciting new developments happening if you go looking for them.



BELLOF REMEMBERED

As I write, we've just had the 30th anniversary of Stefan Bellof's tragic death in the 1985 Spa 1000kms, at the wheel of a Brun Motorsport Porsche 956. I was too young, just, to follow his career. I must have watched an F1 race that featured his underpowered Tyrrell, but all I can recall is Nigel Mansell and the Ferraris during the 1983 season, and the McLarens from 1984/5. My real memories start from 1986, and by then he was gone.

When you watch footage of Stefan driving a 956, you truly understand the joy of driving. Here was a young man completely unfazed by the 600bhp+, sub 900kg ground-effect 956, hurling it around the track with vivacity that can be sensed simply from the car's body language. It's that same joy you can see in the eyes of the Porsche mechanics, exhilarated by watching their car being driven in a way that extracts absolutely everything from it.

It was this blend of talent and courage that meant Stefan's pole time for the 1983 Group C race at Silverstone would have put him 12th on the grid for the F1 race of the same year; led to that unforgettable record-breaking lap at the Nürburgring;

that made him 1984 World Sports Car Champion. The same attributes that allegedly meant he had a Ferrari F1 contract in the back pocket for 1986. He didn't need to race the big Porsche at Spa that September, but he loved to race, so he did anyway – by then for fun with a privateer team.

If you've never heard of Bellof before try and find a spare moment to look up his brief career. As well as being a superlative driver he was, according to those who knew him, a top bloke too with a great sense of humour. He'd blast about in a Mk1 Golf GTI before he enjoyed a series of Porsche company cars (928 and 911), which inevitably he must have ragged within an inch of their lives. Given I spoke earlier about cars that spend too long parked on manicured lawns, it seems appropriate to end by remembering one of the truly great Porsche drivers. Given that elite list also includes Messrs Ickx, Bell, Wollek, Elford, Rodriguez, Siffert, Ludwig and Stuck, plus so many more, that's quite some company. Let's hope that the brilliant Nick Tandy continues his amazing run of success and finds himself, in time, mentioned in the same breath.



Stefan Bellof, one of the great 'what ifs' of motorsport, perished at the wheel of a Brun Motorsport Porsche 956 at Spa in 1985

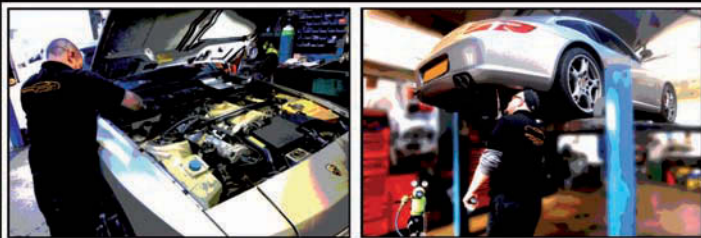
The 964 is the latest on Adam's 'if only' bucket list. Just to torture himself even more, he's lining up a few modified examples to drive

AND FINALLY...

Did I say the end? Well, just one final word about my own Porsche purchase. I may have bought a car, but that's all I'll say for now. Update next time, but given past history, don't bank on it!



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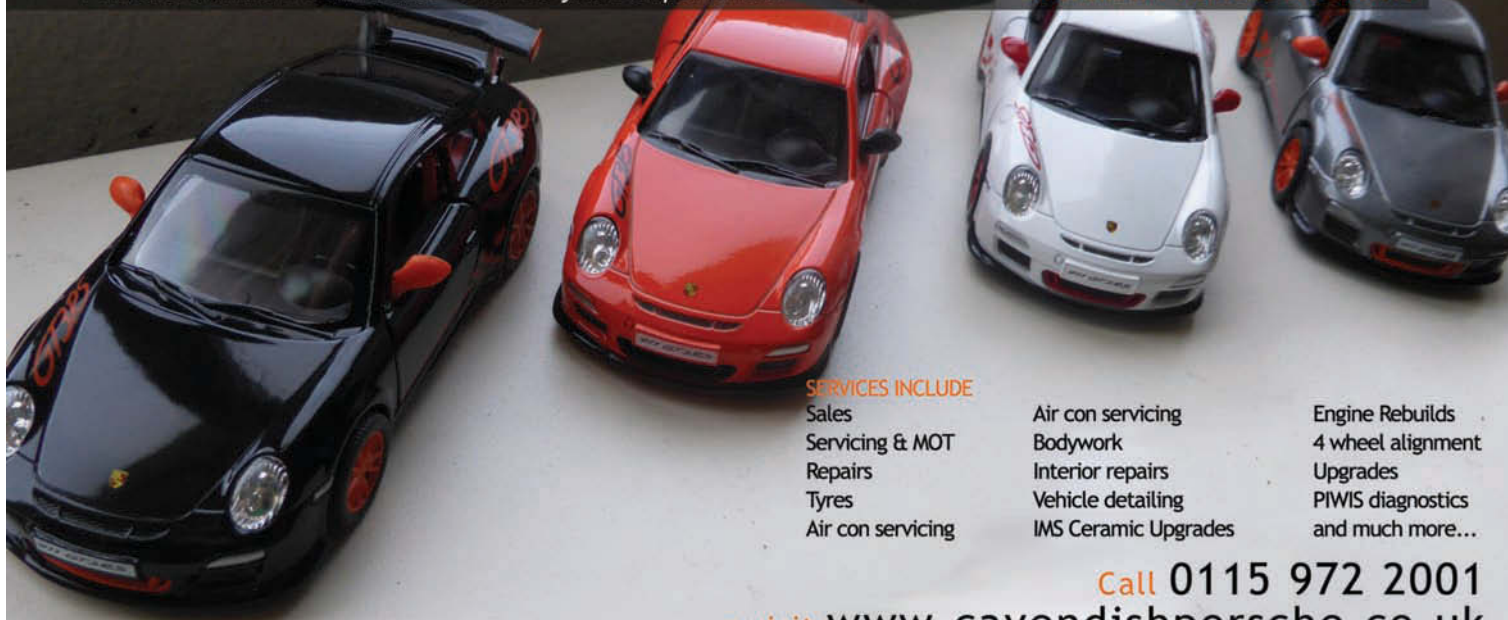


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LETTERS

Got something to say? Need to express an opinion on the Porsche world? Well, here's your chance...



It may not be the original colour, and it may have lost its original Mahle wheels, but Ian Knott's 911T still draws attention wherever it goes

MY FIRST PORSCHE

I have just finished studying the latest issue to appear down here which, as always, was a good read. I particularly enjoyed the 'Your first Porsche' feature as my own first Porsche – more than 30 years ago – was a 2.4-litre 911T.

It had been delivered new in the UK and was then shipped out here to New Zealand. It was a great car, never dropped oil and ran well. I subsequently sold it to make way for a 1977 911 Lux.

Some years later I heard that the 'T' had been written off after an apprentice mechanic wrapped it around a power pole in the course of taking the car (against instructions) to buy the firm's morning tea. That probably didn't do much for his ongoing employment opportunities!

Today, I still own a 911T but this time a 1973.5 model, which was delivered to Australia and is thus in RHD. It is often assumed that this model was a US-only vehicle but in actual fact other countries to receive this specification include Australia, Japan and Canada, as well as the USA. I

understand approximately six were delivered to Australia, all with Mahle wheels. I have only ever seen one other similar car for sale there.

Mine is a Sportomatic which, despite all the negatives talked about this transmission, actually works well – especially in the bad traffic conditions here in Auckland. On a longer trip it can be a bit of a trial, however, with having to plan passing manoeuvres well in advance, but other than that there is nothing much to worry about.

The Mahle wheels on my car were obviously replaced by a set of Fuchs by a previous owner – only the spare is original. The colour, too, is not the original (blame another past owner for that) but it does actually work well as I get a lot of good comments when I'm out and about. I'm sorry the photograph is a bit dark but I think it gives you the idea.

As always best regards, keep up the good work. You guys rock!

Ian Nott, Auckland, New Zealand

FORGOTTEN 912E?

I looked forward to reading the 'Archives' feature on the Porsche 912 but was disappointed to see that, once again, the 912E was missed out of the story.

I realise that this was a US-only model, built for just one year, but it is sad that it never seems to get a mention.

I have owned mine for several years and enjoy it immensely, frequently having to take time to explain to people what the model is all about. Is it really looked down upon so much by 'experts' that it doesn't deserve at least a few column inches occasionally? Is it really that bad?

Steven Williams, via E-mail

Keith Seume replies: Look out for issue #32 of our sister mag *Classic Porsche*, which will have a full feature on a Porsche 912E...





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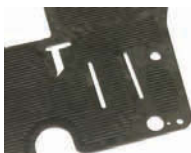
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YOU AND YOURS: BRIAN HILLYARD

CAYMAN GET IT

Brian Hillyard has had a lifetime of Porsche motoring, from the early 356s to a 944 and track day 924. His current drive is a Cayman 2.7, bought for him by his wife for his 80th birthday

Words and pictures: Brett Fraser

As 80th birthday presents from your wife go, a Cayman 2.7 takes some beating. But then Brian Hillyard is a bit of a serial Porsche owner – his first was a 356 Speedster that he bought in 1959 – which takes some of the guesswork out of the perennial question, “what on earth shall I get him this year?” Even so, a Porsche when the best that most of us might expect when we’re 80 is a packet of Werther’s Originals, is a mighty impressive gesture.

The purchase of the Cayman was, however, a bit of a spur of the moment decision by Brian’s wife, Veronica. ‘We don’t normally carry a credit card,’ explains Brian, ‘but on that particular day Veronica had one in her purse because we’d just treated our grandchildren to a holiday. She was driving past a local Alfa garage that also happens to deal in Maseratis and a few Porsches, and she spotted the Cayman, turned around and went in.’

‘The car was about three and a half years old and had done only 3600 miles; the dealer wanted a £5000 deposit and

Veronica was able to pay it with the credit card. Just as she was finishing up the paperwork, another guy came in to the showroom to buy the car. So that was a bit of luck.’

It’s hard not to have preconceived and stereotypical opinions about elderly drivers, but Brian’s tales of early morning ding-dongs with BMW and Audi drivers and high-speed dashes across the countryside (exact details of which he’d prefer not to go into print...) highlight the need to keep an open mind about such things. ‘It’s a fantastic car to drive,’ he beams, ‘and I’ve had some absolutely superb times in it.’

He’s also keen to extol the virtues of the 2.7-litre Cayman over those of its more powerful sibling. ‘The 3.4-litre Cayman is generally considered superior, but the 2.7-litre car is considerably lighter and therefore not so much off the pace in real world driving conditions,’ argues Brian. ‘Plus it has a lower centre of gravity, which helps the handling.’

Brian is a fastidious owner. ‘I jack up the Cayman when I clean it and take the wheels off to wash their rear surfaces: I

then coat them with RimWax which helps keep them cleaner for longer. When I was living in America many years ago I won several concours competitions with my Porsches, so I value good quality valet products – I currently use Zymol wax on the Cayman, and that’s £170 for a small tub!’

All that hard work and attention to detail has paid off; Brian’s Cayman looks showroom fresh – he even polishes inside the fuel filler recess. But it’s not just the car’s cosmetics that receive careful attention. ‘Every trip I take the Cayman out on, I warm it up gently and then cool it down again towards the end of the journey,’ Brian explains.

‘I have the oil changed twice as often as recommended in the service schedule, and where possible I keep the fuel tank brimmed to reduce the chances of condensation forming on the inside of the tank. Recently I had a Porsche factory health check carried out on the Cayman and it sailed through, perfect throughout. And all the way through my Porsche-owning life I’ve never scrimped on tyres – they’re pretty important, wouldn’t you say –

Below: Brian Hillyard and his Cayman 2.7. Brian’s Porsche count stands at – well, many, truth be told. A 356 Speedster started it all in the late ‘50s in Canada. The Cayman is a world away from that, but still resolutely a Porsche



so the Cayman runs on N2 Porsche-rated Michelin Pilots.'

Brian cites his father as being responsible for his lifelong love of motoring. 'He owned a lot of fabulous cars, things like an XK140 Jaguar and DB2 Aston, and I can remember us going off on holiday in a Rover 14 but coming home in a fastback Riley! And he was an engineer, a mechanic, and as a young boy he taught me how to maintain cars, repair them, keep them running.'

By the late 1950s Brian was skilled in the engineering required for plastic forming and landed a job in Toronto, Canada. And before too long the American company for which he worked decided he was the ideal man to supervise a new plastics factory it was setting up in San Jose in California. Which in a roundabout way was how Brian's passion for Porsches began.

'I was owed two weeks' holiday and the company gave us two weeks to get down to San Jose from Canada – so we had a whole month to travel. We went with some friends in a Volvo P44 and saw some fabulous sights, including Yellowstone Park and the Grand Canyon: it was a superb trip.

'Eventually we arrived in LA where I just happened to see a dealer for this strange new German sports car brand called Porsche... I took a test drive in a 356 Speedster and was hooked. I pretty much cleaned out my bank account buying that car – we were left with 40 bucks to pay for gas to do the 450-mile journey up to my new job in San Jose. And when we arrived at our new rented house, the landlord asked for a month's deposit, which of course I no longer had! Fortunately my employer was able to vouch for me.

'I owned the Speedster for quite a while and did lots of long trips in it. We once drove up to Vancouver to visit friends and then did the 900-mile return journey in one hit. We also took it on a skiing trip to Sun Valley, Idaho, where it sat outside in sub-zero temperatures for a fortnight – I can't claim it started again on the first turn of the key, but it only took a couple of minutes to get it going.'

By this stage Brian was a confirmed Porsche fan. 'Next door but one to where we lived was a pet shop, and one day the owner put his 356 Convertible D up for sale – it had done 21,000 miles and he was asking \$2800 for it. That car later made its way to the UK, and I still have the ad from Maxted-Page from when they got hold of it and sold it for £125,000!

'I showed the Convertible many times and even fitted it with special chromed wheels from the factory. Several of us from the Golden Gate area [of the Porsche Club America] clubbed together to buy a bulk order of those wheels direct from Germany. And boy, were they expensive... I went down to the last nine bucks in my bank account to pay for them. I eventually sold the Convertible to a doctor.

'Next came a 356 SC. It was being advertised for \$3600 and when I went to the guy's apartment I offered \$3200, because he rather carelessly confessed he was about to be shipped off to fight in Vietnam. He initially turned me down, but by the time I'd got to the elevator he was calling me back into his apartment... It took about four months to get that car into shape for showing it – we then embarked on a 1300-



“ I pretty much cleaned out my bank account buying that car – we were left with 40 bucks ”



Top: Memories are made of this: Brian's 356 Cabrio, Speedster, 944 Lux and track day 924, on track. Immaculate doesn't quite do Brian's Cayman justice. Why are we showing you the inside of the filler flap? Because Brian's pot of Zymol even finds its way in there, too!



HISTORY

For Porsche, launching the Cayman was something of a no-brainer. The surprise, perhaps, was just how long it had taken them to put a roof on the Boxster – nearly 10 years, as it turned out. It was a niche instantly filled for very little outlay in manufacturing terms, and endowed the mid-engined Boxster concept with an extra focus thanks to its more rigid structure. Controversially Porsche priced it above the Boxster, but none-the-less the Cayman won fans from the offset as a slice of real-world mid-engined exotica, that could outhandle anything from Italy.

mile round-trip to attend the Porsche Parade in Colorado Springs where, out of 132 356s, it came fifth in the concours. We also met the Porsche family there, who explained to us how to pronounce the name of their company correctly. I also got stopped by the police on that trip for chasing a Pontiac Bonneville down a winding hill road, but fortunately got let off.'

After the SC Brian bought a 356 Carrera 2. 'It was a lovely car but I didn't get on with it. It was replaced by a 911T – it was on loan from a dealer who gave me the keys for the weekend, but I never did get around to taking it back again. It made way for a 911S short wheelbase: despite its reputation for biting I never had any problems with the handling, and I thought it was really good fun to drive.'

Eventually returning to the UK, Brian had a dalliance with a 911SC Targa before a change in circumstances forced him to forego Porsche ownership for a spell. A 924 brought him back into the fold. 'We modified it for trackdays: it had adjustable

suspension, 944 anti-roll bars and an Audi Quattro throttle body. It was fantastic and won best 924 at the model's anniversary event at Snetterton in 2001 – part of the prize was a year's subscription to *911 & Porsche World*.'

Brian stayed front-engined with his next

has 15,000 miles on the clock, Ray Northway reckons he could easily sell it for £21,000 or perhaps even more, but I'm advertising it for £20,000. But I've been addicted to Porsche for most of my adult life, so when the Cayman goes I'd like to replace it with a really nice 944.'

“ When the Cayman goes, I'd like to replace it with a really nice 944 ”

Porsche, a 944 Lux that he gradually improved with the help of Northway Porsche Specialists in Berkshire. 'Ray and his team are fantastic guys to deal with,' enthuses Brian. And now aged 83, Brian's thinking about another 944.

'My wife doesn't really like riding in the Cayman, so it's with great reluctance that I have it up for sale. Given that it still only

Porsche these days has brand ambassadors such as Mark Webber and Maria Sharapova – perhaps it should consider employing the services of a certain Chichester-based octogenarian.

Just as we were going to press Brian informed us that he has now sold the Cayman to a lucky new owner from the Aberdeen area. **PW**

Ray's fastidious attention to cleaning and detailing extends to his removing the wheels regularly to clean inside the rims. Sadly he has had to recently sell the car, but the new owner will be bagging themselves one of the best Caymans around

CONTACT

Northway Porsche:
A name that often crops up in the 'You & Yours' pages, and with good reason. Brian can't recommend Ray Northway highly enough
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GAME CHANGER

The 2016 Carreras represent the most significant development in the 911's history since the arrival of liquid cooling nearly two decades ago – and, with downsized biturbo engines offering more power, torque, performance and economy than their immediate predecessors, arguably since the 1974 launch of the Turbo itself. Chris Horton analyses these exciting new models' so far innermost secrets; images by Porsche AG





‘New and improved!’ shouts the banner on the next box of your favourite breakfast cereal, but almost instinctively you know that, in truth, any novelty or improvement will be both modest and most likely inconsequential – and arguably of no genuine benefit at all. Even more annoying is that other tired old cliché, so cherished by marketing departments the world over: ‘Better value’. Better value for whom, exactly? Almost certainly not you, the paying customer. Same-sized pack as before but smaller content, more likely.

You can be forgiven, then, for looking askance at Porsche’s recently announced Gen II 991 Carrera engines. Since the launch of the very first 2.0-litre ‘901’ way back in 1963, almost every subsequent mainstream, road-going 911 has had an engine with a larger swept volume than its predecessor (see the sidebar on page 51). That inexorable expansion process, a natural result of the search for ever more power and torque, culminated in the nominally 3.4- and 3.8-litre motors in the Gen I cars, offering 350bhp and 400bhp, respectively.

But both the latest Carrera and Carrera ‘S’, unveiled at this year’s Frankfurt motor show in rear-drive coupé and Cabriolet form, now have flat-sixes with a cubic capacity below three litres. Just 2981cc, in fact. Even the 911SC, today obsolete for over a third of a century, had 2993cc. Remarkably, however, these substantially brand-new engines really do offer more from apparently less: 370bhp from the base-model Carrera, and 420bhp from the ‘S’ model. Previous maxima were 350bhp and 400bhp, respectively. Torque figures are even more impressive: a maximum of 450Nm from the Carrera (previously 390Nm), and from the ‘S’ a frankly remarkable 500Nm (previously 440Nm). What’s more, in each version that value is available all the way from 1700rpm to 5000rpm. And both engines will rev safely to 7500rpm, we are assured.

This translates into a seemingly modest but in practice substantial improvement in performance – and certainly so in terms of real-world, mid-range driveability. The Carrera

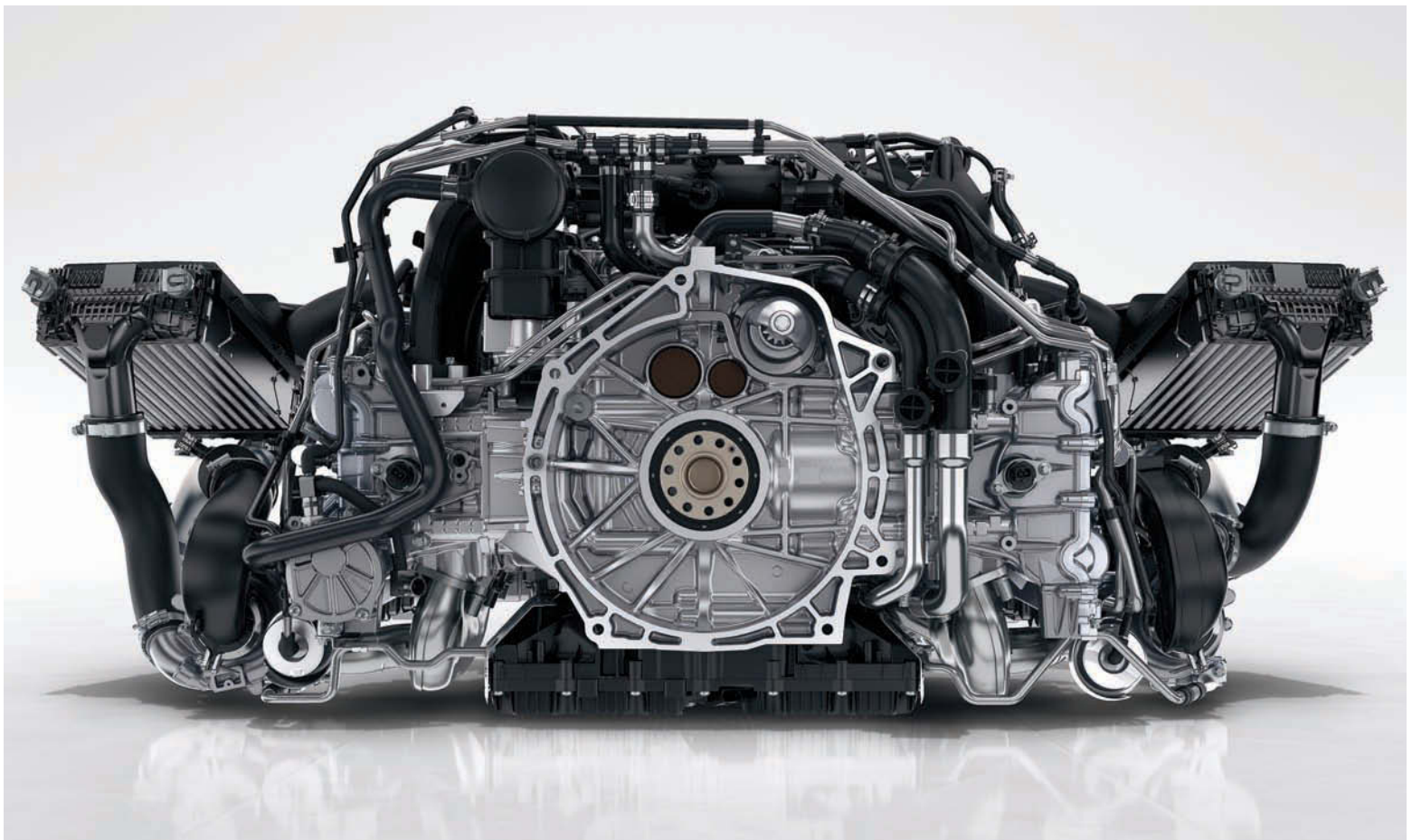
coupé with optional PDK transmission and Sport Chrono now sprints from standstill to 62mph in a claimed 4.2 seconds, two-tenths of a second faster than before. The equivalent Carrera ‘S’ is quicker still, offering 0–62mph in just 3.9 seconds (another 0.2 second reduction), and thus becomes the first of what Porsche calls the Carrera family to undercut the yardstick four-second barrier. Top speeds are higher, as well: 183mph for the PDK Carrera (previously 177mph), and 191mph for the PDK ‘S’ (previously 187mph).

No less remarkably – if unsurprisingly in an age so fixated upon efficiency – this is achieved using less fuel than before, and burning it ever more completely. Based on arguably contrived but none the less industry-standard measuring procedures (not travelling at 183mph, in other words), the 911 Carrera with PDK now returns 38.2mpg Combined, and the ‘S’ an only marginally less frugal 36.7mpg. Naturally both models are fully Euro 6-compliant, and their CO₂ figures – 169g/km and 174g/km for the Carrera and Carrera ‘S’, respectively – place them in Band ‘H’ for UK Vehicle Excise Duty. So you can have fun and simultaneously save the planet, it would seem.

How is it done? Simple. Well, relatively so, anyway – and certainly for a company with as much race-honed experience in the field as Porsche. Forced induction. Turbocharging, to use the more widely used and better-understood terminology. Push air into an internal combustion engine at higher than atmospheric pressure – together with the required amount of fuel, of course – and you increase its specific power output. This makes it possible to achieve the same levels as a naturally aspirated motor, but with a smaller displacement. And that, in turn, makes the resulting engine still more economical. Simply put, it takes less fuel to ‘fill’ a smaller cylinder than a large one.

It is tempting to think of the process as downsizing, to use the modern idiom, but Porsche prefers the term ‘rightsizing’ (at the same time, we note, conceding the almost inevitable possibility that the new engines’ capacity might later increase again; significantly the centres of the cylinder bores are placed exactly as they have always been,





Engine – see also the previous spread for a view from the rear of the power unit – is a masterpiece of packaging and fuel-efficiency. Clearly visible here are the intercoolers and turbochargers – one of each per cylinder bank – that are the hallmark of these hugely important new Carreras, and also the new moulded polymer sump pan. Long gone, of course, is the arguably potentially troublesome intermediate shaft of the 996 and Gen I 997 engines, but no less significantly these latest iterations also have iron-coated cylinder bores for ‘reduced fuel and oil consumption’

precisely 118mm apart). Either way, the overall result is the same. More power and performance for less fuel burned and, nominally at least, the demise of the Turbo as the flagship 911. Henceforth they will *all* have two blowers apiece – although no doubt the engineers at Weissach are even now working hard on restoring the ‘genuine’ Turbo’s dominance in the Porsche hierarchy. Good luck with that, then...

There was, of course, a little more to the task than that. So much, in fact, that Porsche felt it worth flying contingents of journalists from around the world to what it called a technology workshop at the famous Hockenheim circuit, about 60 miles from Frankfurt. There, during early September, we sadly had no opportunity to drive the new cars and their engines for ourselves – that will come shortly, we hope – but a number of fascinating presentations, plus a dozen or so suitably quick and exciting passenger laps in both a Carrera and a Carrera ‘S’, proved beyond doubt that they deliver Porsche’s famously unique DNA in spades.

THE FIRST AND ARGUABLY THE BIGGEST challenge the Porsche engineers faced in improving what was already an astonishingly competent car was to provide the induction system with sufficient air at both low and high road speeds. In all of the so far three water-cooled 911 Turbos – 996, 997 and current 991 – this task was famously handled by a characteristic and suitably large intake duct on each rear wing, just ahead of the wheel, but for probably obvious marketing reasons this would not have been appropriate here.

Instead, there is a single central filtered intake directly beneath the rear spoiler, itself fed by the now longitudinally slatted grille on the engine cover. (And this will surely be the quickest way visually to differentiate between Gen I and Gen II cars.) From here the air passes, via a pair of lateral ports in the filter

box, to the two turbochargers, each mounted low down within the rear quarter panels. The by now compressed and thus heated air is then directed through the adjacent intercoolers, and finally through the throttle flap. The ambient air required for cooling the intercoolers is also drawn in through the longitudinal slats on the grille, and exhausted via the ports at the lower rear corners of the wraparound bumper moulding.

The turbos themselves are naturally broadly similar across the two cars, but the ‘S’ has a slightly larger compressor wheel (51mm diameter to 49mm, we are told), and additionally boosts to a maximum of 1.1 bar instead of the base Carrera’s 0.9 bar. To take full advantage of this, the ‘S’ also has its own further refined exhaust and engine

Both engines also have inlet camshafts with VarioCam Plus – ie variable lift and duration – and a similarly adjustable exhaust camshaft makes it possible to control what Porsche calls the charge-exchange process even more accurately, and thereby effectively eliminate any hint of the dreaded turbo ‘lag’. (Of which, insofar as you can tell from the passenger seat, there is none whatsoever.)

There are a number of what might be termed constructional refinements within these engines – type-numbered 9A2 within Porsche. (The Gen I engines are designated 9A1.) As before, all four camshafts are driven by a single, double-row endless chain, once again eliminating the M96/97’s intermediate shaft and its potentially troublesome bearing, but perhaps most significantly for those who

“ Two fuel pumps – one per bank – deliver a pressure up to 250 bar ”

management system. Both turbos have new electro-pneumatically controlled wastegates for optimum response times.

Just as important as supplying the engine with the necessary air is providing the required amount of fuel – and at precisely the right moment. Two fuel pumps – one per cylinder bank – deliver a system pressure up to 250 bar, and the business ends of the highly sophisticated direct injectors have been repositioned centrally within the combustion chambers. This helps to reduce the cylinder-wall wetting that can lead to both incomplete combustion and perhaps the washing away of the protective oil film, and exhaust emissions are further reduced by inlet tracts designed to ‘tumble’ the intake charge for optimum mixing of the fuel and air.

might approach these new cars via the 997 in particular, the aluminium-alloy cylinder block – itself 1.5kg lighter than before – has brand-new iron-coated bores.

The company is naturally swift to deny that this was occasioned by earlier (alleged) scoring issues, but the accompanying literature states quite definitively that this manufacturing technique, via a plasma beam, reduces the consumption of both petrol and lubricating oil – and at least one engineer told us that it makes the unit more resistant to the poor-quality fuels found in some parts of the world. ‘We have high expectations for the long service life of the power unit,’ he added, no less significantly. ‘Maybe 20 or even 30 years.’ Whether that means either the overall design or individual engines, the message

itself is pretty clear. History will have to be the judge, of course, but Porsche does appear to have learned some valuable lessons from its more recent past.

There is an ingenious moulded polymer (ie plastic) oil pan, or sump, with improved baffling and swirlpots for the fast circuit driving during which high lateral 'g' forces could otherwise create problems of surging and frothing – and, typical of Porsche's attention to detail, metallic shielding against the heat from the naturally closely adjacent turbochargers. One hopes it will prove effective enough in real-world conditions. Either way, that is another 2kg shaved off the power unit's overall mass. The lubrication system is further enhanced by a new modular and fully controllable oil pump with 'intelligent' pressure regulation, and improved scavenging from both the cylinder heads and the turbochargers, each of the latter with its own miniature 'cistern'.

Interesting to note, too, a statistic rather casually buried within the cars' technical specification. The total capacity of the lubricating system is a claimed 13.1 litres, but the refill volume, presumably after draining and a filter change, is apparently just eight litres. Given the volume of 'old' oil that will necessarily leave within the system (the front-mounted cooler and its pipework, for instance), that is clearly going to make by-the-book servicing – and the use of precisely the right grade of top-quality oil – even more important than it naturally is already.

Other auxiliary components – and peripheral systems – contribute to the new engines' increased efficiency and remarkable refinement under all conditions. The water pump now has a clutch controlled by the management system, and at low coolant temperatures this enables the impeller – quite safely – to be disconnected from its conventional belt-drive. This reduces frictional

losses within the engine, and shortens the warm-up period, particularly of the cylinder heads and combustion chambers. The same principle applies to the air-conditioning compressor. Previously its throughput was controlled for optimum engine efficiency, but now it can be completely deactivated by means of a clutch. Warm-up times, particularly during cold weather, are also reduced by a new system of automatically adjustable flaps in the front grilles, immediately ahead of the corner-mounted radiators. There is also a new torsional vibration damper built in to the main drive-belt pulley at the rear end of the engine.

Indulgently, perhaps, but at the same time catering to an obvious demand, Porsche offers these new Carreras with three different exhaust systems, all aimed at maximising the car's aural qualities by means of what it calls an individually tuned sound duct into the rear of the passenger compartment. (And turbocharged engines are invariably rather more muted than their naturally aspirated counterparts, remember.) The base-model Carrera has a simple 'fixed' main silencer with two oval tailpipes, while the Carrera 'S' additionally has two integrated switchable flaps – to redirect the gases for a fuller sound – and dual tailpipes. The optionally available Sport exhaust, also switchable, has two round dual tailpipes that for the first time are centrally located at the rear of the car, and offer what Porsche boldly calls 'an incomparably sporty sound'. In all cases, the company adds, the output is not digitally modified in any way (glad to hear it...), and crucially allows a quiet and discreet driving style when necessary.

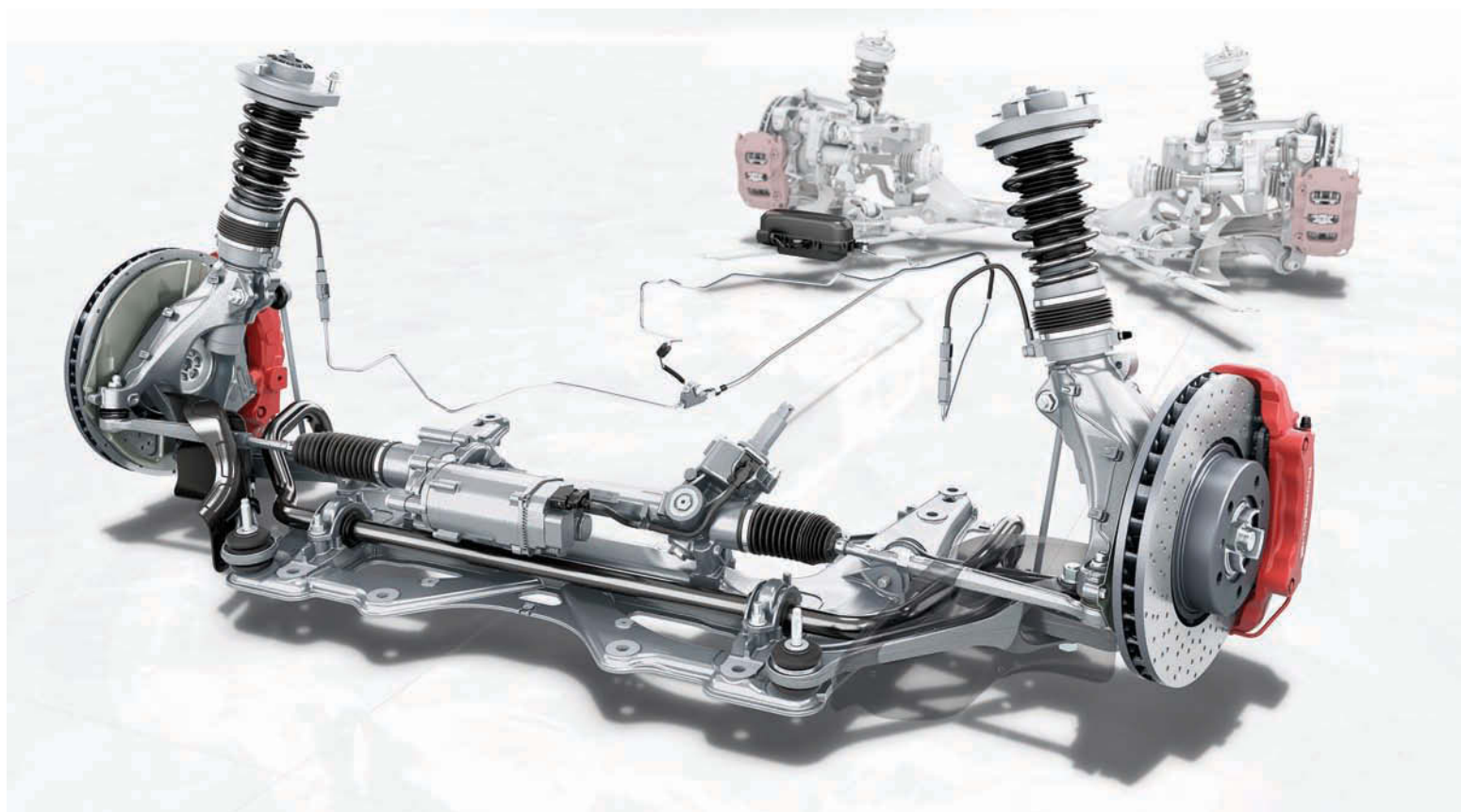
Both engines (and both manual and PDK transmissions) are available with automatic stop-start for valuable fuel savings and emissions reductions when driving in heavy traffic, but now the system anticipates when

the car is rolling to a halt and interrupts the flow of fuel momentarily beforehand – and apparently without any effect on driveability. The engine is also claimed to restart more quickly. Additionally there is in PDK cars a similarly 'intelligent' overrun cut-off, for situations such as a motorway descent. First the drive control system switches to a coasting mode, with open clutches and the engine idling. If, however, the car's speed continues to increase, the clutches are engaged again, and the engine shuts down.

Both transmissions, too, incorporate a raft of improvements and refinements. The suitably strengthened seven-speed manual gearbox has a twin-disc clutch for the first time, to allow comfortable actuation forces with the necessarily high torque capacity, and 'taller' ratios for third and the gears beyond it balance the need for both performance and economy. There is also a new dual-mass flywheel with what Porsche calls a centrifugal pendulum. The company goes on to describe this as an adaptive damper that cushions drivetrain vibrations over a broad range of engine speeds, but essentially it appears to be two concentric sections separated by substantial springs. Its effect, in conjunction with the broad torque band of the engines, is to allow – and even to encourage – driving in higher gears at low speed without any harshness, again with obvious benefits to both comfort and fuel economy.

The similarly seven-speed PDK transmission, also equipped with that new dual-mass flywheel, has both the familiar steering-wheel 'paddles' and a tunnel-mounted shift lever, the latter (potentially confusingly) now pulled back for an upshift, and pushed forward for a downshift. Beware, then, if you are in the habit of shifting thus, and your 'other' Porsche – a Panamera, perhaps – has precisely the opposite configuration. PDK also offers fuel-saving

Optional rear steering – via two electro-mechanical actuators in place of the standard upper control arms – angles wheels through only two degrees, either in the opposite direction to the conventionally steered fronts or the same as, depending on the vehicle's speed. This has the effect of a virtual shortening or lengthening of the wheelbase for optimum agility and then high-speed stability; a smaller turning circle, too. Increased engine output means bigger brakes – dimensions in main text – plus optional PCCB ceramics. Red calipers here are fitted to Carrera 'S'; base model has plain black units





Visually there are few major differences between Gen I and Gen II 991s – Porsche plainly wouldn't want the outgoing cars to seem instantly outdated – but the front and rear lights have been modestly revised, and likewise the door handles. New 19- and 20-inch wheels, too, plus three exhaust and tailpipe options. Biggest change – albeit not obvious in this ghosted view, but see page 51 – is the longitudinally slatted rear lid, which must feed air not only to the induction system but also to the intercoolers, which exhaust from the vents at the lower corners of the rear apron. Not surprisingly, 991 Turbo-style intakes on the rear wheelarches would not have been suitable from a marketing standpoint

'virtual' gears, already proven in the existing 911 Turbo, to reduce engine revs during more sedate driving modes. If shifting to the next higher gear would drop the revs below the engine's lower limit, the control system engages adjacent ratios and varies the effect of both clutches for a defined level of slip. When the driver wishes to accelerate, the dual-clutch gearbox downshifts with what Porsche calls 'lightning speed' (and it does, indeed, seem thus from the passenger seat). The PDK has oil-bath clutches, so this innovative function is said to be wear-free.

In conjunction with the optional Sport Chrono package, the latest Carreras feature a mode switch on the steering wheel, derived from the hybrid mode control of the 918 Spyder. This offers four driving settings: Normal, Sport, Sport Plus and Individual. Depending on the vehicle's specification, the last-named enables drivers to configure their own specific set-up within the PASM and PDK transmission-shifting strategies, and the optional sports exhaust system. In combination with the PDK, the mode switch has an additional Sport Response setting, which 'pre-conditions' the drivetrain for maximum acceleration for a period of 20 seconds – for an overtaking manoeuvre, for example. For a short time, the optimum gear is engaged and the engine management adjusted to an even more spontaneous response. Think of it as the reheat or afterburner effect in a military jet aircraft.

There is almost as much to assimilate in the new Carreras' chassis. Both cars come as standard with both a 10mm lower ride height than before and PASM, or Porsche Active Suspension Management. This incorporates revised dampers for improved response, especially on rough road surfaces, and rebound buffer springs in all four struts to reduce the tendency to roll and pitch, particularly when the car is being driven hard. There are new main springs and anti-roll bars, and the width of the rear tyres – specially developed in conjunction with their

own manufacturers – has been increased from 295-section to 305. The rear wheels, as a result, are now 11.5 inches wide instead of the previous 11 inches. An optional Sport suspension is available, too: a further 10mm lower than standard, but with only minimal effects on ride comfort, we are assured.

Naturally both cars come with Porsche Stability Management, or PSM. This, in conjunction with the optional Sport Chrono package, offers a Sport setting, essentially a sort of halfway stage between PSM fully on and fully off – and which latter condition remains fully available at any time by further pressing the control button for slightly longer. Crucially, however, hard braking within the ABS control range reactivates the full gamut of PSM stability assistance until the brakes are disengaged again.

The brakes themselves have bigger four-piston calipers in the Carrera, with 330mm diameter discs that at 34mm are now 6.0mm

and eye-catching red for the Carrera 'S'.

The braking system additionally features an automatic post-collision function, installed here for the first time in a Porsche sports car. It is designed, as its name might suggest, to reduce the severity of a secondary collision by automatically braking the vehicle after the first, if that was sufficiently severe to activate the airbags. The maximum deceleration rate it provides is set at 0.6g, but the driver can override the system at any time by pressing the brake pedal, and for safety's sake it is also instantly deactivated if he or she presses the accelerator after that first impact.

The Carreras have two new steering wheels, both based on that of the 918 Spyder. The standard wheel is 375mm in diameter, the GT sport item a marginally smaller 360mm. The cars are also optionally available with the active rear-axle steering of the 911 Turbo and GT3, offering significant improvements in low-speed manoeuvrability,

“ Think of it as the reheat or afterburner effect in a military jet aircraft ”

thicker than before. The pad surface is some 17 per cent larger. The 'S' model, too, has 34mm thick discs, but at 350mm in diameter they are 20mm larger than before – and secured to their race-style aluminium mounting 'bells' by pins, offering a worthwhile reduction in unsprung weight. The 'S' model's pads are from the 911 Turbo, and thus some 16 per cent bigger than those of its predecessor. The optional PCCB is entirely 911 Turbo-based, with 410mm x 36mm and 390mm x 32mm discs at front and rear, respectively, and yellow calipers to match. As before, it is easy to tell the two mainstream systems apart by the colour of the calipers: black for the standard Carrera,

high-speed stability – during sudden motorway lane changes, for example – and not least overall agility. At less than around 30mph the front and rear wheels turn in opposite directions to give what has become known as a virtual shortening of the wheelbase, which allows the car to be guided through a corner with smaller steering-wheel movements. It also reduces the turning circle by 0.5 metre, to just 10.7 metres. At higher speeds, however – approximately 50mph and above – the front and rear wheels are angled in the same direction, giving a longer effective wheelbase, and thereby dramatically improving overall stability.

The system's electro-mechanical actuators


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Tiptronic S • Basalt Black • Black Leather Seats • Satellite Navigation 19" Carrera Sport Wheels • 27,659 miles 2008 (08)

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Boxster S (981)

7-Speed PDK • Basalt Black • Black Leather Seats • Touchscreen Satellite Navigation • 20" Carrera Classic III Wheels • 14,757 miles • 2013 (13)

£44,995

911 Carrera 2 (997)

6-Speed • Basalt Black • Flamenco Red Leather Seats • Touchscreen Satellite Navigation • 19" Sport Design Wheels 33,742 miles • 2008 (58)

£39,995

911 Carrera 2 S (997)

Tiptronic S • Midnight Blue • Cocoa Leather Seats • 19" Carrera S Wheels Satellite Navigation • Extended Leather 23,276 miles • 2008 (08)

£35,995

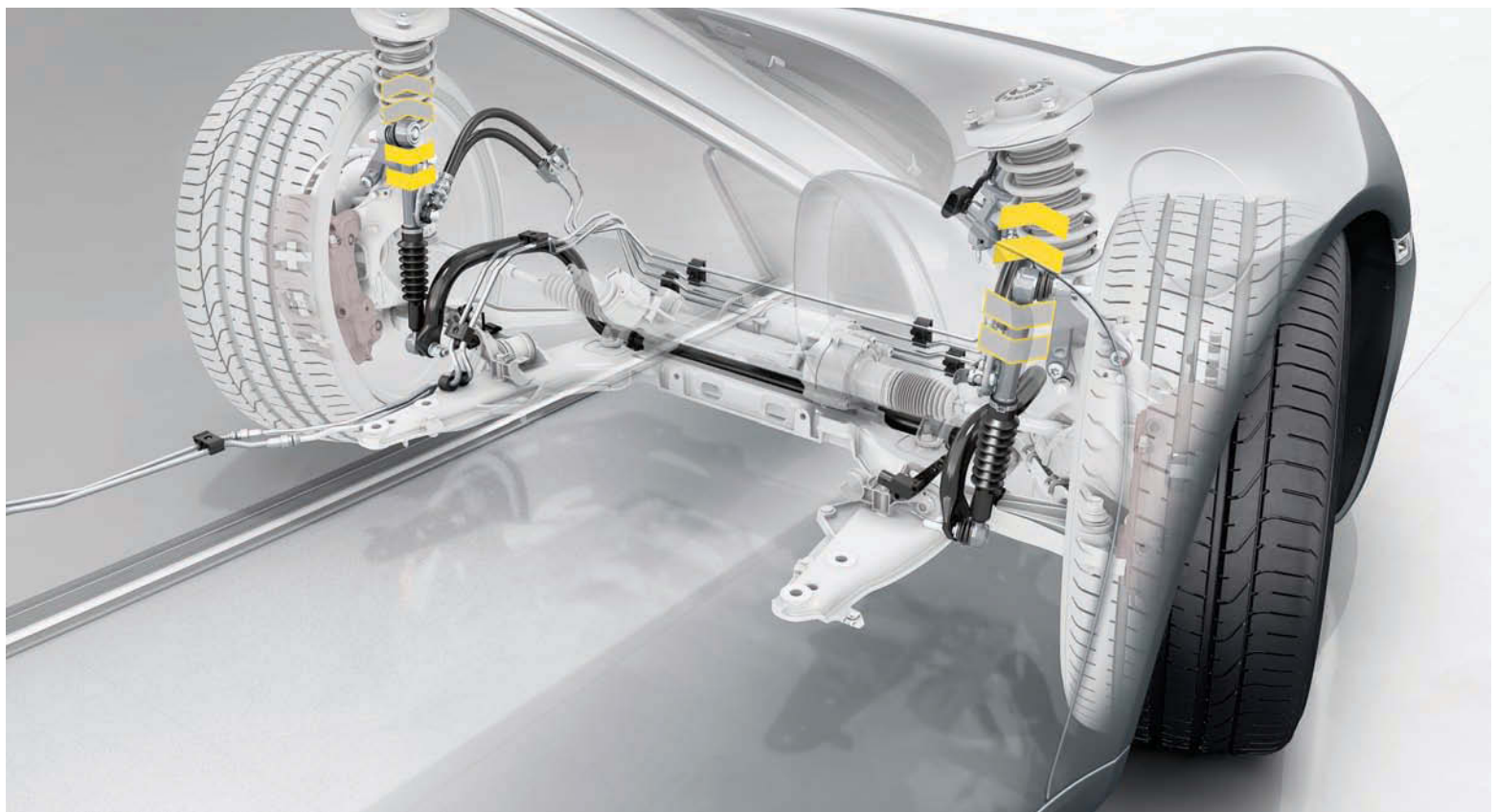
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Standard suspension is 10mm lower than Gen I's, with option to go 10mm lower again – and yet another option for a driver-controlled lifting mechanism built in to the front struts to allow the car to negotiate steep ramps and so on without grounding the lower lip spoiler. See also the graphic below right

take the place of the upper control arms of the conventional fixed rear wheels, and allow up to two degrees of movement in either direction, depending on the vehicle's speed. By way of comparison, a steering angle of two degrees at the front wheels would be the equivalent of turning the steering wheel through 32 degrees. A further benefit of the system is that it allows the primary (ie front) steering system to be made 10 per cent more direct, with obvious additional benefits to the vehicle's overall agility in urban situations.

Finally, to make it easier to drive the car over seemingly minor but often impassable obstacles such as steeply sloping entrances, garage lifts, or even speed bumps, Porsche offers a hydraulic lifting system built in to the front suspension struts. At the push of a button this raises the ground clearance at the lip spoiler by a useful 40mm. If the driver fails to deactivate the system the car will lower itself automatically when its road speed reaches 30km/h (18mph).

There is naturally no shortage of 'infotainment' systems, either. (Ghastly word, but it's hard to think of anything more descriptive without resorting to epithets.) The new 911 Carreras feature a development of the Porsche Communication Management System, including on-line satellite navigation and voice control. The PCM can be

controlled by multi-touch gestures on the seven-inch display, similar to operating a smartphone. It is even possible to input commands and so on via handwriting. Mobile phones and smartphones can now be connected via wi-fi and Bluetooth. The smartphone tray is for the first time integrated within the centre armrest, offering battery-saving charging, and what is claimed to be optimised phone reception. Also new is the option of connecting an iPhone to the PCM to use Apple CarPlay. The driver is further aided by the optional Lane Change Assist system, which monitors following traffic via radar, and uses LEDs in the door-mirror triangle to warn of vehicles in the blind spot. As if...

Real-time traffic information is available for significantly improved route navigation. It gives the driver a quick overview of the traffic situation, and 'guarantees' dynamic adaptation of the route to this information. We shall be interested to try that for ourselves. Google Earth and Google Streetview are also being integrated for the first time to offer 'better orientation'. Other components of the PCM are Porsche Car Connect and the Porsche Connect app, which can be used for remote control of vehicle functions, transfer of destinations to the PCM for navigation, and the use of music-streaming services by third-party providers via the PCM.

VISUALLY, THE NEW CARRERAS ARE necessarily broadly similar to their predecessors. In that respect Porsche, like other German manufacturers, is well aware of the commercial value of evolution rather than overnight revolution. The most obvious distinguishing feature, as we have suggested, will be that longitudinally slatted grille on the engine 'lid', but a number of other styling features have been refined, as well. These include new headlights with four-point daytime running lights, handles inset to the door panels without recess covers, and not least new tail lights – including the now characteristic four-point brake-light Porsche motif. (Although oddly both front and rear lights remained coyly covered during our brief period at Hockenheim, despite the plethora of unmasked images even then available, not least on Porsche's own website.) There are new wheels – 19-inch 10-spokes for the Carrera (effectively five doubled spokes), and 20s with five spokes for the 'S' – with optional Carrera Classic II or RS Spyder Design rims.

Standard equipment in all cars includes leather interior, sports seats, Porsche Communication Management (PCM) including sat-nav with seven-inch colour touchscreen, universal audio interface with telephone module and MP3 connectivity, dual-zone automatic climate control,

The new cars feature a number of fuel-saving measures, including a clutch-controlled water pump which can be deactivated to provide a quicker warm-up, and not least these ingenious flaps in the radiator intakes, which automatically close to the same purpose. Useful to maintain sufficiently high engine temperature in very cold climates, as well – and even help to reduce drag



Sport button (that's the one on the centre console, not on the PDK cars' steering wheel), Bi-xenon headlights, Porsche Active Suspension Management (PASM), Porsche Stability Management (PSM), tyre-pressure monitoring, Porsche Vehicle Tracking anti-theft system, a three-year warranty, and not least a three-year roadside assistance package. Customers will also be able to explore the potential of their new car by participating in a complimentary course at the Porsche Experience Centre at Silverstone.

These latest 911 Carrera models are on sale now throughout the UK and Ireland, and the first deliveries will arrive in Porsche Centres during December. The Carrera and Carrera 'S' are priced from £76,412 and £85,857, respectively, with the equivalent Cabriolet models

starting at £85,253 and £94,698, respectively. (The Gen I Carrera and Carrera 'S', for the record, were last priced at £73,509 and £83,545.) All of those figures include VAT and, while necessarily slightly higher than those of their immediate predecessors, quite comprehensively disprove the premise upon which we began this analysis. Choose your brand wisely, and sometimes, it seems, you *do* get more for less. And occasionally, just occasionally, new really does mean improved, as well.

Dare we suggest, however, that even a 370bhp manual-transmission Carrera is going to be but a pale shadow of a 420bhp PDK-equipped Carrera 'S' with Sport Chrono, PCCB, and all the other bells and whistles? GT3 – and certainly 911 Turbo – drivers, beware! **PW**

THE GOLDEN RATIO

Porsche engines are predominantly – if not exclusively – short-stroke units. That is to say, their cylinder diameters are greater, and in some instances considerably so, than the throw of the crankshaft. This is one of the many reasons why the units rev so freely. The following table shows how the mainstream 911 engine has – until today – steadily grown over the last 52 years, albeit with a disparity between the naturally aspirated and turbocharged units, and modest reductions in the two Gen II 997 motors. In all of that time, however, and through literally dozens of engine sub-types, the centres of the cylinder bores have resolutely remained exactly 118mm apart, just as they do in these Gen II 991 engines. Interesting to note, too, that even now those units retain the same 76.4mm stroke as the air-cooled 964 and 993 motors and thus, unsurprisingly, the water-cooled 996 Turbo and GT3. Some things, it seems – even at a company as famously adventurous as Porsche – are set in stone.

Engine	Bore x stroke (mm)	Capacity (cc)
2.0	80.0 x 66.0	1991
2.2	84.0 x 66.0	2195
2.4	84.0 x 70.4	2341
2.7	90.0 x 70.4	2687
Carrera 3.0	95.0 x 70.4	2993
Turbo 3.0	95.0 x 70.4	2993
Turbo 3.3	97.0 x 74.4	3299
911SC	95.0 x 70.4	2993
Carrera 3.2	95.0 x 74.4	3164
964 Carrera 2/4	100.0 x 76.4	3600
964 Turbo 3.6	100.0 x 76.4	3600
993 C2/4	100.0 x 76.4	3600
993 Turbo 3.6	100.0 x 76.4	3600
996 Carrera 2/4	96.0 x 78.0	3387
	96.0 x 82.8	3596
996 GT3	100.0 x 76.4	3600
996 Turbo	100.0 x 76.4	3600
997 Carrera & 'S' (Gen I)	96.0 x 82.8	3596
	99.0 x 82.8	3824
997 Carrera & 'S' (Gen II)	97.0 x 77.5	3436
	102.0 x 77.5	3800
997 GT3	102.0 x 77.5	3800
997 Turbo	102.0 x 77.5	3800
991 Carrera & 'S' (Gen I)	97.0 x 77.5	3436
	102.0 x 77.5	3800
991 Carrera & 'S' (Gen II)	91.0 x 76.4	2981



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TWIN PEAKS

Probing the outer limits of performance and aesthetics, Alois Ruf has produced a stunning pair of supercars, the RtR and RGT. These wide-bodied siblings fulfil their potential in very different ways

Words: Johnny Tipler Photography: Antony Fraser





Welcome to nirvana. Two of Ruf's very special offerings, displayed at the Geneva Salon earlier this year are now ready to roll after much diligent fettling in the Pfaffenhausen factory. They don't come much broader in the beam than this pair. The blue RtR and the white RGT are siblings, though the former is turbocharged and the latter is normally aspirated; one is four-wheel drive, based on the 991 Turbo, while the other is based on the 991 GT3 and therefore rear-drive only. Paradoxically, the RtR has a manual gearbox, and though the RGT ostensibly projects the more track-orientated imagery, it has PDK transmission.

The white RGT is a right-hand drive car because it's bound for Singapore. It follows the tradition of Ruf's RGT models

with its bolt-on wheelarch extensions, similar in spirit to the original 993 GT2. The absence of the letter T in the designation indicates it's a normally aspirated car, and back in 2000 the model was originally based on the 996 and equipped with a GT3 crankcase. While US customers were denied the factory-produced GT3 at the time, the Ruf RGT was available in the States. Ruf's latest version of this model is extra wide because of its flared wings and wheelarch extensions, and at the front it has an additional 8cm in total width and at the back it's 12cm broader in the beam. In fact, both the white and the blue cars share the same dimensions, albeit achieved in different ways. The RtR is the latest incarnation of a model Ruf first produced in 2001, though it's a formula that dates back to the first Ruf product, the Turbo Coupé of 1977. The blue RtR body

of the current car was created by inserting additional material in the wings (fenders in US parlance), incorporating carbon-fibre in the front arches and steel in the rear. The RGT's extensions are carbon-fibre all round, glued and bolted in place, having had the original inner and outer arches suitably modified to accommodate the enormous wheel and tyre width as well.

The RGT is the more racecar of the two styles, and the RtR the more elegant, which means it's also more expensive to produce. It's typical of Ruf's bespoke service that, if you fancied the spec of one and the image of the other, these models are interchangeable. As Marcel Groos (Alois's son) says, 'we can offer both cars with either option, so the body styles of both cars are interchangeable. You can have the Turbo RtR with the bolt-on wheelarch extensions, and you can have the RGT with the elegant extensions, and



Things happen quite fast in the Ruf RtR. Look carefully and you will see that Tipler's hand is grasping a manual shifter. Yep, despite being 991 Turbo based, Ruf offers a manual option

the RtR is also available as four-wheel drive or as rear-wheel drive only. You can have a manual gearbox or you can have a double clutch gearbox, and that's something that Ruf has always offered: you can have any drivetrain you like, you can choose whatever propulsion you want.' Naturally, the nature of the driveline and aspiration of the engine has a huge bearing on the performance delivery of both cars. Marcel again: 'Yes, the RGT is rear-wheel drive only, and we use the GT3 drivetrain, which comprises the 3.8-litre engine coupled with the double clutch gearbox. The engine remains basically the same as the original GT3 spec, though we've optimised the exhaust aspect and the ECU, and that's producing nearly 500bhp, compared with the standard car's 480bhp, so we've gained a little.' Most prominent feature in the engine compartment of the RGT is a single conical BMC air filter, monogrammed "twin air power, made in Italy", and as neat an installation as you could wish for, in the centre of the engine bay, receiving air blown in from the pair of twin fans located in the underside of the engine lid.

But the real focus is the appearance of the car, combined with Ruf's chassis technology and the function of the built-in roll cage, which stiffens up the bodyshell. 'The suspension is a very well developed KW set-up that we do together with them,' explains Marcel. 'The chassis is reinforced with our integrated roll cage and, basically, every part of the chassis except the doors has been changed or modified; you can see the wider sills and wings (fenders), the rear bumper, and then the front bumper with its retro looks including the round holes for better cooling, and the square central oil cooler. We use the same front bumper design for both cars, including a little bit of retro, and the offset of the wheels also shows off the extra track width at both ends

of the car.' The rear wing and engine lid is different to the RTR's wider, straight version – paradoxically less competition oriented – while the RGT's is a special carbon-fibre Batman look. The engine lid itself culminates in the fundamental ducktail spoiler, regarded as providing sufficient downforce in its own right on the Turbo Florio. The "Batman" rear wing configuration is a lot more complex design than the RtR's because it's edged with winged fins and a pair of small convex lines above where the struts mount on to the ducktail, and it's a more graceful solution than the single plane shelf adorning the RtR. The RGT cabin features an Alcantara headlining, the suede-like material also cladding the pillars and matching seats. A pair of rear seats, too, at odds with the GT3

exclusive feature because normally you would only be able to have the PDK transmission in the Turbo today.'

The front lid is carbon-fibre, and the cabin is another Ruf *piece de resistance*. It has the same colour co-ordinated blue steering wheel boss, extended as highlights around the dash panel, the centre console surround, door panels and the rear of the seats – with blue stitching in the leather as well. It's a marvellous environment for an uplifting driving experience. Ruf looks after the details, too: stashed in the luggage compartment of the RtR is a plastic Ruf-logo'd case containing a continental travel kit.

Both the RtR and the RGT are running on similar wheels. 'We created a new Ruf modular wheel here,' Marcel tells me,

“ We can safely tweak 800bhp out of the Mezger engine ”

origins, and we've also got the additional internal roll hoop, red seat belts and carbon-fibre trims on the doors, dashboard and around the centre console.

The blue RtR is destined for Miami, Florida. Marcel talks me through the spec: 'The RtR has a different driveline to the Turbo Florio (the Ruf Targa that I drove earlier in the day), and it uses the same powertrain as the CTR-3 and the RT-12R, and that's the old, tried-and-tested Mezger engine. We can tweak 800bhp out of that without compromising any safety and security reserves on the car; that's the reason why we use this well-established engine. We can also offer a six-speed manual gearbox for the RtR, which is an

'together with OZ, and both front and rear are running very wide tyres, 20in, and on the front we have 255s and 325s on the rear, so you can really see how much wider the track becomes by the offset of the wheel rims.' Indeed, The RGT is on Pirelli P-Zeros, 345/25 ZR20 at the rear and 265/30 ZR20 up front. The brake discs are carbon-ceramic items, at 410mm the biggest possible diameter on the front, allied to six-piston calipers, with 390mm discs and four-piston callipers on the back. Short of a racing car, I've never seen such big brakes on a road car.

The inspiration for the wide-body look came in the first instance from Estonia – the glamorous Mrs Ruf – who had some



RUF PITCH

The expansive Ruf stand at this year's Geneva Salon presented three new models, the RtR, RGT and 991 Targa-based Turbo Florio, plus a great take on the 1971 "Psychedelic" 917 in the shape of an aptly-liveried swirly-hued CTR-3. The new range takes Alois Ruf's supercar business into a new phase, and on this visit to Pfaffenhausen he told me about the rationale behind the new line-up as well as some of his current plans.

'We launched three new models at Geneva, and if I start with the Turbo Florio, the idea was to combine the new technology of the Targa with the drivetrain of the Turbo 991, adding a touch of Ruf, which is the extra performance of the 3.8 engine that delivers 630bhp, and also the stance of the car when you look at the front end. So we have a different appearance and a sportier vehicle. One of our special touches is the signature Ruf air intake which is very subtle and that makes it a unique car. The name came from the Targa Florio, because Vincenzo Florio was the founder of that race, and we thought it would be good if his name could also be on a car named after him. I don't think that's ever happened before. It's a unique car for the individualist who likes to have a Targa

combined with turbo power, driving with the double clutch gearbox, and lovely flat handling.

'The blue RTR is an extreme car; it takes you to the maximum. It's for people who like the wide body look, with big wheelarches and huge tyres that puts the full race car image on the road, and therefore we had to stay with the good old Mezger engine which we have given our 802bhp package, and that cannot be combined with the double clutch gearbox, so we had to go manual, and there are still plenty of people around who miss the stick shift, although the double clutch gearbox is perfection today. The engineers have worked miracles to make all of that happen, but there are people who've lived all their life with a clutch and stick shift, so it's for those individuals, a custom-tailored car. It's just about the widest bodied car that's practical on the road, and that's about the maximum rear-engined turbo power you can go to as well.

'The third car is the RGT, which is the same chassis concept but with a normally-aspirated engine and rear-drive only. So the width is the same as the RTR, but how we get there is different because we have bolted-on fender (wing) flares, though in principle

it is also possible to switch, so we could build an RGT with the solid fenders like the blue car, and we could also build an RTR with the fender flares that the RGT has. It's all down to customer preference. The bolted fender flares have a certain charm because you can say they are like a racing car's, and it speaks of the muscles that have been added on, and it's also something of an RGT tradition.'

So what was the reception like at Geneva? How were the new cars received? 'Very, very well, and we took orders for all three cars, so they have been very well received. After several months of fettling and fine-tuning we've got to a point where they're ready to go. The white one will be shipped in the next two weeks, and the blue one has already been driven by the owner who was here in early August, and the Turbo Florio already belongs to a local owner here who is enjoying the car very much.'

Let's talk about the rest of the business then; you're still restoring cars in the classic department? 'Yes, we've just finished the early 911, car no. 116, and we've just about finished a 2.7 RS '73 lightweight, and we have a '67 soft-window 911S Targa in the paint shop right now, and that will be the next

candidate for assembly, so we are quite busy there.'

There are a dozen or so cars in the throes of fettling and construction in the main workshop, so what are we seeing going on there? 'We are building another SPS car, sports purpose specification, a very exciting one! You remember the white 2.8 RSR that you wrote a story on before? It's the same idea, but based on a 964. It is going to be a long bonnet car so it will have the early body style, and it will resemble a '73 RS and will have a normally-aspirated engine and a very hot one too – it will be a 4.0-litre! So we will do a story with that car too when it's finished but I cannot say right now when that will be.'

Is there a particular direction the company is headed in? 'You saw our construction site across the roundabout? We're doubling up factory number 2. We've just produced three fabulous cars and we will continue building these cars. We are also thinking about shifting the pages of our own history book and going back in time to replicate something special from Ruf's past, and we can talk about that next time you visit.'

And that is a very interesting carrot to end our interview on.

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Porsche 911 (1997) 3.8 Carrera S Convertible PDK
2010/10, Basalt Black, Automatic, 385bhp, Black Leather, PCM 3 - Touch Screen Sat Nav, Bluetooth Phone Prep, Sport Chrono Pack Plus, BOSE Surround Sound System, Multifunction Steering Wheel, Cruise Control Mileage 46950. **£44,995**



Porsche Panamera 3.0 D V6 Tiptronic
2012/62, Automatic, Basalt Black, 245bhp, Black Leather, PCM 3 - Touchscreen Sat Nav, Bluetooth Phone Prep, Power Tailgate, Heated Seats, Automatic Xenon Lights with Wash, Park Distance Control Front and Rear, Mileage 18500. **£44,900**



Porsche Cayenne D 3.0 V6 Tiptronic
2011/61, Automatic, Dark Blue Metallic, 240bhp, Black Leather, Servotronic, PCM 3 - Touch Screen Sat Nav, Bluetooth Phone Prep, Air Suspension, Electric Memory/Heated Seats, Multifunction Steering Wheel, Mileage 58600. **£32,900**



Porsche Cayman S 3.4 PDK Coupe Gen II
2010/10, Basalt Black, Automatic, 325bhp, Black Leather, PCM 3 - Touchscreen Sat Nav, Sport Chrono Pack Plus, Sports Steering Wheel with Paddleshift, Heated Seats, Bluetooth Phone Prep, Sound Package Plus, Mileage 33400. **£31,900**



Porsche 911 (1996) 3.6 Carrera 4S
2003/03, Basalt Black, Automatic, 325bhp, Black Leather, Litronic Headlights with Wash, Sat Nav, Sports Seats, Park Distance Control, Porsche Embossed Headrests, Stainless Steel Entry Guards, 18" Turbo II Alloys, Mileage 59500. **£21,995**

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Despite being famous for its narrow body turbo 'YellowBird,' Ruf has embraced the widebody look at the behest of its customer base. Mrs Ruf calls the aggressive look "Turbulence," which we like

renderings drawn up a couple of years ago to illustrate her vision. She explains, 'I talked with a customer who was interested in a more aggressive look, and I called the design "Turbulence", which is a play on words!' As she acknowledges, 'it's kind of ironic that our reputation stems from the amazing speed achieved by the narrow-body YellowBird back in the late

our particular foibles.

And now for the moment I've been waiting for – the chance to drive these beasts on the long, looping Swabian backroads, arcing up and down between pasture and arable, forests and tiny villages with onion-spire churches and 100ft maypoles, fabulous for evaluating the chassis in the bends and undulating

Foot on brake, twist the key and it bursts sharply into life. The guttural soundtrack says it means business. The clutch is extremely sharp and it takes a couple of goes to get it off the line, though all is resolved once out on the open road. A delicate throttle and strong clutch foot is all that's needed. However, this is a much more nervous animal than I was expecting, as I apply the slightest throttle pressure and it surges forward. The feedback from steering and chassis is acute, too, as it's feeling every nuance of the road surface. I'm hearing a whistle from the wastegate as the turbo boost cuts off between gear changes. The brakes are equally as sharp – what else was I expecting from those dinner plates? – and the slightest pressure has it jerking, so I need to be extremely smooth on the pedal. There's also an amazing roar between 5000- and 6000rpm as the turbos kick in and we rush away. This could be addictive. The way the RtR accelerates in

“ There's an amazing turbo roar between 5000 and 6000rpm ”

Ruf signature five-spoke style wheel covers PCCB brakes and massive six-pot calipers. Despite being based on the 991 Turbo, the RtR uses the old Mezger engine to reliably produce 800bhp

'80s, and here we are, doing a pair of wide-bodied cars that contradict our original values.' Nevertheless, they do cater to a particular market segment that prefers extreme aesthetics, and we all have

cambers. I'm driving the blue RtR first, and I'm struck by the opulent cabin with its wonderful driving position in the Ruf lollipop seats, and as it's a manual left-hooker I familiarise myself with the six-speed gate.



“ I talked with a customer who
wanted a more aggressive
look and I called the design
“Turbulence” ”





Bolt on style wheel arches are a design cue taken from the 993 GT2 and give the 991 GT3 based RGT a racer's look

3rd and 4th, right round to 6000- and 7000rpm is just staggering; when is it going to tail off, I wonder; but it doesn't stop, it just keeps on accelerating. But even when I floor the throttle the power delivery is very smooth; there's no particular kick in the back, it's just a smooth onslaught of muscle. It's also fun to play a tune with the engine note going through the gearbox. I press the Sport

through the landscape. Handling is slick through the esses, with the pegged-down assurance of the four-wheel drive chassis. The other side of the coin is that I can also cruise along in 6th gear in a very relaxed way. That's the sign of a classy grand touring car: to provide the excitement in the corners and go touring like a lounge lizard. Having a manual 'box with a turbo engine is especially

set of enticing paradoxes presented by the RtR and RGT, the white car is a right-hooker. Double-clutch gearbox, too, so paddle shifts are the order of the day, though I think we'll get acquainted with the performance factor first before flipping those levers. Like the RtR, there's a half cage – more of a roll hoop – in the back, and the controls are familiar enough, Ruf-smart, with Alcantara linings cladding the built-in bars reinforcing the A-pillars. The Alcantara-clad seats feel rather more supportive than the RtR's, a tighter fit, too. In keeping with the race-look wheelarches, the driving position and the attitude I adopt behind the wheel seems a bit more purposeful than the RtR. They're quite different in character, and it's amazing how these transitions are wrought from one model to another.

As befits its GT3 origins, the RGT is more of an aggressive character than the RtR, though agreeably biddable and, when opened up, proves to be markedly less edgy

“ The RGT is more of an aggressive character than the RtR ”

Below: Biplane rear wing gives added downforce. Engine is basically stock GT3, but with exhaust and ECU tweaks to achieve 500bhp over the standard 480bhp

exhaust button so its strident bark is sounding twice as loud, totally awesome, and my hosts use the moment to record a video of the sequence of gear shifts as I move up and down the 'box while travelling

unusual, and it's a joy to drive a manual car with so much power on tap in each gear. The whole thing is extraordinarily smooth and sophisticated.

I switch to the white RGT. To add to the



“ It’s a lot less powerful
than the RtR, but
for me the RGT is the
preferable drive ”





than the RtR. Since the six-speed manual of the RtR is a very seductive proposition, it's whether one would be prepared to accept the PDK transmission on the RGT – although all Zuffenhausen-built GT3s are thus equipped now. Nevertheless, it's a very tantalising conundrum. By comparison the

to hold onto the gear for longer than I'd expect as I accelerate. The rear drive chassis is quite refreshing after the prescribed four-wheel drive of the RtR. The steering is a lot lighter, and it's a more light-hearted car. Despite the fact that, statistically, it's a lot less powerful than the RtR, for me it's actually the

amenably planted. It certainly flows unperturbed through the curves in a very agreeable way, and in a tighter turn I lift off a touch and the nose tucks in. Fabulous.

The bottom line is, I'm spoilt for choice! What spec am I going to choose out of this embarrassment of riches? Either of these spectacularly wide badboys would be hugely satisfying to own. The rear drive layout undoubtedly saves weight but, arguably, is less secure than the all-wheel drive RtR on a wet road. But I would opt for rear-wheel drive, not only for lightness, but because the steering feedback is more delicate, leading to a more vivacious car. Twin peaks? There have been plenty of pinnacles in Ruf's back catalogue, and these are certainly two milestone cars in the Ruf oeuvre. I'm hooked. As FBI agent Dale Cooper (AKA Kyle McLachlan) says in the eponymous Twin Peaks who-done-it, 'Every day, once a day, give yourself a present.' Just driving these cars hits that particular button. **PW**

Above and below: Customer specification makes the blue RtR the lairiest looking of the two cars on test, both inside and out

“ These are certainly two milestone cars in the Ruf oeuvre ”

RGT brakes are more user friendly, not so harsh, though a few miles aboard the RGT is familiarisation enough. There's a bit more transmission noise emanating from the back of the RGT, and of course without the turbocharger the power delivery is a lot more linear, and in non-paddle shift mode it seems

preferable drive, and the further I go the more I'm leaning towards the PDK persuasion in spite of a lifelong stickshift habit. It almost drives itself but, being rear drive, there's more levity about its disposition than the blue car. The RtR feels nervier, regardless of its AWD, whereas the RGT chassis just feels



CONTACT

Thanks to P&O Ferries for the smooth English Channel crossing, Dover-Calais. poferries.com

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

2011 - 997 GT3 RS 4.0 GEN II LHD (GRAND PRIX WHITE) 11,000 MILES
4.0 Ltr, Black with Red Sports Bucket seats, Red Seats Belts, PSM/PASM/PCM 3-Touch screen Satellite Navigation, Telephone, Chrono Pack, Sports Exhausts, Climate Control, 19" GEN II 997 GT3 Alloys, Full Service History.

2010 - 911 (997 GEN II) TURBO S PDK (BASALT BLACK) - 25,000 Miles
PDK, Black Leather Int, PSM/PASM/PCM (GEN II)-Touch Screen Sat Nav, Telephone, Sports Exhaust, Cruise Control, Chrono Pack, White Dials, Heated/Memory/Fully Electrical & Sports Seats, BOSE-CD Changer/USB/IPOD Connection, Xenons, Porsche Crest on Headrest, Alcantara Headlining, Climate Control, Rear park Assist, 19" Turbo Alloys Wheels, Full main Dealer Service History.

2006 - 997 TURBO COUPE TIPTRONIC (BASALT BLACK) 56,000 MILES

Black Leather Intr, PSM/PASM/PCM-Sat Nav, Telephone, Chrono Pack, Sports Exhaust, BOSE, CD Changer, White Dials, Heated/Memory Seats, Fully Electric Seats, Alcantara Headlining, Sunroof, Porsche Crest Embossed on the Headrest, Red Seat Belt, Rear wiper, Rear parking Assist, Xenons, 19" Turbo Alloy wheels, Full Service History (Just Serviced).

2007 - 997 TURBO COUPE MANUAL (COBALT BLUE) 73,000 MILES

Black Lther Intr, PSM/PASM/PCM-Sat Nav/Telephone, Chrono Pack, Sports Exhausts, Heated/Memory/Fully Electric Seats/BOSE-CD Changer, Alcantara Headlining, Sunroof Porsche Crest Embossed on the Headrest, M/F/S wheel, Rear wiper, Rear parking Assist Xenons, 19" Turbo Alloy wheels, Full Porsche Service History.

2010 - 997, C2S CABRIOLET, PDK, (GEN2), BASALT BLACK. 41,000 MILES

Full Black Leather Interior, PDK 7 Speed Double Clutch Transmission, PSM/PCM/Voice Control). Extended Sat Nav (Touch Screen), BOSE Sound System, iPod and USB attachments, Telephone Module (Bluetooth), On Board Computer, Sport Seats, Rear Park Assist, Cruise Control, Climate Control, Heated Seats, 19" Porsche Sport Design Alloys, Xenon Headlights, LED Daylights. Full Official Porsche Centre Service History.

2008 - 997 C4S COUPE MANUAL (BASALT BLACK) 46,000 MILES

Black Lther Intr, PSM/PASM/PCM-Sat Nav/Telephone/BOSE & CD Changer, White Dials, Sports Exhausts, Heated Seats, Alcantara Headlining, Part Electric Seats, Rear Park Assist, Climate Control, 19" Turbo Alloys, Full Porsche Service History.

2007 - 997 C2S COUPE MANUAL (BASALT BLACK) 20,000 MILES

Black leather Interior, PSM/PCM-Sat Nav/Telephone/BOSE, CD Changer, Sports Exhaust, Sports/Heated Seats, Sunroof, Rear Wiper, 3 Spoke M/F/S wheel, R/Parking Assist, Top tinted windscreen. Porsche VTS, 19" Carrera Sport Wheels, Full Porsche Service History.

2010 - 997, C2S CABRIOLET, PDK, (GEN2), BASALT BLACK, 41,000 MILES

Black Leather Interior, PSM/PCM-Sat Nav/Telephone-BOSE/CD Changer, Heated Seats, M/F/S wheel, Alcantara Headlining, Rear wiper, Climate Control, 19" Carrera Alloy wheels Full Service History.

2006 - 997 C4S CABRIOLET MANUAL (BLACK METALLIC) - 62,000 MILES

Black Dark Olive Metallic, Black Leather Interior, PSM/PASM/PCM-Sat Nav, Telephone, Sports Exhausts, Chrono Pack, White Dials, Heated Seats, BOSE-CD Changer, Part Electric Seats, Porsche Crest on Headrest, Rear Park Assist, Climate Control, 19" Alloy wheels, Full Main Dealer Service History.

2005 - 997 C2 COUPE TIPTRONIC (ARCTIC SILVER) 62,000 MILES

Black Leather Interior, PSM/PCM-Sat Nav/Telephone-BOSE/CD Changer, Heated Seats, M/F/S wheel, Alcantara Headlining, Rear wiper, Climate Control, 19" Carrera Alloy wheels Full Service History.

PORSCHE 996 GT2 & TURBO

2002 - 996 GT2 CLUBSPORT (POLAR SILVER) 55,000 MILES

ONE OWNER ONLY, Full Porsche Main Dealer Service History with a recent service, GT2 Club Sport Model, White Dials, PCCB Brakes, Radio and CD player, Climate Control, Central Locking, Electric Mirrors & Windows, Porsche Crested Sports Seats, Correct carbon fibre interior. One of 12 only, very rare.

2004 - 996 TURBO COUPE TIPTRONIC (BLACK METALLIC) 37,000 MILES

Black Leather Interior, PSM/PCM-Sat Nav/Telephone, Cruise Control, Heated Seats, Fully Electric Seats, Memory Seats, BOSE/CD Changer, Sunroof, Rear Park Assist, Rear Wiper Alcantara Headlining, Climate Control, 19" GEN II Turbo Alloys, Full Main Dealer Service History.

2004 - 996 TURBO CABRIOLET TIPTRONIC (BASALT BLACK) 70,000 MILES

Black Lther Intr, PSM/PCM-Sat Nav, Telephone, BOSE, CD Changer, Heated & Fully Electric Memory Seats, Climate Control, Cruise Control, Rear Parking Sensors, Original Hardtop Available, Optional Wind Deflector Present, 18" Turbo Alloys, Full Porsche Service History, Detailed Invoices showing high level of maintenance, Extremely Well-Kept Example.

2002 - 996 TURBOCOUPE TIPTRONIC S (LAPIS BLUE) 86,000 MILES

Lapis Blue Metallic, Grey Leather Int, PSM/PCM-Sat Nav, Telephone, BOSE, Sports/Memory/Electric Seats, Sunroof, White Dials, Red Seat Belts, Rear Park Assist, Rear Wiper, Alcantara Headlining, 18" Turbo Alloys, Full Service History.

PORSCHE 993 - TURBO / C2S / C4S / C2 / C4 / TARGA

1998 - 993, TURBO S, COUPE, MANUAL (METALLIC BLACK), 40,000 MILES
Black Leather/Carbon Fibre Interior, Litronic Lights, Sports Seats, Electric Seats, Electric Mirrors, White Dials, Radio, CD Player, Sunroof, Rear wiper, Yellow Callipers. 18" Turbo S Alloy Wheels, full Service History.

1997 - 993 TURBO COUPE MANUAL (ZENITH BLUE METALLIC) 79,000 MILES

Beige Leather Interior, Sunroof, Sports Seats, Fully Electric Seats, Alpine Radio Player, Rear Wiper, Climate Control, 18" Turbo Alloys, Full Service History.

1997 - 933 TURBO COUPE, MANUAL, BASALT BLACK, 56,000 MILES

Black Leather Interior, Sunroof, Sports Seats, Fully Electric Seats, Alpine Radio Player, Rear Wiper, Climate Control, 18" Turbo Alloys, Full Service History.

993 C4S, COUPE, MANUAL, IRIS BLUE, 63,000 MILES

Grey Leather Interior, Sunroof, White Dials, Porsche Radio and CD Player, Electric Windows, A/C, Alarm, Fully Documented Service History.

1995 - 993 C4 CABRIOLET MANUAL (IRIS BLUE) 108,000 MILES

Iris Blue Coachwork, Marble Grey Lther Interior, Sports Seats, Semi-Electric Seats, Electric Windows, Electric Mirrors, 18" Turbo Alloys, Full Porsche Service History.

1994 - 993 C2 COUPE TIPTRONIC (BLACK METALLIC) 84,000 MILES

Black Metallic Coachwork, Grey Leather Interior, Alpine Radio & CD Changer, Sunroof, Climate Control, Telephone Module, Rear wiper, 17" Alloy Wheels, Fully Documented Service History.

1994 - 993 C2 COUPE MANUAL (FOREST GREEN) 104,000 MILES

RHD, Marble Grey Leather Interior, Sunroof, Alpine Radio Player, Part Electric Seats, Rear Wiper, Climate Control, Electric Windows, Electric Mirrors, 17" Alloy wheels, Full Service History.

1994 - 993 C2 CABRIOLET (CARRERA WHITE) 103,000 MILES

ONE LADY OWNER ONLY, Metropole Blue Leather Interior, Manual, Part-Electrical Seats Climate Control, Blue Hood, 17" Alloys, Full Service History.

1994 - 993 C2 COUPE TIPTRONIC (BLACK) 94,000 MILES

Black Leather Interior, Tiptronic, Sunroof, Becker Radio, Electric Seats, Electric Windows/Mirrors, Rear Wiper, 17" Alloy wheels, Full Porsche & Specialist Service History. (Just been Serviced).

1987 - 993 CARRERA 3.2 CABRIOLET (G50 GEARBOX)

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

1990 - 964 C2 CABRIOLET MANUAL (MIDNIGHT BLUE) - 108,000 MILES

Midnight Blue Coachwork, Marble Grey Leather Interior, Sports Seats, Fully Electric Seats Sony CD Player, 17" Alloys, Full Service History.

1992 - PORSCHE 964 C4 CABRIOLET MANUAL (BLACK) 94,000 MILES

Marble Grey Leather Interior, Semi Electric Seats, Kenwood CD Player & Radio, Electric Window, Electric Mirror, 17" Alloys, Full Service History, Toney Cover available.

1987 - PORSCHE 911 CARRERA CABRIO SUPER SPORT 76,000 MILES

Carrera White Coachwork, Dark Blue Leather Interior, Sports Seats, Climate Control, Blue Dial, Semi Electric Seats, SONY Radio & MP3 player, 16" Fuch Alloy wheel, Full Documented Service History, Original Service book and manuals available.

1987 - PORSCHE 911 SUPER SPORT TARGA (G50 GEARBOX) - 86,000 MILES

Carrera White Coachworks, Black Leather Interior with white piping, Rear Wiper, Fully Electric Windows & Mirrors, Full Service History (Just Been Serviced).
This Porsche is a genuine M491 SuperSport one of only 37 RHD Targas and obviously has the desirable G50 Gearbox (Swepec Oil too). It drives and sounds amazing with the Dansk twin exhausts and has had the usual troublesome work such as replacing the butterfly valves done. A top end engine rebuild was done 10,000 miles ago (2007) and the Targa roof has also been refurbish by Southbouds. Whilst the car isn't concourse it's as near as you would want for a car that you can enjoy using and yet still be very proud to own. Paperwork wise the file is extensive and the original service book, in its original folder has 27 stamps. The latest service was 700 miles ago. The car flew through its MOT last week with no advisories. We welcome any inspection as we are more than confident that it will stand up to any scrutiny.

1992 - 964 CARRERA COUPE (POLAR SILVER) LHD - 138,000 MILES

Tiptronic Gearbox, Black Leather Interior, Sunroof, SONY CD & radio Player, Fully Electric Seats, Rear Wiper, Climate Control, Electric Windows & Mirrors, 17" Alloy wheels, Full Service History.

FERRARI - MODELS FROM 1964 +

1973 - FERRARI DINO, 246 GT, ROSSO CORSA RED, 41,000 MILES

5 Speed Manual, Nero Vinyl Interior, Rosso Carpeting, Full Ferrari Service History, 6 owners from new.

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.

1964 - FERRARI 330 GTC COUPE - GRIGIO SILVER

Ferrari Classiche, Rosso Red Leather Interior, 86,000 Miles, Chassis No: 10157-GT, Engine No: 10157-GT, Extensive Interior retrim-(photos available), All MOTs, Fully documented service history with many invoices over the years, Original handbooks and Tool kit, Original sales brochures.

CLASSICS - AC / BENTLEY / JAGUAR / PORSCHE 356

1997 - AC COBRA 289 CONTINUATION (ROLLS ROYCE EBONY BLACK) - 1997

11,000 Miles, Rolls Royce ebony black coachwork, hand crafted grey leather seats with matching grey leather head rests, leather trimmed aluminium semi lightweight dash with "Smith" original style instrument finished with black carpet with piped grey leather. Ford 5.0 LTR H.O. EFI injection engine and normally aspirated 302 cubic inch V8 cylinder arrangement, 8.9:1 compression ratio cast iron engine block with cast iron heads, roller camshaft, upgraded SV0 lower Aluminium inlet manifold/upper Aluminium inlet manifold body with performance 65mm throttle body.

1972 - PORSCHE 911 2.7 RS TOURING 72,000 MILES

7000 miles since total restoration by RUF, Canary Yellow, Black Interior, Left Hand Drive, Complete History of Restoration, including Photos and invoices.

1973 - JAGUAR E-TYPE ROADSTER SERIES III AUTO 25,000 MILES

finished in Carmen Red with Black hide interior and Crema soft top, Automatic transmission, stereo system. The finest Chrome wire wheels. Chrome exhaust system, Previous owner over the 32years, totally restored to a very high standard. Total miles is 25,000, Fortune spent on restoring this superb E Type drives like new. This car is just amazing.

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

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

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

Grey Leathr Gurney Nutting Coachwork 1 Owner 40 Years Extensive History A True Classic Completely Original Throughout & Has Been Exhibited At Louis Vuitton Concours D'Elegance In Paris 2003.

OLD WAYS

On paper the differences may seem subtle, but back-to-back it's rather more than just 200ccs that separates the 911 2.2S and the later 2.4S as we find out

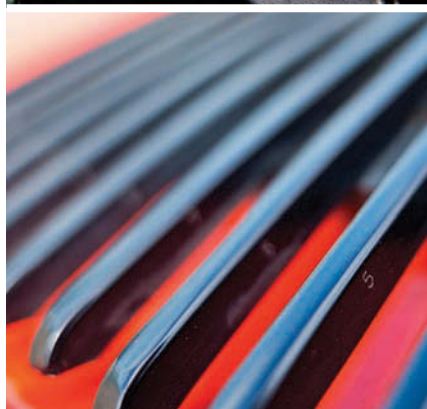
Words: Adam Towler Photography: Antony Fraser







Right: Blue skies and a burning orange 911 2.4S. Does it get any better? Probably not. Classic 911s are made for these sorts of undulating country roads where they really come alive



All the classic 911 details are present and correct. Chrome grille, the four-spoke, thin-rimmed wheel that wriggles in your hands, the opening rear windows for a bit of airflow on a hot, sunny day and the typically clear, no-nonsense dials



I am standing in a field about 50 yards from the road. After a few minutes of complete silence, the sound of an internal combustion engine, strident in delivery, drifts suddenly across the downs of Wiltshire, gaining in volume until an orange blob appears on the horizon. If I close my eyes I can think of only one thing: the lanes of rural France, a little bridge, a sleepy town, a tree-lined road...a small capacity, mechanically injected 'six'...it can only be the opening sequence to the 1971 film, 'Le Mans'.

Since I first saw that movie as a child, I've been obsessed with that initial three minutes of celluloid; the hazy French countryside, the romance of it all. And above all else, the sound of that little Slate Grey 911 2.2S as it drones through villages, cackles through the countryside and combines with the dreamy chords of Michel

Legrand's brilliant soundtrack to evoke all the drama, joy and sadness of that era of motor racing.

So it is no surprise that this Signal Orange 911 presses all the right buttons: it is also a 1970-model year 911S, the same model delivered to McQueen on the set of Le Mans, at the time the most 'senior' 911 offered to would-be Porsche buyers.

But am I seeing double? No sooner has the 2.2S left my earshot but another orange 911 appears stage right, a deeper, darker hue, and subtly different somehow in appearance. It's a 2.4S, the last of the pre-impact bumper 911s, or the so-called ultimate version of the early 911 if you're prepared to discount specials like the Carrera RS. These were cars for the connoisseur, the well-heeled, not just actors like steely-eyed Steve McQueen and hard-bitten racers.

Today, we're lucky enough to have one

“If I close my eyes I can think of only one thing: the lanes of rural France”



of each to compare them, but this feature isn't just about explaining how Porsche developed the former into the latter. This is about examining their character, and the motivation for creating them: the 2.4S may be the 'ultimate' early 911, but as we shall see, the reason for its introduction owed more than a little to marketing and worldwide events. Could the older car be the last of the completely 'pure' engineering-led 911s?

The 911 matured, as we know it, towards the end of 1968. It was at this point that the B-series was introduced for the 1969 model year, and its greatest development was the lengthening of the wheelbase by 57mm. Porsche achieved this by simply lengthening the rear trailing arms, pushing the wheels backwards in the body (and necessitating the moving of the wheelarches rearwards) and therefore also reducing the overhang of the engine within

the overall footprint of the car. Of course, this didn't radically alter the 911's handling characteristics, but it did calm the car's reaction to certain states or actions during cornering. At the same time, for top of the range 'S' specification and new mid-range 'E', Porsche replaced the Weber carburettors with a Bosch 'plunger type' mechanical fuel injection system, as increasingly used by its racing cars. The new method of fuel delivery liberated an extra 10bhp, realising 170bhp in the S, and coincided with a switch from aluminium to magnesium for the crankcase which saved 10kg – Porsche was rapidly refining the 911 with seemingly little regard for cost. In fact, having raced with no little success throughout the late 1960s with its prototype racing cars, the engineering team – led by Ferdinand Piech, of course – were applying what they had learnt to the 911.

It was a Porsche policy that further

developments appeared every two years, but in the end the 2-litre LWB 911 lived for only one, replaced in late 1969 by the C-Series car and its 2.2-litre engine.

Why move to the larger capacity? Not only did this give the 911 a useful performance boost in terms of outright acceleration, it also made the car more flexible in everyday traffic. Porsche had toyed with the idea of twin cam cylinder heads, but with the increase in traffic it was decided that increasing the displacement was more suitable than a high-rev screamer. Nevertheless, the S was still peaky, with little or no concession to those who couldn't be bothered to change gear on a regular basis.

The larger engine also had one other key benefit. Under the motorsport homologation rules at the time, there was a class structure based on engine displacement. With its previous 1991cc 'six' Porsche



The 911 2.2S is the lighter, revvier predecessor to the 2.4S. It's the racers choice, the wheels of works drivers like Jo Siffert and Pedro Rodriguez and, of course, the personal transport of Steve McQueen, while filming Le Mans

always competed in the up to 2000cc class, with no meaningful headroom for increasing capacity and hence performance under the rules. A displacement over 2-litres would put Porsche in the 2001–2500cc class, and the engines could then be enlarged for racing right up to the class limit by increasing the bore size, if not the stroke. This is the reason Porsche moved from an 80mm to a 84mm bore size, releasing a capacity of 2195cc for the road car, and competition engines were built first with 85mm bores, and latterly 87.5mm ones. These '2.3' and '2.4-litre' engines formed the basis of the Group 4 'ST' 911s that claimed class victories at all the important sports car races of the time, including Le Mans, and also rallying victories such as Elford's triumph on the Monte Carlo Rally.

All of which brings us to Ian Cox's stunning Signal Orange 2.2S, one of three

early examples of the type brought into the UK during October 1969. He started his Porsche odyssey on an unusually high note with a 1979 930 3.3, then took a quite different tangent with a 968 coupe, before moving to a 911 2.7 Carrera RS – "When they were sensible money", says Ian: "It was a cheapie, LHD and Touring spec, I paid mid-30s" – and we both roll our eyes at the potential investment that slipped away, and the ridiculous price that car would now fetch. A Basalt black 993 RS followed that, before Ian re-created a 911 ST around six years ago in a period when there were fewer remanufactured parts available. The trail then leads to the 2.2S.

"I bought this car about five years ago. It is one of three 2.2S models imported into the UK in 1969 at the start of production – and all three cars still exist to this day. It's a matching numbers car and very original.

At some point it had been sold to Northern Ireland and used as a rally car, then moved to the Irish Republic where it was also rallied and suffered a major accident. It was very nearly at the point where if it hadn't been an S it would have been broken up."

That's because the body had been badly mangled in the accident, so much so that when Ian had the car straightened at GTR Motorsport the position of the A pillar was found to be inches out of position. So not only was the shell straightened, the usual ravishing by rust had taken its toll and the car required new floors, four new wings and the usual places for corrosion repairs such as sills and kidney bowls. The more you hear about the hard work that went into the car during this stage, the more you realise it's something of a miracle that the car is still with us at all.

Ian's pursuit of originality and factory

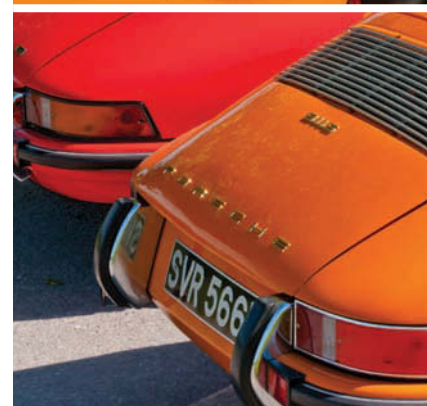
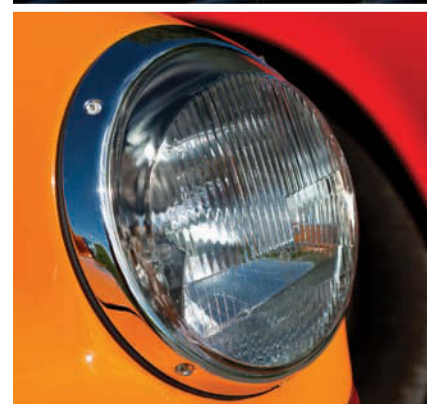
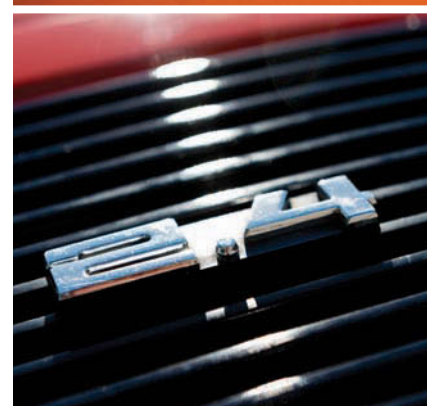
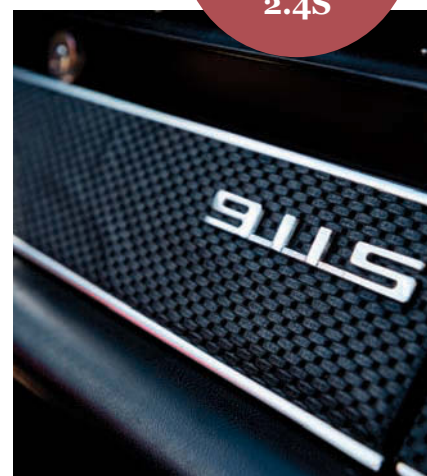
Back in the late '60s/early '70s these two machines shared the same colour chart, which more than anything defines their look and place in the 911 timeline. Pity we've lost that bold sense of colour adventure with cars these days



correctness has been extraordinarily thorough, driven by his deep understanding of the original specification. For example, it took him two years alone to track down a pair of the correct H1 headlamp units. It all contributes to the sheer magnetism of this car, something that I'm immediately powerless to resist. Other than the S on the – aluminium – engine lid, Porsche's top 911 of the period has no obvious embellishment. It was the last 911 to be completely devoid of any aerodynamic device, so it sits daintily on its narrow 5.5in rims – whose period-correct finish is beautifully downplayed – it has delicate chrome horn grilles and detailing, and the only hint of extravagance is the gold Porsche script on the rump.

Climbing aboard into the all black interior on a sunny June day is like crawling inside a coal bunker, and I'm immediately

sweating under the sun's rays beaming through the glass close to my forehead. Ian's car has the correct 410mm steering wheel, and the thin rim monopolises the space in front of me, causing my legs to splay out at an awkward angle and my ankles to hinge at odd trajectories to meet the pedals. To my left sprouts the spindly gearlever, the script on top of the diminutive ball denoting the dog-leg first gear of the 901 transmission: the shift is tight but there are few clues to the precise location of each gear, other than your intuition and experience. I drop the electric windows to let what breeze there is drop the temperature slightly and twist the simple key in the ignition. After only a brief churn the engine fires; I release my grip slightly too keenly, and for a moment think it's failed to catch, but it stammers into life almost imperceptibly and then chunters away





Far left: Interior is typically black and sombre. Engine is the peak of 911 development at the time, producing 190bhp and 160lb ft torque from a modest 2.4-litres

behind with a rattly idle.

I have driven to our photo location in the 2.4S, and need to rapidly re-wire my brain to the idiosyncrasies of the 2.2: the clutch biting point is different, as is the initial response to the accelerator, and all suddenly goes quiet after a few feet forwards...not the best start! Fired up again, I edge out onto the road, and am immediately assaulted by a wall of sound from over my shoulder as the engine pulls up through the lower reaches of the rev band. Across the gate and up into second, I've set a fair chunk of my brain capacity to constantly remind my own self that THIS IS A DOG LEG GEARBOX and that I am now in second gear, despite it looking to all intents and purposes that I'm in first. Trying

of 'long bonnet' 911 production before the landmark G series brought in impact bumpers and a new generation for 1974. It was the first 911 range to be developed once the process of the Porsche and Piech family members had begun to step back from the day-to-day running of the company, and it was also a direct response to external market factors. So while its front air dam greatly reduced lift on the front axle – a direct result of aerodynamic learning in racing – and for the first year its oil tank was moved forwards to make another minor improvement in weight distribution, its engine was a subtly different beast. Since 1968 Porsche had been contending with emissions regulations in America, a market crucial to the business of selling sports

increased yet again with 190hp @6500rpm and, perhaps more tellingly, 160lb ft at 5200rpm.

This 2.4 originally lived in the Channel Islands before making its way to the mainland in the 1990s. It was tired when Vic bought it, so was extensively restored by Bruce Cooper at Sportwagen (body and paint) and Steve Winter at Jaz Porsche (mechanicals), and many years and 1000s of miles later is largely in the same condition today, give or take the fastidious routine maintenance it always receives.

It feels different sat inside, mainly because of the smaller steering wheel and inertia seat belts fitted rather than the tiny detail differences in the cars, such as the

“ The 2.2S feels very light, agile – almost nervous. The big thin wheel requires only a light touch to coerce the front wheels ”

to select first in the traditional manner is clearly a potential nightmare scenario to be avoided – that would in fact be reverse gear. The 2.2S feels very light, agile – almost nervous. The big, thin steering wheel requires only a light touch to coerce the new but period-correct Michelin XWXs to change tack, and there's plenty of pliancy in the torsion bars.

Before considering the older car any further I decide to take a drive in the 2.4 again. I've been fortunate enough to drive this car before, as it belonged for many years to arch 911 enthusiast Vic Cohen, it's custodian for today, who recently passed ownership onto his son.

The 2.4 range – T, E and S – announced in late 1971 for the 1972 model year was continued into 1973, forming the final year

cars, and something more radical now had to be done, not least because the S would need to run on lower octane fuel. Porsche lowered the compression ratio from 9.8:1 to 8.5:1, retained the same valve sizes, but went in search of a greater displacement by increasing the stroke from 66mm to 70.4mm. Only minor alterations were required to fit in the longer throw crankshaft. Bore size was kept the same, giving a total capacity of 2341cc, which Porsche rather cheekily referred to as '2.4'.

Porsche could claim that 2.4-litre 911s had already starred in motor sport but, of course, in reality that was a quite different big bore/short stroke unit to the more tractable engine now being offered. Nevertheless, performance in the S model

lock on the glovebox sited differently.

This car has a stainless steel backbox rather than the original spec mild steel item on the 2.2, which gives the exhaust noise a slightly different tone with more of a hard-edged ring to it, but it's also a marginally less frenetic noise when sat inside the car. As long as there's a couple of thousand revs on the dial it pulls without protest and, while the fireworks require 5000rpm before the display begins, there's meaningful acceleration to be found below that point. Don't get me wrong – this is still a small, high revving six-cylinder engine that needs working to extract the best out of, but it could never be classed as intractable. When you do really give the engine its head you're rewarded with a determined wail that fills the cabin along with your skull and



Far left: The 2.2 engine is peakier than the above 2.4, producing 170bhp in this 1969 car, with 134lb ft of torque at 5500rpm, a recipe for much gear-changing to keep it on the boil





Left: Our man Towler, sporting new 'aero' haircut, indulges his Steve McQueen fantasies at wheel of the 2.2S

acceleration in the lower gears that still feels brisk by modern standards. The really intriguing prospect is to try and imagine what that must have felt like in 1972, because as part of this car's overall dynamic arsenal it must have seemed truly formidable.

Comparing the two cars' handling and road manners is going to be more difficult. The 2.4 sits slightly lower, on period gas-filled Bilstein struts, with some subtle additional bracing in the kidney bowl areas of the 'shell, modern Continental tyres (195/65/215 as opposed to the 2.2's correct 185/70/15s), a smaller steering wheel and suspension geometry honed over time. In short, it feels like a very well sorted, surprisingly planted car that immediately breeds confidence. After the delicate 2.2 it requires more steering heft, but the flipside to that is more decisiveness in its actions – this is a car I'd certainly trust to a much greater degree. But how much of that is down to the modifications or the tyres? At the kind of speeds we're reaching today I doubt that the front air dam is making any difference, but the fitment of 3.2 calipers on the 2.4 means the brake pedal feel is vastly superior on the later car.

Jumping back into the 2.2S doesn't shed any more light. With just 200 or so miles under its wheels since the restoration was

completed, the car is box fresh and still being run in. Not only does that mean the suspension is still possibly settling down, but the higher reaches of the rev range are frustratingly but understandably out of bounds. By 4000rpm there are some very gritty sounds beginning to permeate the car's firewall, but then it's time to swap into the next cog and the rate of acceleration never really gets going.

The rest of our time with the cars is spent fulfilling the photographic brief, but by the end of the day I don't feel as though I really know the 2.2S yet. It's a niggle that won't leave me during the days that follow, so I give Mikey at Autofarm a call, and would you know, they just happen to have two, orange, 2.2Ss for sale. Before you can say 'plunger-type mechanical injection' I've made an appointment to drop by and take one out for a leisurely jog.

By the time I've driven a mile up the road it's obvious that this car drives in a subtly different manner to the other two cars in this feature, due no doubt to variances in set up, the age of various components and so on. It makes comparing cars like-for-like almost impossible once over 40 years has passed beneath their wheels. However, what's obvious is the strength of the 2.2-litre S engine: with the oil up to temperature I venture beyond the cut off point of

4000rpm required in Ian's car, and the gnashing metallic sound from behind gives way to a raw shriek that sends the rev counter needle zipping around the dial. The engine's appetite for revs is insatiable, and it's clear that while you do need to keep it spinning over 5000rpm if possible, so, also, do you want to. Suddenly, the real worth of the dog-leg 'box is apparent as well, because the shift from second-third and back again, a necessity on a decent give-and-take road with an engine as peaky as this one, is merely a push fore and aft.

It's on this drive that I decide the 2.2S is the one for me. It's the car Messrs Siffert and Rodriguez must have tooled around in when not piloting their Gulf 917s; the McQueen choice, the sporting 911 without compromise. It has vivacity at the top of the rev range that the larger engine simply can't match. It is emphatically my favourite early 911: a car so alive I half expect it to answer back as I chatter away to it like a madman on our drive. The 2.4S is a wonderful machine and, on paper, you could say the ultimate of the breed, but the enjoyment of cars has always been more emotive than simply how things appear when written down, and when it comes to the original 911 I'll take mine with a less-is-more approach; preferably, that is, in orange. **PW**

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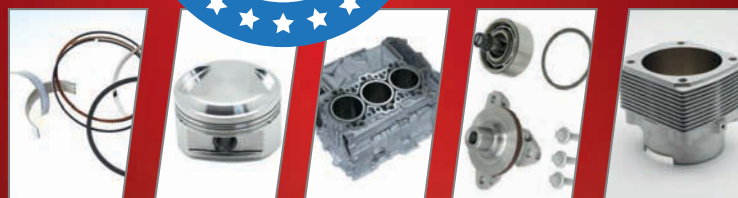
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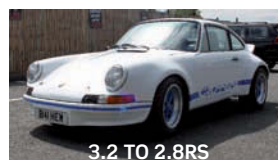
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CLONE WARFARE

These two 997 GT3 clones are more than mere wannabes. Both combine the 'look' with realistic 400bhp power outputs and all for a fraction of the price of the 'too precious to use' real thing

Words: Adam Towler **Photography:** Antony Fraser



There was a time when the 911 GT3 was the backbone of the high-end track day market. For 15 years, and through successive generations, the 996 and 997 GT3s ruled this niche almost without rival. Anything from Ferrari was much more expensive to acquire and considerably more indulgent to run, whereas BMW M3s and the like simply didn't offer the same level of performance and durability, at least straight from the box.

Yet times are a changing. A corollary of the surge in GT3 prices is the inevitable unease about exposing such a prime investment to the rigours and potential panel bending disaster of serious track work. Moreover, there are many would-be

track day drivers who have now been priced out of the market altogether. What can be done about this situation?

The answer might just be parked in front of me at our familiar Longcross testing facility. Two 997 Carreras, or should that be a pair of 997 GT3s? At a quick glance they're convincing, not so much for the aero kit – which some specified from new and has never signified a GT3 on its own – but mainly because of their stance and the GT3-style centre exit exhaust.

It's difficult to know which car to drive first but I plump for the white Carrera in the end. I say white, but it was originally black – the change achieved via a wrap. This car is the work of a relatively new company in the UK. Waffen aus Zuffenhausen or 'WaffZuff' – which

translates to 'Weapon from Zuffenhausen' (the suburb in Stuttgart that's home to Porsche, but you knew that, or course) – has been in business for about a year, but existed in Finland long before that. It's the trading name of a chap called Raikku, who has worked with Porsches for many years, including as a race engineer with direct links to the racing department at Weissach. In fact, he currently runs both 997 Cup cars and works freelance as an engineer in the UK Carrera Cup Championship, among many things.

Raikku is one of those blokes with an infectious enthusiasm for cars, and knowledge, experience and confidence about how they work that seems to know no bounds. This particular Carrera actually belongs to his girlfriend, Marika, who also





Towler at the wheel of James Tyson's modified 997, which makes a very fair fist at being 95% of the full GT3 experience, for a fraction of the price

Below left and right: The white 997 belongs to Marika, Raikku's girlfriend who helps to run WaffZuff. James Tyson runs the black and orange 997. He's just about got over the horror of the broken con rod incident, that started him on the modifying trail

helps Raikku build engines as well as run the business. It's not your average Porsche specialist, that's for sure.

Raikku is proud of the fact that he has an account with Porsche Motorsport, enabling him to buy factory racing parts that would otherwise be off limits to many. He points out the mesh in the front air intakes, which are genuine motorsport parts not available via a Porsche Centre, as an example. Underneath the white wrap is a very early 997 Carrera S (the body has number '55' stamped on it), originally delivered to Paris, which Raikku and Marika bought from Belgium recently (because they're not fans of right-hand drive cars).

In many ways the recipe is quite simple: this is about honing the standard Carrera into a machine that does a fair impression of a GT3, and that works on both road and track. Oh, and probably costs, at most, around half of the real thing. I'm quickly, and mightily, relieved to discover that both

our owners here today aren't interested in creating a replica; rather they're after maximising what the Carrera has to offer via using the best bits that are available. That's one reason why this car proudly bears the Carrera script down its flanks. When you think about current 997 Carrera

Raikku has, in his own words, "left the uniball suspension joints on the shelf", so as to preserve some degree of comfort for road driving. The engine has plenty of modifications, but none touch the internals, thereby avoiding the significant rise in expense that brings. There's a GT3 throttle

“The engine has plenty of modifications, but none touch the internals”

pricing, the whole exercise starts to make an awful lot of sense.

This car runs H&R springs, which give a 15mm lower ride height than the standard items (akin to the original factory Sport option) but retains the standard PASM factory damper with its two setting function.

body, a WaffZuff intake plenum that's his own development, a BMC air filter, and a full Supersprint exhaust system that features long headers, of near equal length, to boost mid-range torque. After a suitable re-map, the result is approximately 390bhp, up from the 350bhp-or-so of the standard





Both have the all-important GT3 stance. More than that, they handle like a GT3, too, utilising broadly similar suspension geometry set ups

car, and hopefully more mid-range torque.

Obviously there's the GT3 aerokit, and different wheels, but this car has an open rear differential, albeit with the engine's output deployed through 305-section rear tyres. Finally, the suspension geometry is set to 'GT3' specification. "The Gen I 997 Carrera S is the closest you can get to the experience of a 997 GT3, much more so than the Gen II cars", notes Raikku, in doing so highlighting an inevitable process where what was once seen as cold, clinical and modern, begins to take on a more enthusiast appeal. For an earlier example of that phenomenon just look at the perception of 964s.

At this point you might be wondering how the much-maligned 3.8-litre M97 engine is going to cope with the additional stresses of the performance modifications, not to mention the spectre of long-term track work. And it's true, these engines do suffer from a number of issues that, at this magazine, we've gone into on a number of occasions. It's instructive to chat to Raikku about what he believes are the problems, and how to prevent them happening. Clearly, there are upgrades such as that prescribed for the IMS bearing that can be done in advance, but he also puts a lot of

emphasis on the quality and type of oil used. Raikku's theory is that the oil typically used in 997s is too thin, and tends to shear as well. If the car is then abused when engine temperatures are cold, the oil doesn't do its job properly, which leads to engine damage. Having said that – and as we shall see shortly with the black car in this story – if you are going to build a 997 Carrera for performance, it would be wise to expect the high mileage donor car to require at least some expenditure to get into fit shape beforehand. Go the whole way, fit liners and stronger internal components, and you should have an engine that will last, but that involves some serious cash. "There is no high-performance engine that is bulletproof", counters Raikku to my initial raise of an eyebrow over M97 durability. "Otherwise it wouldn't be a high-performance engine". I suppose when you think about it, he has a point. Maybe we've all been a bit harsh on the old flat six?

Before we look into James' black 997 Carrera, it's time for a drive in the white car. The Supersprint exhaust system is LOUD. Raikku wants to reduce some of the drone at cruising speeds, although

Marika doesn't mind it as it is (and given she drove it single-handedly to Finland and back in quick succession she has had plenty of time to live with it). This M97 fires with a real boom, the bass notes fizzing right through your body, but upon greater familiarity I'd say it was a nice noise, not a burden. I make the point because I've driven tuned M96/M97 engines in the past with 'sports' exhaust systems and – mentioning no names because, to be fair, they were 'work in progress' – the actual noise itself was a rather one dimensional drone/blare that quickly grated. This car has a much sweeter tone than that, and I reckon I could just about live with it. As ever, it's personal preference.

Once you've accepted the noise, this car is as easy to drive as any 997. It brings into focus just how useable these cars are, and while there are those that slate the type for being too normal compared to the air-cooled 911s of yore, I've always believed that the 997 strikes a really nice balance: more comfortable ergonomically than a 996 and better looking inside and out, it still looks, and feels, like a 'proper 911'. There's the upright dashboard, the shallow windscreen fairly close to the face, and the fact you



can reach across and touch the top of the passenger's door from the driver's seat. Not to mention the way the nose bobs over long-wave undulations at speed. These are not attributes I associate with the 991, and although much of it can be put down to 'progress', they are also things I value about a 911.

I love the way this 997 drives. The power is there all right, and the response and mid-range urge is obviously stronger than a standard Carrera S. Pick up from the engine in second gear coming out of a corner is notably zesty, the rev counter needle flicking round the dial with true energy. But it's the grip, poise and general balance of the car that really impresses. It's possible to trim the line by playing around with the throttle, but the car doesn't feel nervous, and the way it changes direction is brilliantly assured. The amount

of cornering force it can summon up is quite surprising. I've no doubt this car would be a lot of fun on a track but I can imagine it works well as a road car, too, because Longcross errs towards that style of road more than a racing circuit and it really feels at home.

What you don't get is that multi-timbre, tonal shifting howl experienced with a bona-fide GT3, nor the frenzied rush to the red line. In a very unscientific test, we run some acceleration contests with the two 997s and snapper Fraser's familiar Mkl 996 GT3. Fraser's car has a few mods of its own, so puts out nearer 400bhp these days, so the comparison is enticingly matched. From a rolling start in second gear at 30mph, the 997s have a very slight advantage, but the GT3 pulls away at the top of the gear with a real shriek from the exhaust just feet from my ear drum: the

same scenario is amplified when we repeat the experiment in third gear, the GT3 falling back initially before pulling back the deficit and then some as it hits its stride. There's no substitute for that top end rush of the Mezger engine, but we are talking fine degrees here, and in most situations – particularly on the road – there's not going to be much in it. If anything, the solid mid-range of the 997s might make them a tad quicker in the 'real world'.

What, then, of our black car? It's clearly riffing off the Gen I 997 GT3 RS look with its orange wheels and mirrors, but owner James Tyson is aghast that it should be seen as a replica: "I didn't want it to be something it wasn't", he says emphatically. James has owned a number of performance cars over the years, and has bought a couple of Boxsters in the past as



James, Raikku and Marika are keen to point out that the motivation for their respective projects was not to build GT3 replicas, but to use the GT3 look as a starting point. That said, the centre exiting exhausts on both cars help the illusion

summer cars, trading them in at the end of the season. At the end of last year he saw, then acquired, this 997 Carrera – with the standard 3.6-litre engine – as he says, “on the spur of the moment. I knew nothing about Porsches”. That was quite, err, brave...

Described by James at the point of purchase as “a ropey job on an RS take-off; unloved, with lots of miles”, this 2006 black and orange replica did at least feature a high spec, with Sport Chrono and ceramic brakes among them. The Gen II GT3 bumper was already present, but James and his chosen specialist, Addspeed Performance Cars in Horsham, Surrey, did a number of tidying up jobs and renewed much of the suspension including fitting Eibach springs. The brake calipers were rebuilt and painted black, thereby preventing the orange-yellow colour clash of the standard PCCB items.

Come the spring of 2015 and the car was ready to go, shorn of RS badging and driving much more as it should. James decided to take the car to a track evening at Brands Hatch. Now, bear in mind that the engine had been boroscoped in the

past, and the head gaskets changed, our owner felt he was on fairly safe ground, but did wonder if the car felt a little sluggish on the way there...

James describes the actual moment of destruction as being “A rumble, then a puff of smoke”. With the car back at Addspeed the awful truth was apparent. The number six conrod had parted company with the crankshaft and in the ensuing carnage had

just about useless – it proved a difficult job to move the project forward without horrendous costs incurred. He located a crankshaft from a 997, and the block out of a 3.6-litre Mk2 996, and then began to speak to Specialist Vehicle Preparations based near Droitwich. We’ve driven SVP’s work in 911s and Cayman before at 911 & *Porsche World*, and come away impressed. SVP took the block out to 3.9-

“James’ cheap 997 was looking like an expensive nightmare”

destroyed everything in the engine. Suddenly, James’ cheap 997 purchase, made on a whim, was looking like an expensive nightmare.

Turning a negative into a positive, our owner set out to future-proof his engine for trackdays, as well as increasing its performance. Given he had nothing viable to exchange – his incumbent engine being

litres, with JE pistons and Carillo rods. The engine was then built up at Addspeed, with another pair of 3.8-litre cylinder heads as the first lot were discovered to be unviable. These heads were ported and polished, with bespoke oil breather and cooler made up: technically this mongrel of a water-cooled engine is two different engines-in-one.



The WaffZuff car is actually black with a white wrap applied for the Porsche Motorsport look. On a '54' plate, it's actually one of the very first 997s to roll off the production line some 12 years ago

But like a lot of mongrels of the canine type, these are often the most loveable of things, and so it proves here. James' car is only just coming to the end of its running in period, but already the performance is superb – virtually a match for the WaffZuff car and with a very useable band of torque across a wide rev range. Given its starting

The finishing touch on James' car is the '3.9' logo so very subtly applied to the rear wing end plate. Jump inside and it's standard 997 again, and very useable as a result. With GT3 suspension geometry and a broadly similar spec to the white car, it's not surprising that it drives in much the same way. Any differences that are there

that would simply not have been the end equation, before the surge in car values, but these days the logic is sound. It hasn't all been straightforward though: due to the bespoke nature of the build, particularly with the engine, every element that has been introduced to the car has initially not fitted and required further work. That's incurred additional time and cost, but as James remarks now with pride: "We've brought this car back from the dead". Having driven it, I'd say it has been well worth it.

The WaffZuff car is along similar lines: the engine work here adds up to £6500, but £4500 of that is for the Supersprint exhaust and race cats, with the suspension a mere £300 for the springs. All figures exclude buying a 997 Carrera S in the first place, of course, and with every car being different in what it requires and what the end objective is, it's hard to put a definitive price on a conversion.

Nevertheless, it's heartening to see that the future of this generation of water-cooled Porsches looks more than viable, and that they still have so much to offer. **PW**

“ The finishing touch on James' car is the '3.9' logo on the wing ”

point I think this is both a major achievement and also hugely interesting: it shows that keeping faith with a car, even a relatively new one like a 997, can be rewarded in the long term, and that the idea of customisation is alive and kicking in the 'modern' Porsche world. The more you hear about the work that's gone into this car, the more engrossing it gets.

are very slight. It goes, stops and steers in a way that is both entertaining, but also seriously quick even by the very latest of modern standards.

James reflects on the considerable sums that he's had to spend to reach this point, and a fair calculation is that he's ended up shelling out perhaps half of what a nice 997 GT3 would have cost him. Five years ago

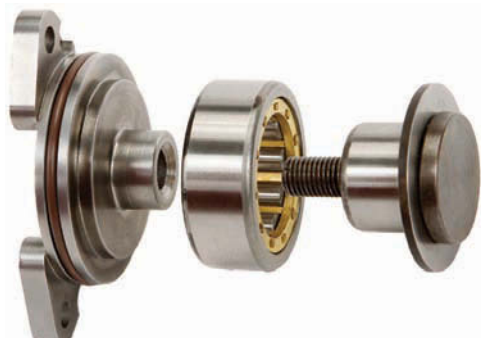


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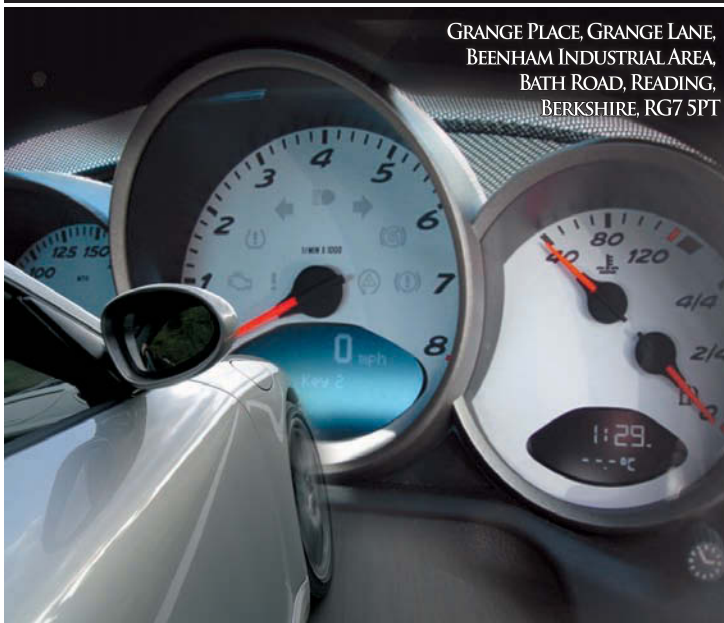
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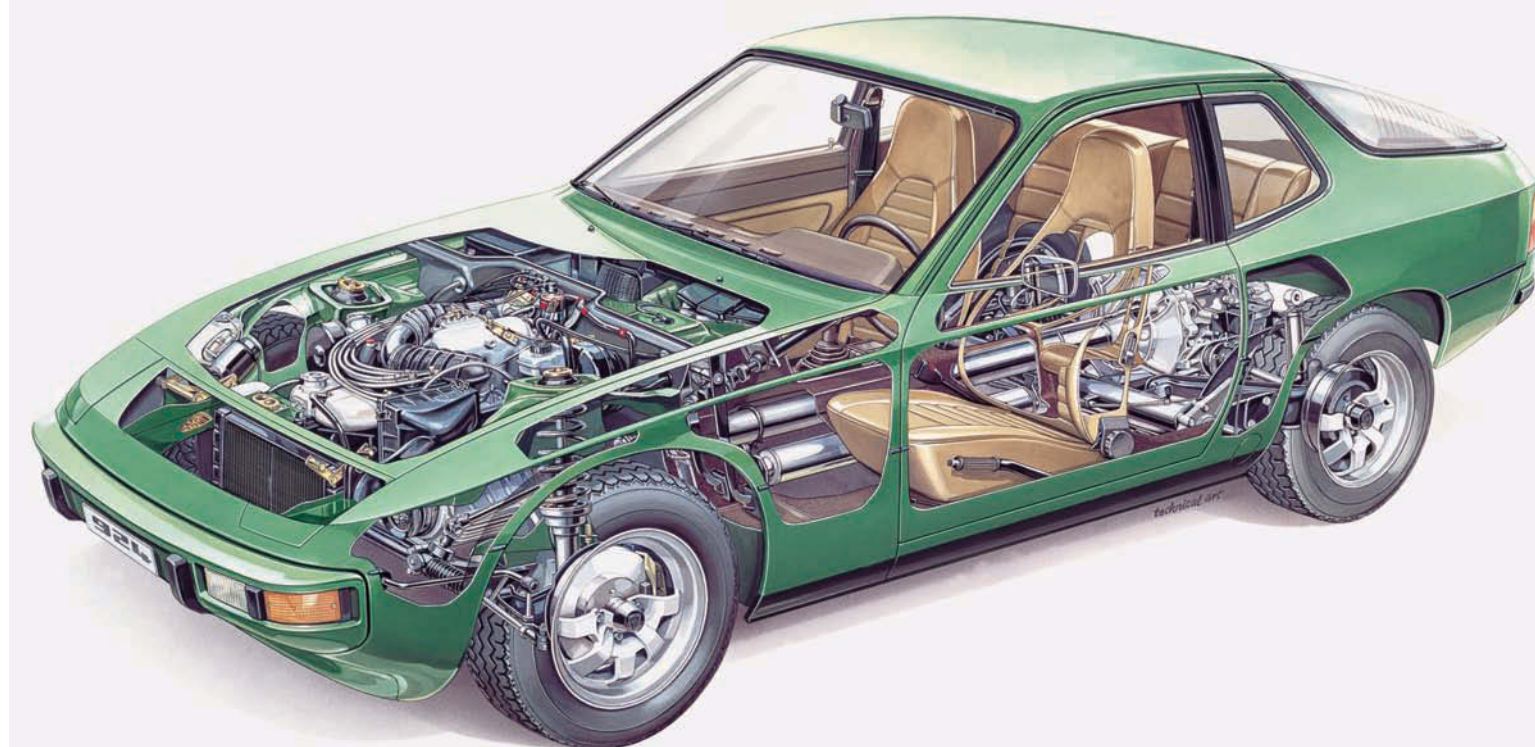
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WINDS OF CHANGE

For years, road-going Porsches had largely been rear-engined, with air-cooled ‘flat’ engines – in fact, the only exceptions to the rule had been with regard to engine location. And then along came the 924 and 928, which broke the mould, being both front-engined and water-cooled. Forty years after the 924’s introduction, we look back at the origins of a Porsche that some people still love to hate...

Words: Keith Seume **Photos:** Porsche Archiv

The story of Porsche’s front-engined 924 begins back in the early 1970s, a time in the company’s history when the winds of change could be felt blowing through the draughty corridors of the newly-opened Weissach development facility. This was not a great time for Porsche, demand for the 911 was in decline, with many of its past supporters beginning to question its longterm viability, and profits were on the way down.

In 1971, Porsche was still tied up in a deal with Volkswagen, then as today a sibling with which it didn’t always see eye to eye. The deal back then was to jointly produce an entry-level sports car, one which could bolster VW’s image while giving Porsche a low-cost product which

might tempt new customers into the showrooms. In 1969, a new company had been formed – *VW-Porsche Vertriebsgesellschaft*, or VG as it was generally known – to develop and market new models, with Volkswagen and Porsche sharing costs. It seemed like a great idea, the first child of this union being the mid-engined 914.

As history was to prove, the 914 wasn’t quite the success the two companies hoped for but to begin with spirits were high, meaning that with one project under the collective belts (although VG hadn’t played an active role in its design), maybe it was time to think about another. The 914 had received a mixed reception – too ‘flashy’ for some at Volkswagen, too underpowered and ungainly for many at Porsche.

It was also too expensive to build, once Karmann had taken its cut for building the bodies and nailing the VW-powered examples together. Another reason was that the 914 used relatively few VW-made components except for the engine, wheels and front brakes, and some minor bits and bobs such as interior door latches.

But VG was determined to give the concept another go, but this time more consideration would be given to using as many VW-sourced components as possible. It was also considered imperative that the new model should be substantially different to any existing Porsche, at the same time reflecting something of the design of the planned new model that was beginning to take shape on the drawing board: the 928.

Above: Cutaway artwork clearly shows the 924’s torque-tube drivetrain arrangement, with its rear-mounted Audi-built transaxle



Aside from the 914, there had been several past projects jointly undertaken by Volkswagen and Porsche, including the EA266, a small passenger car powered by a water-cooled engine laid on its side and located under the rear seats. Porsche took the opportunity to look into developing a shortened four-cylinder version of the 911 flat-six with an eye to using it in a low-cost sports car of its own. But there were changes afoot at Volkswagen which would bring this avenue to a halt.

In September 1971, VW's chief executive, Kurt Lotz, was persuaded to step down in favour of Rudolf Leiding. Lotz had taken the reins at VW just as the company felt the full impact of a slowing economy and had to sit back as his

successor went through the company's books with a fine tooth comb. This could also have marked the end of any new joint sports car venture, including the proposed EA425 entry-level project...

Meanwhile at Porsche there was plenty going on. Ferry Porsche decided it was time for a major shake-up, which must have made for awkward conversation at family gatherings. Ferdinand Piëch handed over the control of the new Weissach test facility to Helmuth Bott, while Butzi Porsche left to form Porsche Design, to be joined soon after by Hans-Peter Porsche, who had been head of Porsche's production department. Piëch took up a post at Audi. Despite the contributions made by these family members to his company, Ferry

Porsche clearly had no qualms about seeing them depart for pastures new: 'They are like sand in a well-oiled machine', he is reported to have said.

Porsche was restructured, with the company no longer being a limited partnership (*Kommanditgesellschaft* – or KG) instead becoming a joint-stock *Aktiengesellschaft* (AG), with ten shareholders. At the top were Ferry Porsche and his sister Louise Piëch, along with their eight children. There was also an advisory board, headed again by Ferry Porsche, and reporting to that was a board of management, headed by Ernst Fuhrmann, father of the legendary four-cam racing engine, but more recently at piston manufacturers Goetze.

Above: Sitting outside Werk 1, a prototype 924 wears the VW badge – a reminder of the origins of EA425. Photo circa 1972

Below left: Early design drawing for EA425. If only the 924 had ended up being this swoopy!

Below right: Shades of the Ferrari Daytona, with the wraparound turn signals. Photo taken circa 1972





In October 1971, Fuhmann laid down the foundations of what was to become the 928, with its proposed front-mounted 5.0-litre V8 engine. Its advanced design was seen as the future – even if it was at the expense of the 911.

It was unusual in its layout (at least, as far as Porsche was concerned) in that while the engine was located at the front, the transmission took the form of a rear-mounted transaxle, coupled to the engine via a torque-tube arrangement. This was decided upon in an effort to improve front-rear weight distribution, although a more conventional layout with the gearbox attached directly to the engine was still considered on grounds of cost.

The contract with Volkswagen to develop a new low-cost sports car was useful for Porsche at a time when finances weren't great. But it was also useful in as much as it gave Porsche the opportunity to explore the engine and transmission layout on a smaller scale – and at somebody else's

expense. Of particular concern was the matter of vibration generated by using such a long torque-tube assembly.

The only way to test this design was to build a couple of mules – rough and ready test vehicles traditionally built using prosaic saloons in which the new technology was hidden, so as not to attract any unwelcome attention on long test drives.

Porsche built a number of such mules, based on Opel Manta coupés, with at least one other built around a BMW 2002. They underwent rigorous testing in a variety of conditions, proving that the torque tube and transaxle design had merit.

As far as Porsche was concerned, EA425 was a Volkswagen, pure and simple – the first prototypes were even badged as such. All looked good, for it was a true 'win-win' situation, with Porsche gaining much needed funds, along with the opportunity to investigate new ideas, while VW benefited from Porsche's seemingly bottomless pool of engineering knowledge. But there was

trouble on the horizon.

The previous VW/Porsche tie-up, which resulted in the 914, had not been quite the success it had been hoped. This was not only due to the fact that market reaction to the new model had been mixed but also because, in 1970–71, the American economy fell into a period of decline. The ever-strong Deutschmark meant that German products were more costly than ever, affecting sales, and hence profits, for Porsche AG.

More significantly at this point, the imbalance in currency values had a dramatic effect on Volkswagen's fortunes. It is said that every German *pfennig* lost in exchange rate adjustments resulted in a loss of some DM25 million each year! It was not a sustainable situation.

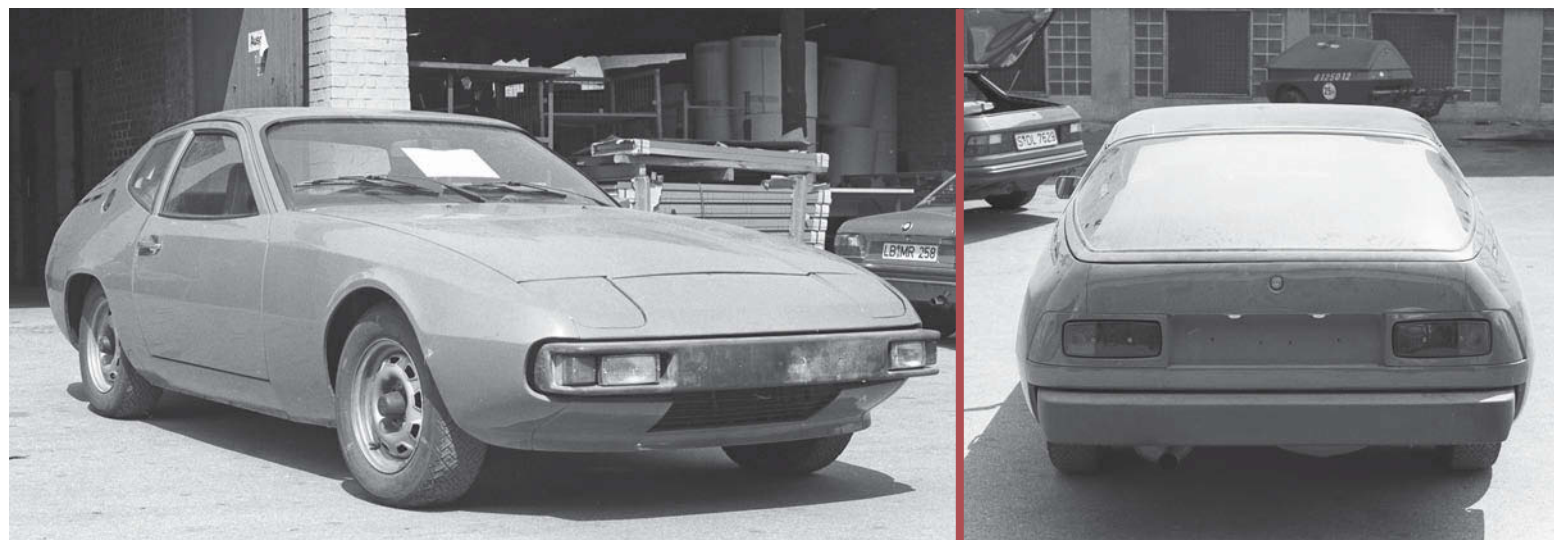
A second major financial slump loomed, placing enormous pressure on Volkswagen's dwindling reserves. Rudolph Leiding had already been forced to take drastic action in an effort to save money,

Above left: Harm Lagaay (centre) with the team that styled the 924

Above: Weissach, 1972. Clay model of what was to become the 924 nears completion

Below left: In 1979, one of the early styling exercises was wheeled out for the photographers

Below: Clumsy rear end treatment didn't make it past the prototype stage!



cutting staff (notably the more costly engineers) and giving him reason to look closely at ongoing projects. He had cancelled the EA266 passenger car in 1972, stating that all prototypes were to be destroyed, with all efforts now placed on developing what was to become the VW Golf. This apparently panic action did not go unnoticed by Porsche.

In 1973, Leiding cancelled the engineering contract that existed between his company and Porsche, but somehow the EA425 project escaped his attention. As the sole project handled by the VG operation, things didn't look too rosy – after all, it was jointly owned by both VW and Porsche, each holding a 50 per cent stake. Without Volkswagen's support, how much longer could VW-Porsche Vertriebsgesellschaft GmbH survive?

Although the 914 continued in production, Volkswagen drew a line in the sand when it launched the VW Scirocco, a sporty hatchback based on the floorpan and drivetrain of the soon to be launched Golf. It was a clear indication that, as far as the men at Wolfsburg were concerned, the proposed new joint venture with Porsche might not be top of their list of priorities.

Concerned about the future of the EA425, Porsche dispatched VG's sales manager Lars-Roger Schmidt to talk with Rudolph Leiding with a view to taking over the project in its entirety. Leiding wasn't



Schmidt to sell VW's share of the EA425 project to Porsche.

Rather than agreeing to a lump-sum payment for EA425, Volkswagen suggested that it be paid royalties on the first 100,000 sales of the new model. However, the

20,000 engines a year for the new Porsche, which had now been given the type number '924'.

The 924 became the subject of Porsche's new engineering hierarchy, which required each project to have a director and a 'father'. The idea was for the director to take day to day control of the situation and, in the case of the 924, the chosen person was engineer Jochen Freund. His responsibility was to oversee the development and testing.

When he required more assistance or extra funding, he then turned to the project 'father', who in this case was Paul Hensler, who had been appointed head of the company's experimental department working under Helmuth Bott.

With a capacity of 2.0-litres, the four-cylinder water-cooled unit (EA831) was to be built at VW's Salzgitter factory, although development work was carried out at Audi's research centre at Ingolstadt. This was a natural choice as Audi already had

Above: One of the test mules, built using an Opel Manta as a base – the GM coupé hides the drivetrain of the forthcoming 924. Photo circa 1974

“ In 1973, Leiding cancelled the engineering contract, but somehow the EA425 project escaped his attention... ”

interested in selling out at that point and Schmidt returned to Stuttgart empty-handed. But in December 1974, Leiding stepped down on grounds of ill-health – whether his own or those of his company's finances is not entirely clear...

In his place came Toni Schmücker who, just one month later, struck a deal with

dissolution of the VG tie-up still cost Porsche a pretty penny: DM100 million, in fact. That was the value placed on Volkswagen's 50 per cent share.

This was a smart move on VW's part, for it ensured the future of the ailing Audi plant at Neckarsulm, and also guaranteed a nice little bonus in the form of a deal to build

Below left: Interior view of the BMW-based test mule. Sadly such cars were generally crushed once they had carried out their duties

Below right: Beneath this BMW 2002 lay the heart and soul of the Porsche 924...





a successful four-cylinder engine in production – it had first seen the light of day back in 1965 – which was ripe for upgrading. The first move was to turn it into a single overhead camshaft design, in the quest for more power but without undue expense.

The crankshaft stroke was left alone at 84.4mm, but the bore was increased to 86.5mm from 84.0mm to result in a swept

volume of 1984cc. To reduce costs, the bore centre measurement of the engine – 95mm – remained unchanged, meaning that there was insufficient space between adjoining cylinders for a water jacket. Instead, the cylinders were siamesed, with cooling passages down each side of the block, fed by a new water-pump with two separate outlets. The engine also featured a redesigned oil pump.

“ The 924 was designed to use either a four-speed manual or a three-speed automatic Audi transmission... ”



Above left: Very telling is the way the dashboard of the VW EA425 prototype gave pride of place to the speedometer, unlike Porsches in general which always position the tachometer in the centre

Above right: An interesting photo. Yellow 1972 prototype sits alongside an Opel Manta mule, while in the background are two production 924s

Drive to the overhead camshaft was via a toothed belt, using components from VW's own OHC 'four' developed for the new Golf and Scirocco. The camshaft itself ran in five bearings, opening the 40mm inlet (38mm in the US market) and 33mm exhaust valves via bucket-type tappets. Total valve lift was relatively high, at 12mm for the inlet valves and 11.8mm for the exhausts.

Various cylinder head designs were investigated during the engine's development, the final choice being a Heron head arrangement, with a flat combustion surface and a dished piston crown. This was found to reduce emissions by as much as 30 per cent. Compression ratio was set at 9.30:1 for all markets except the USA, where 8.0:1 was the norm.

As the engine had been developed for multiple uses, it was necessary for Porsche to carry out a number of modifications to suit its intended performance application. The task was placed in the hands of newcomer Herbert Ampferer, who chose to use larger-diameter main bearings (65mm) and a forged crankshaft.

In addition, in deference to the lack of a separate oil cooler, Ampferer specified a new finned oil sump, which was also shaped to allow the engine to be canted over at an angle of 40 degrees to fit under the low bonnet line and to fit within the confines of the front suspension.

The 924 was designed to use either a four-speed manual or a three-speed automatic Audi transmission. The former was a transaxle unit that had first seen use in Audi's ageing 100-series saloons, where it was mounted at the front of the car, with the engine ahead of the axle line.

However, as the new EA831 produced more torque than that for which the transmission had been designed to handle, it was substantially reworked to cope with the extra loads placed upon it. This revision was also of benefit to Audi as the unit was also to be used in later 100-series models equipped with more powerful engines.

The gearbox casing was an aluminium casting which housed the final drive gears,

Left: Although dated 1976, this photograph shows a disguised pre-production 924 being put through its paces at Weissach – photo was probably taken around 1974



along with the input shaft on which third and fourth gear ratios were located. Reverse gear and the two lower ratios were located on the output shaft mounted in a separate bolt-on casing at the rear of the transaxle.

How to take the drive from the front-mounted engine to the transaxle at the rear was a new problem for Porsche's engineers. Normally, in a more conventional layout where the gearbox is mounted at the front, and drive is taken to a separate rear axle, the propshaft rotates at road speed. But with the engine and transaxle being two separate units at opposite ends of the car, the propshaft joining the two rotated at engine speed – ie, far higher than a normal propshaft.

As the shaft only had to handle the engine torque, as opposed to the multiplied torque generated by a conventional gearbox, it was possible to make the shaft lighter than usual – the problem was how to make the drivetrain vibration- and noise-free. Then came the matter of where to mount the clutch: on the engine's flywheel or a smaller one attached to the

transmission? In the end, Porsche opted to mount the clutch at the engine end of the drivetrain for simplicity.

The majority of the brake and suspension components were picked from the Volkswagen parts bin – the front suspension wishbones, for example, were shared with the VW Golf and Scirocco. Even the instrumentation and interior door handles were supplied by Volkswagen.

This reliance on Volkswagen components – especially the engine which was, after all, shared with the VW LT commercial range – didn't win the new car many favours among the die-hards at Stuttgart. Clearly they needed reminding that the original 356 had been just as much a 'parts bin special' as this new model.

There was no doubt that the 924 lacked the charisma of the 911, but you couldn't get away from the fact that it had been styled at Porsche under Tony Lapine's watchful eye – it used seats designed and manufactured by Porsche (an essential part of giving the new model the right 'feel') and that the men at Weissach had been responsible for the innovative (at

least, as far as Porsche was concerned) torque-tube and transaxle arrangement. As far as the marketing department was concerned, this was a Porsche in more than just name.

Whatever people's view of the car, it was an important arrival in the line-up at a time when, in common with most other car manufacturers, Porsche needed as much financial input as it could muster. And the 924 delivered in spades.

Some 100,000 were sold in the first five years of production, their purchasers for the most part being new customers who had previously felt unable to afford a new Porsche. At around £7000 on the UK market, the 924 was relatively inexpensive.

It was only a matter of time before the 924 topped the sales charts, becoming the most successful Porsche of all time up to that point, with sales exceeding 23,000 in 1977, helping to boost profits from DM7.5million to a heady DM17 million.

In more recent times, a similar story would be told as the 'unpopular' Cayenne, for example, has done its bit in turning around Porsche's ailing company finances... **PW**

Above left: A crudely disguised prototype 924 is crash tested. The passenger compartment has stood up well, the crumple zones having done their job

Above: June 1975 and a 1976 model year 924 is crash tested. The passenger compartment has stood up well, the crumple zones having done their job

Below, left and right: The 924 may not have been everyone's cup of tea, but it helped turn Porsche's fortunes around at a time when the economy was in decline – in the same way the Cayenne has more recently



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TECH SECTION

PRACTICAL
PORSCHE

Welcome to the grubby end of the magazine, where the glossy features give way to the oily bits. Too often ignored, this is the beating heart of Porschedom, where we strip, mend and modify our machines and yours

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HOW TO: 100

Want to add the full, authentic fuelling experience to your hot rod or early 911? We show you how to fit a pair of PMO downdraught carbs



SPECIALIST: 106

Pioneers of the online Porsche parts business and online technical forums, Pelican Parts saw the future before the rest of us. We drop in on the California-based company



OUR CARS: 112

More adventures from the 911&PW fleet. Bennett's 944 makes a reappearance and has its cylinder block sleeved. Tipler's 996 gets a new front end and wheels, and Seume's 912 hot-rod gets an MOT. Plus we catch up with our Eibach competition winner



Q&A: 125



CLASSIFIEDS
The place to buy and sell
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P133

You ask, we answer; well, our tech guru, Chris Horton does, together with his crack squad of Porsche experts. This month we look at 924 handling, 993 rust traps, bargain Boxster resto and smoking Boxster 987 update

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The Boxster has been a massive sales success for Porsche, and so we tend to take it for granted. We shouldn't. It's a work of mid-engined genius and one of the best handling cars on the road bar none. Its relative ubiquity makes it something of a bargain



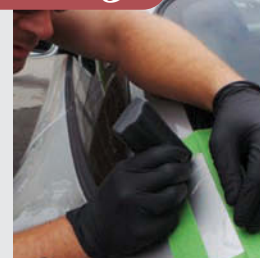
TRIED & TESTED: 139

Getting out there and kicking the tyres! This month our man Horton checks out a Boxster 3.2 and a 996 GT3 Gen II



DETAILING: 131

Your Porsche's paintwork is under constant assault. Stone chips and minor scratches can be repaired easily, though. We take you through the process



TECH: HOW TO TRANSFORMER

It was famously the name of the late Lou Reed's second studio album but, given their likely effectiveness, it is also a highly appropriate sobriquet for California-based PMO's Porsche-specific replacement carburettor kits. A thoroughly impressed Chris Horton outlines the fitting procedure on a 1968 911S at independent specialist Redtek; photographs by the author



This month's 911 & Porsche World how-to story is based on a satisfyingly simple premise. That if you own a pre-1974 and thus carburettor-fed 911 you need the PMO conversion shown here. Not like the proverbial fish needs that infamous bicycle, but in the same way that it needs water. Like we need similarly life-supporting air. And while installation is probably not the sort of task you should tackle without at least some previous spanning experience – and observing one or two fairly obvious precautions; more on those later – it can none the less be done with just a handful of pretty basic tools.

To be fair, there was little inherently wrong with these classic Porsches' original twin downdraught Solexes, Zeniths or Webers – when they were new, or even just

a few years old. But the plain fact of the matter is that four decades and more down the line they will almost certainly be quite significantly worn, with the resulting largely incurable air leaks, and as a result almost impossible to adjust correctly. And any second-hand units that you are likely to find (and be charged a small fortune for) will probably be just as bad. Factor in the uninformed tinkering and even the downright abuse meted out to them by owners and specialists alike over the years – and knowing everything there is to know about air-cooled 911s doesn't necessarily make you a carburettor expert – and frankly it's a wonder that many pre-MFI engines run at all. (And it's worth noting, by the way, that the same PMO set-up is no less suitable, with the relevant associated modifications, for the 1974–1989 cars with

varying types of fuel injection, a fact not lost on the backdating fraternity.)

Only a few months ago, for instance, this writer was a passenger in an early-1970s' car that, despite its immaculate appearance, and its obvious structural and overall mechanical integrity, coughed and wheezed and backfired like some asthmatic old veteran on the London–Brighton Run. And that was shortly after a no doubt costly trip to a well-known specialist for a service and a 'tune-up'. Likewise Torsten Larsson, the enthusiastic and clearly fastidious owner of the 911S shown here, arrived at Brackley-based Redtek for the installation using the car's hand throttle to keep its engine running at anything approaching an 'idle' speed. (About 1000rpm, actually, so at least 200rpm too high.) No great problem on the M40 motorway, perhaps, but it must

US-made PMO carbs are closely based on original downdraught Weber devices, but redesigned and re-engineered from scratch. Quality is exemplary, and they have a number of pleasingly neat features – such as 'windows' in the float chambers (just visible here on the left-hand unit) that allow you easily to check fuel level. They are very simple, too: cold-start mechanism consists of a jab on the accelerator, and then keeping the engine running on the hand throttle until warm

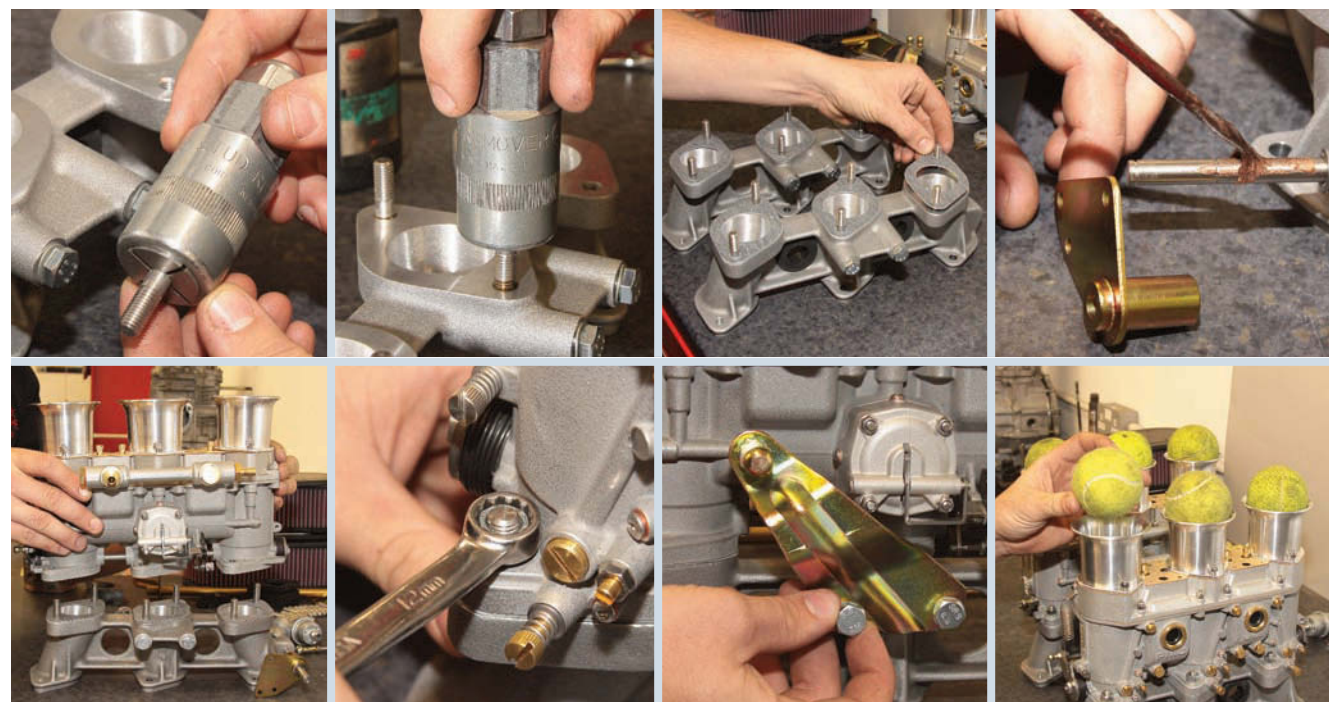
Studs can quite easily be fitted to the new mounting stacks using two nuts locked together, or even by hand, but a proper lockable extraction tool, such as this

Snap-On device (right), will make the task a lot easier and quicker – and it's pretty well essential for later replacing the studs in the cylinder heads with the

slightly longer ones required by the PMO carburettors. Lightly lubricate linkage with copper grease. Nuts (all supplied within the kit) have an M8 thread, but smaller-than-standard flats necessitate a 12mm spanner. Cross-shaft mounting plates are adjustable for optimum setting, which is vital for correct operation of the finished set-up

(and the original Porsche system, come to that). Tennis balls aplenty at Redtek: a quick and easy way of preventing foreign bodies dropping into choke tubes and/or inlet ports

have been little short of a nightmare coaxing it through busy London traffic.



have been little short of a nightmare coaxing it through busy London traffic.

We first heard about the American-made PMO set-up, essentially a pair of Weber-derived but then completely redesigned and beautifully re-engineered triple-choke downdraught carburettors, perhaps 12 or 13 years ago. I clearly recall, as the then editor of *911 & Porsche World*, running a story some time in 2005 – February, actually, as I have since been reminded – about a reader's 911SC that had been thus equipped – or in the case of that obviously fuel-injected car backdated, if you prefer.

And understandably very happy he was with the conversion, too. Rather more recently, thanks to our friend Nick Fulljames at deservedly well-known 911 engine specialist Redtek in Brackley, Northamptonshire, and not least the aforementioned Torsten Larsson, we were given the opportunity to follow the entire fitting procedure from start to finish – at the same time learning just a little bit more about some of the idiosyncrasies of these iconic engines' no less ingenious induction systems. (Including, for instance, the absolutely crucial importance, in either the

PMO or the standard Porsche set-up, of correctly adjusting the throttle linkage, and particularly the main cross-shaft.)

In truth, we had to pack up and leave Nick to carry out the final tuning and balancing the following day, but the fact is that even when we headed for home, with the carburettors at their most basic factory settings for the specification previously provided to PMO by Redtek, the engine was running immeasurably better than it had been just a few hours earlier. It had needed new spark plugs, and the contact-breaker points checking, before it would

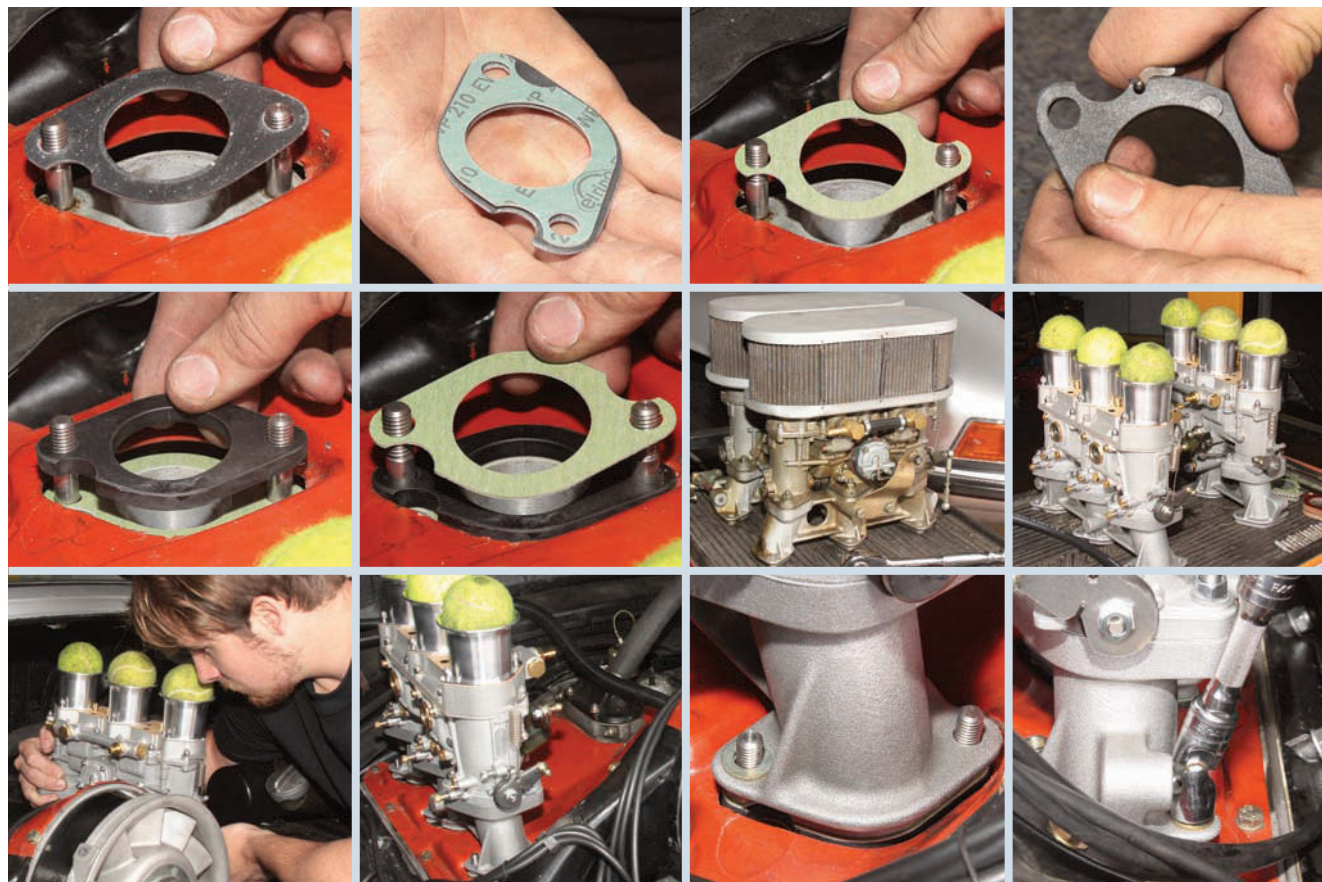
First stage of work on the vehicle itself is to remove the original carburettors.

Disconnect throttle linkage and fuel line, safely catching and/or mopping up any spillage. Universal-jointed socket (12mm) is the best way to get at the securing nuts. To sell or to store (top right)? Undoubtedly

even worn-out original carbs – like anything pertaining to these early 911s – have a value, but we would advise keeping them with the vehicle if possible, even if only to pass on to a new owner. Arguably the most laborious part of the installation process is removing the 12 original studs securing the mounting stacks to the cylinder heads, as well as the two gaskets and one heat-insulating block per port. Standard shroud offers a little more space, but aftermarket item, as here, might need to have securing screws loosened off. Stud extractor is essential here. Note difference in stud lengths (right)



TECH: HOW TO



The PMO-supplied gaskets were just a little too large for this engine's close-fitting after-market shroud, so we used some standard Porsche items instead. What's more, those are almost guaranteed to come off again in one piece if ever you need to remove them. Cut-out section – also seen on the new heat-insulating blocks – is for engines with fuel injection. The PMO blocks, too, were a little too large for the holes in the shroud, but that was easily dealt with by carefully finishing them, and then trimming the edges with a sharp scraper. Car's owner had wanted to retain his existing after-market air filters for their 'retro' look, but was persuaded that K&Ns supplied with PMO kit would both look and work better. Tighten mounting nuts gradually and evenly – and always with washers beneath them, either flat or of the wavy spring type

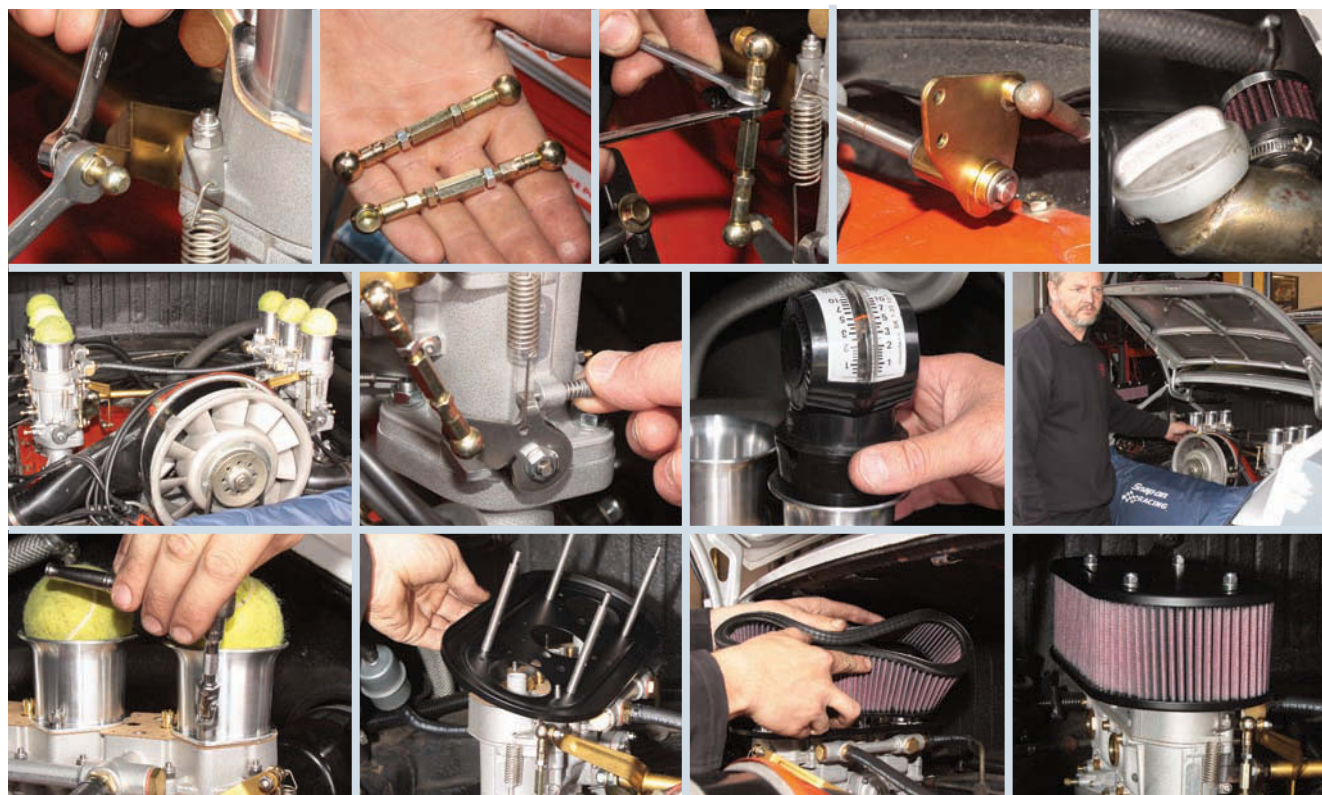
restart, the former perhaps the inevitable result of previously running for a long period with a wildly incorrect fuel/air mixture, but once those issues had been dealt with it fired literally instantaneously, and quickly settled down to a reassuringly smooth and even tickover. Perfectionist Nick reckoned that there was still some way to go for optimum smoothness, response and fuel consumption – and not least the restored or

even additional power that can be one of the other significant benefits of the PMO units – but had you been doing the job on your own driveway you would have been absolutely delighted. Simple as that.

The PMO carburettor and air-filter kit is supplied with many pages of concise but highly detailed and encouragingly well-written fitting instructions, together with obviously expert recommendations for

spark plugs and ignition timing, and even ancillary components such as exhaust systems, so there is obviously no point in our trying to duplicate all of that information here. Instead, we shall let the pictures give you a broad overview of the fitting procedure, at the same time homing in, as it were, on some of the more important stages – and some of the technical points that you might benefit from knowing about

Full and well-written instructions are provided for all aspects of the PMO installation, and not least assembling and setting up the throttle linkage. Key element is setting the two short rods to the same (correct) length before fitting, and also achieving the required geometry for the cross-shaft. Photo at right-hand end of top row shows filter capping off the now redundant connection to the oil filler. More than likely that the engine will start and run fine on carbs' factory settings – PMO will ask for its precise specification when you order – but not unreasonably some fine-tuning will be needed. At its most basic level this can be done with little more than a throttle-balancing device, but Nick Fulljames, pictured, also uses a sophisticated exhaust-gas analyser. Set-up is done with filters off, but intake trumpets in place



THE KNOWLEDGE

One of the stages in the PMO installation process that we haven't shown in the accompanying photos is the removal of the original air-filtration system – for the simple reason that the car's owner was already running a simplified 'pancake' set-up on each Weber. It is straightforward enough, however, and certainly so if you are capable of fitting the carburettors yourself. Just remember to add the special breather filter (supplied) to the oil-filler neck, on the right-hand side of the engine bay (in place of the pipe that ran to the induction-system tinware), and also to remove the hot-air tube to the relevant heat-exchanger, before capping the remaining spigot. This will help prevent a loss of heater pressure.

Probably the most laborious – or certainly labour-intensive – part of the job is dealing with the relatively large number of M8 fixing studs involved. Fitting the new ones supplied to the PMO mounting stacks is easy enough – although it still warrants a (Snap-On) tool like the one shown for speed and convenience – but you will first have to remove the original two per inlet port, and then fit the new and slightly longer ones in the PMO kit. (The PMO heat insulators are slightly thicker than the original Porsche parts.) This, too, should be easy enough in principle, but again you will immediately reap the benefits of that special extractor, rather than struggling with the usual two nuts locked together. Broken studs are mercifully quite rare, but some of them can be very tight, especially if they have been undisturbed for many years, and problems can occur – in which case you may well have to drill and Time-Sert, as required, or else seek specialist assistance.

All of the new studs should be 'Loctited'

into position, primarily to prevent them unscrewing if you subsequently have to undo the carburettors' fixing nuts, but also to help prevent corrosion between the steel threads and the light-alloy cylinder heads. (Redtek favours a similar but apparently stronger-bonding 3M product. It's quite a lot more expensive, however.) Obviously take great care when dealing with any of the studs not to drop anything into the inlet ports – plug them with pieces of cloth or paper towel – and likewise when, if necessary, scraping away any remaining pieces of old gasket material. (Original Porsche gaskets usually peel off in one piece, but cheaper after-market items may not.) Just in case, have a magnet and/or a vacuum cleaner on stand-by – and a precautionary 'evacuation' of the ports wouldn't be a bad idea, in any case.

The PMO kit helpfully comes with both those aforementioned insulator blocks and the dozen gaskets – obviously two per port/block. Both have slightly larger external dimensions than the Porsche parts, however, and in some cases will not pass easily through the cut-outs in the cooling-air shroud, especially if the latter is an after-market item that has been deliberately trimmed for a particularly close fit. The solution for us was to use genuine Porsche gaskets, and also to finish the blocks down to the required size – although even then it was necessary to undo the shroud's fixing screws to allow it both to lift a little and move sideways, as well. Last word on fixings: always use washers beneath the nuts, ideally of the wavy spring type, but if of the ordinary flat variety then also small enough in diameter to fit neatly without fouling against

the castings. Flat washers can be trimmed with tin-snips – if absolutely necessary. Nuts themselves obviously have to be M8, but with smaller-than-standard flats for a 12mm spanner/socket. (All are supplied in the PMO kit, but just in case...)

If there can be a single most important step in the installation process, then it's fitting the throttle linkage. That would make at least a four-page feature in its own right, but full and usefully detailed instructions are provided with the kit, and if you follow them to the letter you shouldn't have any problem. Obviously make sure that all of the various elements are individually free to move as you add them, and especially the main cross-shaft, which no less obviously must remain clear of the fan shroud at all times. The cross-shaft mounting brackets – one on each carburettor – allow for some adjustment, but if necessary remove one or the other pressing and 'oval' one or more of the holes.

When it comes finally to adjusting the carburettors you will need just a few basic tools: stubby drivers for the mixture and air screws, 7mm and 8mm spanners, perhaps a millimetre rule for setting the float height and drop, and most importantly a synchronising or balancing device such as the seemingly old-fashioned but still highly effective device shown. This ensures that both sets of throttle butterflies have the same idle-speed setting. Naturally the engine must be at its full running temperature before you attempt any adjustments, and with correctly set valve clearances and ignition timing. PMO recommends an electronic ignition system of some kind, and also offers various suggestions for exhausts.

The visual difference between this 911S's original Weber carburettors (below) and the now finished PMO installation (main photo) isn't huge, but imagine you had started out with the standard air-filtration system – and you can see why it is so popular with

owners seeking to backdate later models, even those with fuel injection.

Dynamically, however, this vehicle was immediately transformed, and we hope to have an update from owner Torsten Larsson after he has lived with its new-found performance and driveability – and fuel economy – for a few thousand miles

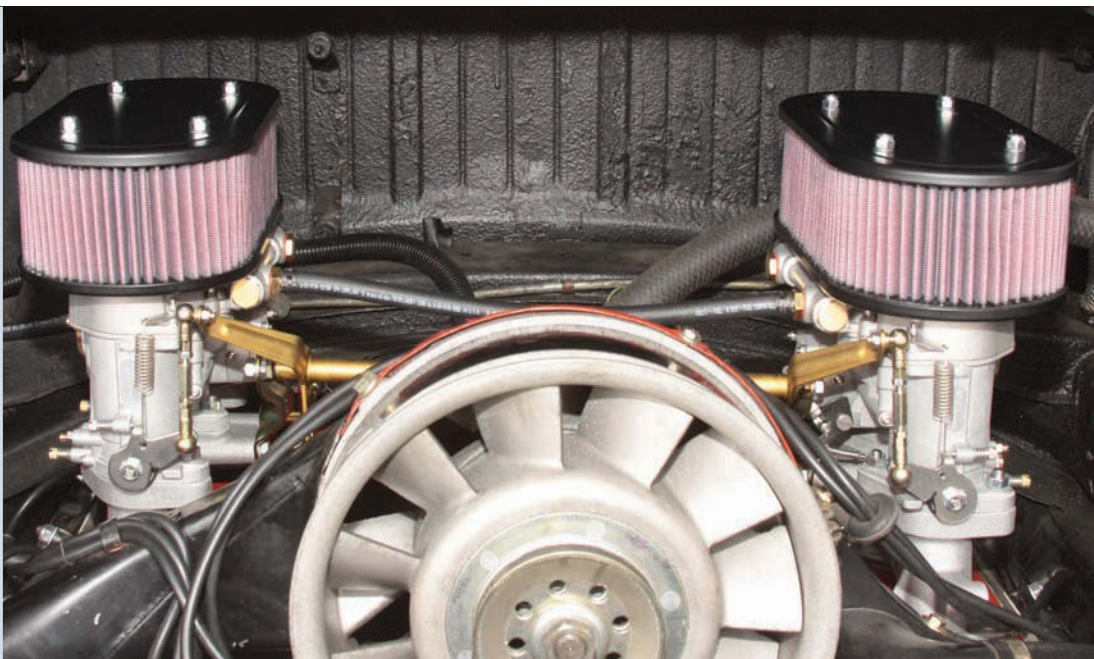
even before you begin. Forewarned is forearmed, and all that.

Full details of all the PMO carburettor (and fuel-injection throttle-body) kits are available on the company's website at www.pmocarb.com, including options and prices, but as a guide to the latter we can tell you that the set shown, for Torsten Larsson's 1968 911S and all similar models, retails here in the UK for around £3950 including VAT. Not what you might call cheap, then, but beyond doubt a small price to pay for the reliability and economy that it can bring, together with the associated

driveability and sheer enjoyment – and just a drop in the ocean compared to the substantial and ever-increasing value of some of these vehicles. Redtek – one of the company's UK distributors, and thus readily able to supply kits, parts and not least expert technical support – will typically charge around £1440 including VAT for basic installation and setting up, obviously with any additional work required (spark plugs and points, for instance...) on top. More details about all of those aspects at www.redtek.co.uk, or better still call Nick Fulljames on 01280 841911. He will be

more than happy to explain the possibilities.

Our thanks, by the way, to one of Redtek's two young technicians, Sam Pritcher, who patiently carried out the installation work with the inevitable interruptions for photographs. He may be just 23 but, having worked for Nick Fulljames for the last four years since leaving college, is clearly both immensely capable already, and determined to learn all he can from one of the acknowledged masters. And as the enthusiastic new owner of a 'Y'-registration 2.0-litre 924, well, he *has* to be one of the good guys. **PW**





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THE PELICAN BRIEF

Wayne Dempsey, co-founder of Pelican Parts, is something of a visionary, predicting the rise of the internet and ensuring that his Porsche parts business was right at the forefront of the online world

Words and photos by Matt Stone



Wayne Dempsey's Porsche experience began as did that of so many young enthusiasts; at the wheel of a somewhat ramshackle 914. Dempsey was living in the snow-ridden Northeastern United States, and dating a woman whose father owned a rust-addled 914. In spite of its "Flintstone car 'see-through' floors" and "Swiss cheese exhaust system" it was great fun to drive, recalls the clear eyed, handsome, Pelican Parts co-founder and CEO. "I remember hitting a bump on the expressway in that car, and the entire exhaust system cracked apart and fell off. When I brought the car back to her father, she blamed me for 'breaking her dad's car.'" No matter, the die was cast.

Dempsey – no relation to the racer/actor of the same last name – decided to move to California, and went Porsche shopping even before he'd found an apartment to live in. He admits that he knew little about Porsches at the time, but came upon a black '74 914 2.0 for sale. He drove it and liked it, and took it to a nearby dealer for a pre-purchase

inspection, which it passed with generally good marks. So he bought it.

It drove well enough, but wasn't as quick or sporty as he expected, so he investigated further. As you can likely guess, his "2.0" was about 0.2 shy of a two-litre, being instead a 1.8. Thankfully it was a pre-catalyst '74 and not the even slower '75. The 914 was followed up by a full restoration on his next Porsche, a 1960 356B Coupe. He also admits to a fling with a Ferrari, which he recalls as being very pretty but not all that fast and not particularly well engineered or built. Even though his education at the Massachusetts Institute of Technology (MIT) yielded engineering degrees, his primary work experience lies in the computer sciences. Sometime in 1997, after a lot of brainstorming with his friend Tom Gould, the pair figured out that this "Internet thing" was no passing fad, and would be a great way to sell and distribute automotive parts and accessories, and an equally good channel by which to disseminate technical and "how to" advice to DIY enthusiasts. Gould and Dempsey officially joined forces to launch Pelican Parts out of the stockpile of Porsche parts in Gould's garage.

The pair wanted to offer something else to draw potential customers to their sites and thus their business; the answer was obvious to them, as Dempsey had learned so much while cranking on his 914 and restoring the 356, that they felt that distributing hands on, detailed tech information through their site at no cost would be the additional customer need-filler they sought. So tech articles and lots of discussion in Porsche owner and user forums has from the beginning been a big part of the culture at Pelican.

Dempsey had so much experience developing technical solutions to Porsche problems, maintenance and rebuilds that it led to him becoming a successful published author, and you may be well familiar with his now long running "101 Projects" book series, with titles like "101 Projects for your Porsche Boxster" and "How to rebuild and modify Porsche 911 engines" and such; you can see the whole series at www.101projects.com.

Pelican quickly grew, and Dempsey ultimately bought his business partner (though still friend) out of Pelican Parts, which has since settled in an approximately 20,000 square foot office, warehouse and

Boys' toys: The view from Wayne Dempsey's office. The success of Pelican Parts has allowed a serious collection of ex-racers and Porsche ephemera

Right: The Pelican Parts team. With 49 employees, we couldn't fit them all in! Far right: Mission control. Dempsey at his desk. Note window to the workshop



garage space in the Harbor City area of southern Los Angeles, California. What you won't find here at the moment is a large, glossy showroom with display cases full of keychains and t-shirts for purchase – because Pelican is a primarily on-line international business, it doesn't have a huge walk-in retail face. However, if you have ordered parts from Pelican, and choose to save on shipping costs and pick them up yourself, they will certainly welcome you, by appointment please. The reception area is modest, backed by a large open space customer service area operated by a staff of parts-smart people who can get you connected to the right parts and will happily take your order; computer screens are always lit up and the phones always buzzing, as you might guess.

Pelican was born about Porsche parts, but has since expanded into BMW, Mercedes-Benz, Audi, VW, Saab, Volvo and MINI; Porsche still represents the majority of Pelican's business, but BMW and

Mercedes activities have grown substantially in recent times. In terms of Porsche parts, Pelican stocks a mix of OEM, aftermarket service and performance, plus genuine Porsche replacement parts and accessories – “but no junk” insists Dempsey. “There are a lot of great

lifts and bays dedicated to DIY project cars, photography and tech article generation.

Dempsey's office is a place for a big boy and his toys. There's great books on the shelves, wonderful two and three dimensional art on the walls, the requisite knick-knacks, and several scale model

“Dempsey stays well involved in Pelican's online forum presence”

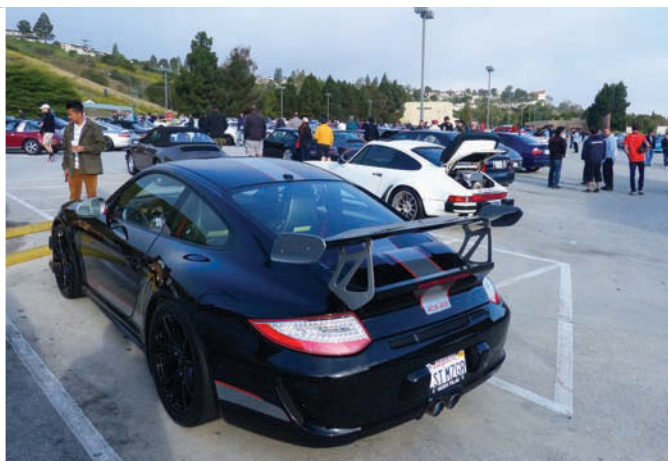
aftermarket performance and replacement parts producers around the world, and a few that make cheaper, poor quality stuff. And we don't sell any of the latter.” Pelican supports markets worldwide, with the United States so far its largest, but with meaningful sales in Australia, Canada, the UK, Norway, Brazil and Japan. Pelican has no service/repair shop, save for a couple of

engines, some that run and some just for show. Naturally Dempsey's desk resembles a flight deck with a double screened computer, a telephone and a few more die-cast toys and car parts. Being a very hands-on guy and book author, Dempsey stays well involved in Pelican's online and forum presence, often surprising visitors that their call or online query is being



Projects and complete cars share space in workshop. The black 911 is Dempsey's first Porsche, now fitted with a Carrera 3.2 engine. The 959 is also Dempsey's while the RSR replica was bought from a friend in the mid 2000s. Strange looking machine underneath is an electric race car!

TECH: SPECIALIST



With much of its business operating in the virtual world of the internet, Pelican's own 'run what you bring' events, every Saturday morning, are a great way for Porsche owners and Pelican customers to meet and mingle

answered by the boss himself.

Naturally you can't wrangle a warehouse full of parts without a competent parts management and shipping/receiving staff, and Pelican's got that too. Back in his MIT days, Dempsey designed and built a computerised assembly module system, a variation of which is still used in Pelican's back end operation. As you'd expect, the company's loading dock is a parade of

in Dempsey's office gives a glimpse of the real toybox, that being his and the company's seriously impressive car collection. The large, high roofed garage space packs a dozen or so Porsches, plus numerous engines on stands, everything with a unique story to tell. Logically enough, our visit begins with the black 914 Wayne Dempsey purchased upon his arrival in California; it became one of Dempsey's first

Carrera 3.2 powerplant – horsepower problem cured for good.

Dempsey next points to a handsome black chrome bumpered '72 911 coupe that's been given a bit of an RS 2.7 vibe with red graphics, a ducktail and a rorty sport exhaust system. True to the early 911 ethos and a blast to drive so says he. By now we've noticed the black over grey 959, a car Dempsey's owned for about a decade now, and considers to be perhaps the ultimate street 911 variation. With 450 horsepower, a superbly trimmed leather cabin and sophisticated all-wheel drive, it's hard to argue that point. Dempsey recalls with a chuckle the time he was driving it up in Carmel Valley, California during the Monterey Peninsula's annual Pebble Beach Car Week and feeling pretty good about himself behind the wheel. After all, he started in a highly humble 914 and was now tooling the exotic car filled streets of Carmel in a rare 959 – he recalls people smiling, waving, and taking photos, and that his chest was sticking out pretty proudly...until he looked in the rear view mirror and realised that someone else was driving a

“ All products are listed, illustrated and orderable online ”

postal, UPS, Fed-Ex and other delivery trucks. But the warehouse appears generally organised with automated and manual inventory processes that keep the parts flowing in and out as quickly as possible. The company doesn't print any old school paper catalogues, with all products listed, illustrated, and orderable on line.

A look through the large picture window

project cars and the subject of one of his books, and is no longer displacement challenged. Along the way it's picked up bit of a 916 GT vibe, with 911 style Fuchs rolling stock, and aggressive, steel flared fenders. The previous displacement and cylinder count deficiency was more than adequately cured by the binning of the 1.8 and its subsequent replacement with a



It's mainly Porsches, but Pelican Parts also supply for other big European makes like Mercedes and BMW, so a few of those are likely to turn up, but all are welcome

Right: Historic rally plates. Dempsey gets handy with a 944 lump. He still likes to remain hands on in all aspects of the business. Below: What it's all about: Shifting large amounts of parts all over the world



million dollar 911 GT1 homologation special just behind him, and that all of the waving and cheering was for that barely streetified racecar, not for him and the 959. "Brought me down a peg or two" notes Dempsey with more than honest humility.

Upon a lift is a seriously green and credibly authentic RSR tribute, a car built at great expense by a friend of his, and purchased into the Pelican stable during the economic recession of the mid-2000s. Even more of a story is the engine destined for it, sitting on a stand just in front of the car. It's a prototype old-school air cooled, built at the nearby legendary Vasek Polak Porsche dealership and racing shop; a wonderful mix of bits, based on 3.6-litre cases wearing twin-plug heads and a full factory mechanical fuel injection system. To the best of Dempsey's knowledge, it displaces approximately 3.4-litres and may or may not have ever run in a car. His plan is to tear into it a bit, verify the makeup of the internals, freshen things up, and bolt it into the green monster. The futuristic vehicle parked beneath the green RSR up on the lift is a solar electric

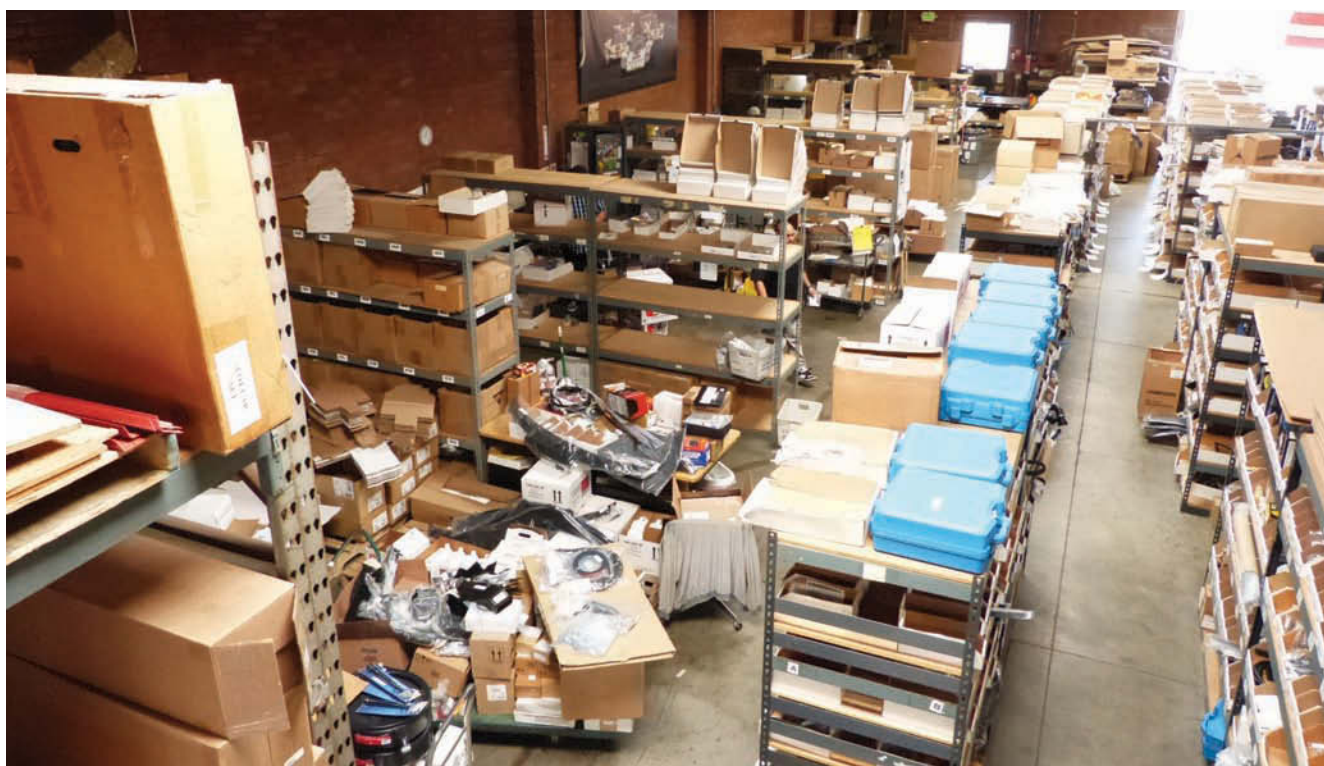
powered MIT team racing car, elements of which Dempsey designed while at the school.

Soon you're at the corner of Prototype Blvd and 962 Avenue, headlined by a trio of magnificent, and historically significant 962s; the Havoline liveried car extra significant being the actual 1987 and 1988 Sebring 12-hour winning 962. Another fascinating machine is one of the earliest, fully carbon fibre body and chassised 962s. Bookending these three breathtaking prototypes are a very original black '58 Speedster, and Champion Motorsport's Porsche-powered ex Wallace/Haywood/Luhr/Maasen Daytona prototype racer. Naturally no big game playpen garage would be complete without a huge leather conversation couch, giant TVs and a Porsche-only slot car game set built to resemble the German countryside, castles and all. The pinball games have Porsche cars, too. Absolutely not to be missed is an immaculate #59 Brumos 935, reputedly the last racing car driven by Peter Gregg before his unfortunate suicide.

Orange County, California was home to

one of the world's original and best morning cruise-ins, originally launched in a Newport Beach area shopping park called Crystal Cove. After a while, the shop owners there grew tired of the huge Saturday morning crush of cars, so the event moved to the parking lots of a nearby Ford and Mazda office complex. It was renamed Cars N Coffee. Now that event has gone on hiatus looking for larger quarters, so Pelican is filling the need with its own Saturday morning, "run what you brung" breakfast cruise at the Promenade on the Peninsula shopping complex not far from its HQ. The event, launched only this year, drew more than 300 cars at its most recent holding, Pelican hosts and organises the event primarily as a way to meet and bring together its customers. Many of Pelican's 49 employees are on hand to meet, greet and enjoy the hardware.

Should you need anything from a steering wheel or set of spark plugs to a transmission and major online DIY tech advice, it's more than likely that Pelican Parts can help, and it's very easy to while away a few hours on the Pelican site. **PW**



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THE TEAM

STEVE BENNETT

996 C2/944 LUX

Just a single Bilstein damper is all that stands between my 996 C2 and its suspension



makeover, so I've been concentrating on the 944, which has now had its block sleeved with steel liners.



KEITH SEUME

912/6 'EL CHUCO'

Well it's got an MOT, but no V5 at present thanks to a DVLA cock-up. Not to worry, because it's not quite there. Just need to sort out a bit of mapping and it will be ready for the 911&PW Picnic!



CHRIS HORTON

924S, 944

Space needed at home for other car projects, so I've parked the 924S at Auto Umbau again. But I'm missing it already – and I'll be back there later this week to pick it up for the 911&PW Picnic.



PETER SIMPSON

CARRERA 3.4 TARGA

Project 3.4 backdate is finally home for the much needed body work. I've also been busy collecting engine parts for the 2.7 Targa – with them fitted the spec should be very close to the 2.7 RS. I can't wait!



BRETT FRASER

BOXSTER 3.2S

I continue to be impressed with my new Eibach springs – the Boxster's handling has really sharpened up. Meanwhile the Michelin Pilot Sports have coped well with our summer 'weather.'



JOHNNY TIPLER

BOXSTER 986/996 C2

Well, as you can see on the opposite spread, my 996 C2 continues to evolve. I'm delighted with its new front end look, courtesy of Design 911. The wheels, too, have spruced it up, not that I'm finished yet!



ANTONY FRASER

996 GT3, SC, TRACTOR

A few laps at Longcross test track confirms the GT3's new suspension to be the bee's knees. Through 'The Snake' it can get airborne over a crest after a tricky right hander. It's never, never done that before.



MORE FRONT THAN SAINSBURY'S

Yes, it was only a matter of time. The facelift king has been at it again: Tipler has swapped the front panel of his 996 C2 for something rather more racy. Switched wheels too



I'm not a jealous guy. Sure, the hot GT3 is subtly different from the standard 996 in the looks department, and not difficult to imitate. But why stop there? Let's get into more rarefied territory and go Carrera Cup. Or something like it. You see, I wanted an even harder-edged image than the GT3 front end, without venturing into the realms of the body-art specialists orbiting Zuffenhausen – Gemballa, speedART, CarGraphic, TechArt and so on, however exotic they may be. Closer to home, Design 911 offered just the look I wanted, though it's not absolutely specific to any particular hotted up 996, which makes it even better; I'm not seeking to emulate anything precisely, just give the car more of a sporting image to match its Porscheshop power upgrades. Having ordered up the new glassfibre nose, I booked "Pig Energy" in with Wayne Parker at Norfolk Premier Coachworks in Norwich to have the

transformation wrought.

You thought it was just a matter of whipping the old nose off, sloshing a coat of silver over the new panel, and bolting it on? Think again! The paint code says Arctic Silver, but turns out there are at least half-a-dozen shades of Arctic Silver, so Wayne had to experiment to be sure of getting the right one. Here's the meticulous methodology as described by the maestro: first, remove the original front bumper PU panel, then offer up the replacement piece. The fitter marks out where all the existing holes align with the new spoiler, which is then removed from the car and the marked holes drilled out with a 5mm bit. The nose is then refitted and checked for alignment, with all points marked that need modifying. Once these have been attended to, it's refitted once again just to be sure, then taken off and prepped for first stage primer. That means all repaired areas as a consequence of the modifications. Next, a primer guide

JOHNNY TIPLER

996 C2, BOXSTER S

Occupation: Freelance writer, author
Previous Porsches: Carrera 3.2, 964 C2
Current Porsches: Boxster S/996 C2
Mods/options: Modified induction set up/K&N filters, remapped ECU, Dansk exhaust
Contact: john.tipler@paston.co.uk
www.johntipler.co.uk
This month: More cosmetic enhancements



Above: New front end sourced from Design 911 suits the car nicely. Original 18in Porsche Classic wheels were sourced from Alloy Wheels Direct. These were an O/E option for the 996. It wears them well, so to speak



Left: New front apron receives prep and paint at Norfolk Premier Coachworks. New wheels and ContiSportContact tyres being fitted at Kingsway Tyres

coat is applied before block sanding. This highlights any imperfections in the primer when sanding, and these blemishes can now be attended to. Post sanding, the panel is cleaned up with degreaser, and the complete front bumper is primed with a fine surface coat. We are getting there! It's now prepped and block sanded so it's ready for topcoat, with a final blow-down and thorough degrease. The nosecone is mounted on a panel stand in the painting booth, wiped down with a tag cloth, and the first coat of Arctic Silver is applied. This normally takes about three applications of basecoat to cover, and then a fourth and final drop-coat is sprayed on to even out the metallic hue. That gets a 15-minute flash-off in the oven, then the painter applies the first clear-coat, followed by one more full wet-coat to finish off. After flash-off it gets baked in the oven for 40-minutes at 65-degrees C. After it's cooled down the painter flats out any tiny imperfections in the clear-coat with 1500-grade wet-and-dry paper. It's then polished back until all scratches have been removed. There's another facet to the front panel of any water-cooled Porsche, and that's the air ducts and channels. I'd noticed that the nose of the Dear Leader's (AKA

Steve Bennett's) new 996 displayed mesh grilles behind the apertures, which Pig Energy's lacked. I resolved to fix this with the new nose, and ordered a sheet of black mesh from Design 911 along with the front panel. Wayne's boys cut this to fit and bonded it in place to the rear of the ducts, and very smart it looks as well as keeping out extraneous garbage. Only now could the new panel be attached to the car again, along with all bumper fixtures and fittings including side indicators, tow-eye cap and numberplate. A last polish and wax, and the job was complete. It's a masterpiece, and I am thrilled! It's just the appearance I was after.

The car was ready just in time for me and my petrolhead daughter Zoë to make the mad dash down to Plymouth, board Brittany Ferries' Pont Aven and sail overnight to Santander for the whizz down to Portugal on the hunt for the 928 launched at the '77 Geneva Salon. But not before Pig Energy's wheels were swapped for a set of genuine 18in Porsche Classic II spokes, swiftly sourced from Alloy Wheels Direct and fitted by Kingsway Tyres, along with a new set of ContiSportContact boots. These sexy competition-style split-rim wheels are also

set off with coloured Porsche crest logo'd centre caps. I'd pondered having the spoked centres painted a contrasting colour, but actually they look just fine in plain aluminium alloy. A bugger to clean, though!

Embarking on the ferry – more of a luxury liner – demanded great care traversing the ramps so as not to damage the new nose's front splitter. It's the same on speed bumps, where a new vigilance is required. Having arrived in Spain, we helped guide a fellow 996 traveller out of the port and on to the route south, branching off west ourselves for the blast along the fabulous autovia, across northern Spain and down into Portugal, to link up with the Geneva 928's owner, Pedro Diogo. That's another story coming up shortly in *911&PW*, but meanwhile, Pig Energy is well on the way to achieving the look I crave.

One day we will match GT3 power output as well, but cosmetically we're getting there. I love the curved, unspoiled rump of the 996 when it's parked up, though I doubt I can resist fitting a rear wing or spoiler of some description for long. And watch out for a radical colour shift too! (*The mind boggles! Ed.*) **PW**



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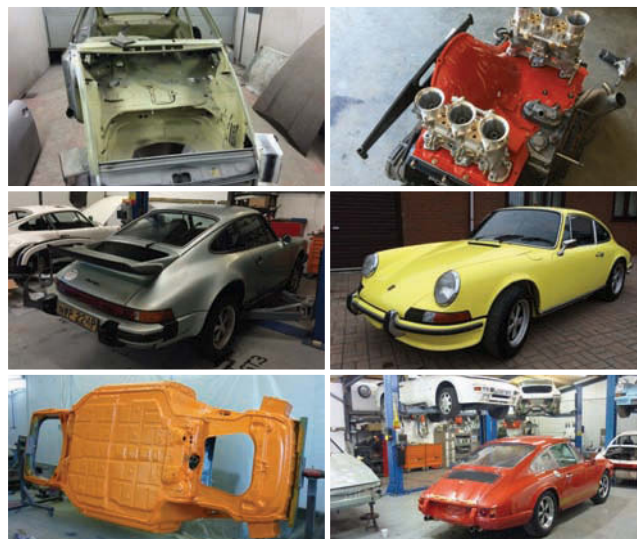
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REMEMBER THE 944?

Out of sight and out of mind, but Bennett's 944 Lux is back on the agenda and getting closer to completion. The cylinder block has been sleeved and now the engine can go back together. Not long to go now, then...



STEVE BENNETT

996 C2/944

Occupation:

Editor,
911 & Porsche
World

Previous

Porsches: 911
Carrera 3.2, plus
numerous 944s

Current

Porsches:

944 Lux/996 C2

Mods/options:

Augment
Automotive ECU
and camshaft, Koni
dampers. 996 C2 is
standard, but with
factory Mo30

Contact:

porscheworld@chp
ltd.com

This month:

Work on the engine
begins in earnest
with the block
relined with steel
liners

You could be excused for forgetting that, as well as an exciting new (to me) 996 C2, I also own a Porsche 944 Lux.

Out of sight, out of mind is the mantra, and there's nothing like not seeing your car for nearly a year to blur the memory. But still own a 944 I do, and it's getting close to being back on the road. No, really it is, and it's going to be one of the best 944s around when it's finished. Ooh, there's fighting talk.

Because it's been so long I'd better recap, I think. With just 81,000-miles on the clock, my 944 came to me via dealer Paul Stephens. He had taken it as a part ex on a silver 996 C2 (hmm, sounds familiar) and kindly sold it to me for exactly what he'd taken it in for, which was very decent of him. Of all the 944s that I've owned (and there's been many), this was, and is, easily the best

of them, thanks to its overall condition and colour (Diamond blue metallic) that looks nicely contemporary compared to the usual '80s 944 colour chart of red, black or white.

It had clearly been looked after and the Porsche Certificate of Authenticity that came with it (always a good sign) confirmed a production date of November 1986 and a registration date of 2 Jan 1987. A happy new year for someone then. Supplying dealer was Malaya Garage in Sussex, and options included a passenger door mirror (yes, you really did have to pay extra in those days), front and rear anti-roll bars, cassette and coin holder, sunroof, aforementioned metallic paint and 4-speaker stereo, amongst other things.

So, there you go. A good, straight, standard 944 Lux, with low miles and in great condition. So obviously I was going to leave it standard? Hell no, where's the fun in

that? While the paintwork was in generally good condition, and the sills were absolutely solid, the front end was a bit pock marked, so I had that resprayed. The interior was pretty good in a mix of black and a sort of putty coloured grey. I could live with that combo on the dash, door cards and console, but all-grey seats were too much for me, so I swapped them for all-black leather front and rear. So far, so good.

Mechanically the car was pretty good, save for a couple of oil leaks from the myriad of oil seals that 944 engines seem to need to keep all the black stuff in. However, soon after buying it, I had the chance to try Augment Automotive's air flow meter delete and ECU mods, which rather transform the 944 and 924S, by doing away with the restrictive air-flow meter flap system of measuring air coming into the engine, and then relaying that info to the ECU, which adjusts the fuelling

Below: Major work being carried out! After a bore scoring incident, it was deemed prudent to resleeve the block with steel liners, which is not the work of a moment, but should last the lifetime of the engine. It's a quality job, too, as you can see





and ignition accordingly. State of the art it might have been in 1982, when the 944 was launched, but by contemporary standards it's positively archaic.

Doing away with the air flow meter allows for a much smoother and rather more fulsome passage of air from the air-box straight into the fuel injection plenum chamber and inlet manifold to mix it up with the fuel. Augment Automotive modify the ECU retaining the basic drive system for the injectors, but replacing everything else with modern components that read the fuelling and ignition parameters in a wholly modern way. The system can also be mapped to suit different cams, head work, injectors etc and also features a distributorless, wasted spark ignition system. All very modern in other words. The result was an extra 13bhp up from 144bhp to 157bhp and a sizeable increase in torque.

Now if you're thinking: "Hold on, isn't a 944 supposed to have 163bhp as standard," then yes, you're correct in that assumption, but I've never seen a 944 produce that, and nor have the guys at Augment Automotive. 150bhp is usually the best case scenario and I've seen anything between 138bhp to 150bhp from three of the 944s I've owned, on the rollers, with the current one somewhere in the middle with 144bhp. Of course different rolling roads produce slightly different results, but a good one rarely lies.

So all good. More power and torque, a much sharper throttle response (the air flow meter flap makes the throttle response rather lazy), improved economy, we should have just left it there. But no. It wasn't that we wanted more per se, but got ourselves a bit lost trying out different injectors and Augment Automotive's fast road cam, which resolutely

refused to work with my engine. The injectors were a blind alley which, due to their very fine atomisation, sent the engine and ECU a bit doolally in traffic and in retrospect the cam probably never had a chance. A lot of time was wasted on the rollers while we sussed out the injector issue. In the meantime the 944 had its original clutch replaced and original dampers upgraded to Koni adjustables, but then, en route back to Augment one day, the temperature started to climb so off came the head to investigate. It wasn't pretty. The obviously original head gasket had started to rot. No huge surprise after 28 years, really. Rather more concerning, though, was the broken piston ring, which had also scored the bore, albeit very lightly. The script was writing itself and the only sensible thing was for a full engine rebuild.

The broken ring didn't become apparent for a little while, and Augment had already started on the head, with new guides and grinding the valves in, plus pressure testing it for valve leaks and fitting a vernier pulley for spot on cam timing with their road cam.

With oversized piston rings required for the bottom end rebuild, David Barker at Augment wasn't happy with what was available on the market and so we opted for some uprated, oversized Lyndsey Racing rings from America. Unfortunately, with the bottom end reassembled one of the rings 'picked up' in its Nikasil lined bore, thus rendering it pretty much scrap, which rather put a spanner in the works. That left only one real option – machine the block for steel liners. Sounds simple enough, and it kind of is, but it's also very labour intensive.

And that's where we're at and, actually, I'm very happy about it. Cylinder liners and

bore wear have been the bane of Porsche engines (and other manufacturers – BMW springs to mind) for years. Just look at the chunking liners on some 996 engines and the catastrophic bore wear on some 997 engines. It doesn't happen with steel liners. My first ever 944 engine was scrapped thanks to bore wear on no 4 cylinder (doubtless as a result of an overheating incident) and a subsequent very early 944 I owned had evidence of a damaged no 4 cylinder, observed after head gasket replacement, and documented on the invoice for the very expensive work at a Porsche Centre. They obviously decided to put the head back on and hope for the best. Funnily enough, that was the aforementioned engine that produced a rather meager 138bhp! So, I don't really get all this fancy aluminium bore stuff, with various coatings, whether it be Nikasil, Alusil or any other sort of 'sil.' Interestingly, and as reported elsewhere in this issue, the new Gen 2 991 turbo engines have iron-coated bores for longevity.

So yes, I'm happy to have steel liners and even happier now that I've seen the rather good job that Jacob Engineering (rather more at home with high end classic car stuff) have done for Augment Automotive. Just look at the pics and you can see how they've become part of the block. It's time-consuming though. It takes two to three goes to machine the aluminium bores out, and likewise the steel bores, when inserted, to get the optimum size.

As I scribble this, the engine is about two weeks away from going back together and then we'll have another crack with the cam and set it all up on Augment's new dyno, with final tweaks on their rolling road. Can't wait to get it back. **PW**

Above left to right: The horrible truth. Rotten head gasket, a lightly scored bore and a broken piston ring, all leading to the inevitable conclusion of an engine rebuild



Below left: Cylinder head on the bench being tested for leaks from valves. Cam timing being dialled in. A vernier pulley will be fitted for optimum cam timing from Augment's fast road cam

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TECH: PROJECTS

AND THE WINNER IS...

A few issues ago we ran a competition to win an Eibach suspension makeover with springs, anti-roll bars and spacers, with the lucky winner having the full kit of parts fitted at Parr. Well, just to prove that people really do win these things, here's the full fitting story



Back in June we ran a competition with Eibach and Parr for a full chassis makeover, with goodies from renowned suspension manufacturers Eibach and full fitting at Porsche specialists Parr. The lucky winner was Billy Armitage, with his 2004 Porsche Boxster 986. Based up in Glasgow it is quite a drive for Billy to Parr in Crawley, but he certainly had ample opportunity to try out his suspension makeover on the way home...

Having never been into modifying his cars before, this was a whole new world for Billy. After discussions with both Eibach and Parr, Billy opted for an Eibach Pro-Kit, Pro-Spacers and Eibach Anti-Roll Bars and a date was fixed. Tying the fitting in with a trip to London for his son's wedding, the Boxster was dropped off at Parr for the week.

Parr used the time previous to the actual fitting day to run a health check on the car so no nasty surprises would be sprung on them on the day. They could see that under the car there was some corrosion on bolts and joints, which apparently is common when working on cars from Scotland. With the harsher winter weather, there is a lot

more salt used on the roads so the car can look beautiful on the outside but underneath it can be a totally different story. Luckily there was the corrosion mentioned, but no more than expected for a car of its age. Billy could breathe a sigh of relief!

The fitting day found us at Parr for 8am. Matt Woods the photographer gets straight on with the before shots, then quickly to get out of the rain, the Boxster is driven in on to the ramp. Inside Parr is rather impressive with 11 bays all filled with quality vehicles. The Boxster is tucked in next to a lovely Cayman S that is in for a Parr upgrade. Jamie Woods, the technician working on the Boxster, quickly had the wheels off. Starting work on the front first, it is a relatively simple job, the undertray is removed, then the car is lowered so Jamie can access the nuts to the top mount. He lowers the wheel hub just slightly to give himself some room to wiggle the front spring out. It is then a two man job to squeeze the new Eibach Pro-kit spring in. He hits a problem on the driver's side where the top mount is really corroded, after quite a bit of 'persuasion' the nuts undo but on removal of the top mount it is

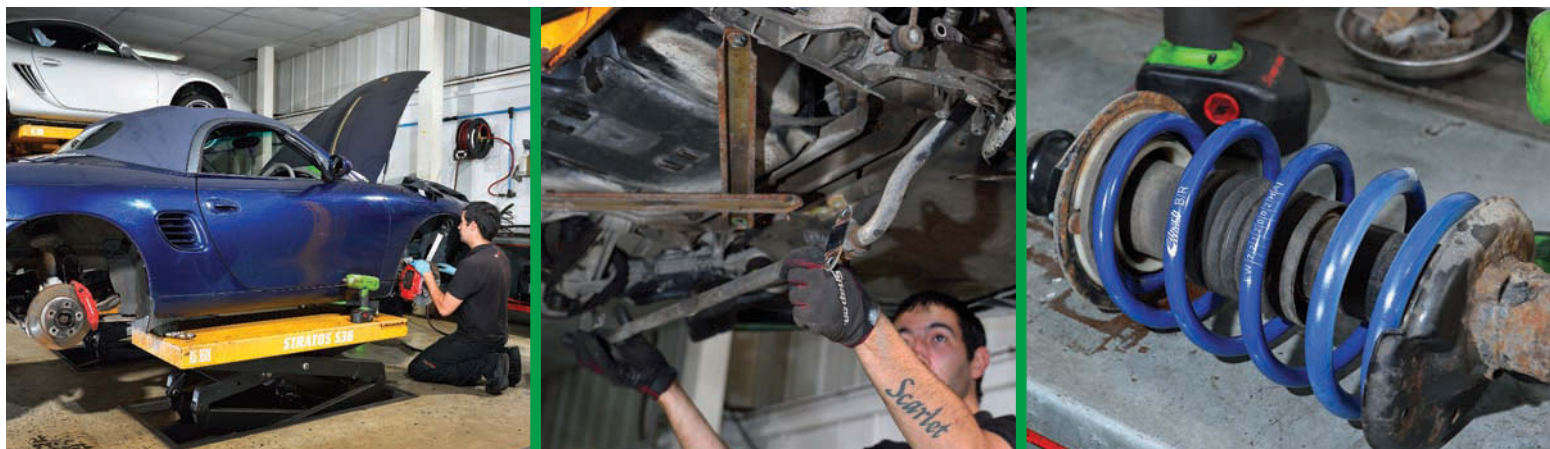
found that the central bush, which is normally a fixed part has actually become detached. A phone call to Billy for the go ahead, and then to the suppliers, and a new one is swiftly on its way and delivered within the hour.

In the meantime Jamie cracks on with fitting the front anti-roll bar (ARB). Again this is a straightforward job, just needing to loosen the strengthening brace to give enough space to remove the bolts and then the original bar. Matt jumps in quickly to take a comparison picture. This particular Eibach ARB kit was specifically designed in the UK in response to demand for this vehicle, and is only available through exclusive dealers. The kit features a hollow front and rear bar which offers a weight saving of up to 60% compared to equivalent aftermarket ARB kits. The front bar also has the added benefit of being two times adjustable, Eibach having worked their design magic to offer this feature where the OEM version and other aftermarket front bars do not. The Eibach products are designed to be direct OEM replacement parts and as such are referred to as 'bolt on' parts. Jamie puts the new uprated

Above left: Billy's Boxster as it arrived at Parr for its fit-up. Note standard ride height. Above: The parts haul as won by Billy in our 911&PW competition, which comprises of: Eibach Pro-Kit springs, Pro-Spacers and Eibach Anti-Roll Bars

Below: Typical of a car that's been on the road since 2004, there was a fair amount of corrosion to the suspension components, some of which, like a front top mount, had to be replaced





SuperPro bushes, which are included in the Eibach kit, on with lube and fits the bar. Having spoken to Billy with regards to the type of set-up he is after, the bar is set on the softer option. This gives Billy an option to stiffen the ride if so desired once he has the car at home, but as the car is mainly for road use this softer option is deemed perfect.

Then work moves onto the rear. The plan is to try and lower the hub enough to be able to work behind it but after quite a lot of time and effort, Jamie has to remove the hub as he isn't able to lower the suspension unit enough to get the spring off in situ, so the whole unit needs to come out. On the rear, the top mount access is through the boot so part of the interior has to be carefully removed. In taking the hub off the droplink bolt has seized. Jamie tries many ways to undo it, but it is seized tight so has to be broken to be removed. This is the main issue when starting any work like this. You need to be aware, particularly on older model vehicles that nuts, bolts and bushes can seize or perish and cause unexpected work and costs. Luckily Parr is able to order a droplink to arrive that day so work doesn't have to stop. As Jamie works and replaces bolts throughout the day, he sprays them with an anti-seize grease to hopefully prevent this happening again in the future. Once the suspension unit is out, the top mount is removed and the unit is placed into the spring compressor and the springs are swapped for the uprated Eibach springs. A protection wax is sprayed to give an additional barrier to the spring before being fitted back on the car. A quality powder coated polyester resin is used on all Eibach springs meaning this procedure isn't

really necessary, but it is another example of the attention to detail and thoroughness of the Parr technicians that is proven again and again throughout the day.

The new top mount for the front arrives so Jamie is able to move back to the front and finish up. After it is in place and fixed, he continues on with cleaning the hub, so there is no dirt or grit on the surface before he puts the wheel spacers on. Billy has decided on the 7mm Eibach Pro-Spacers all round. This may not sound a great deal but by increasing the Porsche's track measurement this will improve turn-in and steering feel, as well as the more obvious benefit, which by pushing the wheels out to fill the arches will further enhance the Boxster's good looks. With Pro-Spacers and wheels back on both sides Jamie can continue on with the rear. After a quick sandwich that is!

All that is left of the fitting is the last rear side which should be straightforward, but as we all know things never quite turn out like that. In this instance it was the 17mm bolt that is really corroded and Jamie literally tries every trick (and tool it seems) of the trade. With sheer persistence and a little brute force finally he loosens the bolt and the unit is out and in the spring compressor. Once the unit is back on the Boxster, the undertray is then removed and the strengthening frame loosened so Jamie can access the rear anti roll bar. Again it is a direct swap with the Eibach bar making it a very quick upgrade. Once the Pro-Spacers and the wheels are back on it is time for a test drive. This is to ensure there are no knocking noises and that the car handles as expected. Once Jamie is satisfied the Boxster is brought back in for

Matt to take his 'after' shots, as the geometry set up is booked to be done the following day.

Having spoken to Billy about how he wanted to use the car and his expectations from it, it was decided that the Parr fast road geometry set up would be used. This has been designed for, as the name suggests, fast road use and the occasional track day. By changing the camber, castor and toe settings better grip levels are achieved on turn in, cornering and braking. An additional bonus is improved tyre wear. The set up can take 2-3 hours, even longer if the vehicle has ride height adjustable suspension. It starts with a road test, which the Boxster has already had, then is put on the designated geometry ramp. A visual check is made before they start to make sure there are no worn bushes/components, and if there are these are replaced first. Lawrence Stockwell from Parr says: "The importance with a geometry set up is accuracy and ensuring what you are working with is sound. We use our Beissbarth wheel alignment system to then record the current settings and then adjust to achieve our target settings. After this process is complete we then road test again to ensure all is well and the steering angle is correct."

So the job is complete, and when Billy arrived to collect his car he was delighted with the Boxster's transformation. **PW**

Feedback from Billy

'Just a short note just to say thank you, on the long journey home the car was great, feels much smoother and a much better ride overall, couldn't be more happier, thanks again'

Above left to right:
Life is so much easier with a ramp!
Removing the old anti-roll bar. New Eibach spring in position

CONTACT

Parr,
parr-uk.co.uk
Thanks to Parr for fitting and setting up Billy's suspension kit

Eibach
eibach.com
And thanks to Eibach for putting up such a good prize. With Eibach springs fitted to many of the 911&PW fleet, we can vouch for the quality

Below: Stubborn bolts require heating up to release them. Copious amounts of copper slip used for reassembly, so hopefully this won't happen in the future. Boxster fitted and set-up. Note lower ride height. Job done!



TECH: PROJECTS

IT LIVES! IT DRIVES!

After four years of ownership and over three and half years of work, *El Chucho* is alive and kicking! OK, so there's still a rolling road session ahead, but it's now MOT'd and legal(-ish). The end of the journey is in sight...



KEITH SEUME

1966 912

Occupation:

Editor,
Classic Porsche

Previous Porsches:

Carrera 2.7; 928;
912; 914/6; Junior
Tractor

Current Porsche:

912

Mods/options:

Six-cylinder
engine conversion,
etc.

Contact:

classicporsche
@chpltd.com

This month:

Getting the car
MOT'd; reworking
the fuel system

Crispin Manners gave the car a once-over and declared it good enough to get through the MOT. Hooray! At last!

If you happened to read last month's *Usual suspects* column, you'll have seen that I finally managed to drive my long-term project – when I say 'drive', I mean sit at the wheel as it coughed and spluttered up the road under its own power. And my willpower... But it moved without being pushed.

Taking a step back in time – to the August 2015 issue, in fact – the car was pretty much there apart from having to refit

the alternator and ECU. Neither job took long although, thanks to a non-standard crank pulley, I needed to find a suitable fan belt as the stock one was just a few millimetres too short. In the end, I found one at a local motor factors, which was still a little tight, and then finally bought one online. Turns out it's meant for a VW Golf, or something like that.

One small job I did need to do was wire the alternator warning light correctly. As the wiring loom I have in the car was designed

for non-Porsche applications (it was a street rod loom from the USA), for some reason the warning light didn't, well, light. Taking a new feed from elsewhere in the loom sorted that and I was delighted to see the light go out as soon as the engine fired up. Phew – one more thing crossed off the list.

It was at this point I realised there was no real reason for me not to attempt driving the car down the road. I still needed to sort out the oil level gauge (or so I thought – more on that anon), but oil pressure was good,



Far left: Engine bay looks empty compared to most Porsches – 'hidden' plug leads and fuel pipes help keep things neat and tidy

Left: Tim Bennett tried his best to sort out the fuelling but in the end he was thwarted by a faulty fuel pump!



the temp gauge flickered up to 'zero' when I turned on the ignition and the fuel gauge showed signs of life. All looked good.

What became immediately obvious as I tried driving the car was that the engine simply would not run much over quarter throttle, a problem which I assumed was down to the lack of a suitable map in the ECU. But the car drove and felt good in all other respects – no bangs and crashes from the suspension, the brakes pulled up true and the steering play-free. I was happy – even if the tacho (and oil level gauge) still didn't work.

Next stop was to get the car MOT'd. Now, for me, subjecting a car like this for its first MOT is a little bit like awaiting a dental appointment: I get all nervous even though there is no real need to. The chosen garage was Crispin Manners' Oak Tree Garage at Newton Poppleford, near Sidmouth in Devon, which is about eight miles from Roger Bray's workshops where the car has been living for the last couple of months.

It was a nerve-wracking drive to Crispin's as the car was only really happy at small

throttle openings, spitting and kicking in protest if I got any more adventurous. This would have been embarrassing enough in any car, but when I discovered a queue of cars behind me all wondering why the Porsche is only doing 30mph, I felt like running and hiding. But we got there in the end, even if the maiden voyage wasn't quite the fun drive I'd imagined.

Crispin gave the car a thorough once-over and picked up on a couple of points, one being excessive play in the top bush of the steering column. But, with an advisory note issued, the car passed its MOT and I was jubilant!

Crispin did make mention of how noisy the fuel pump was, and suggested I move it to the front of the car as it appeared to be struggling to suck fuel through the line. Back at the workshop, fixing the bush only took a few minutes (I'd missed out a split collar and spring when fitting the steering wheel). Next – get it running better.

I arranged for Tim Bennett from the DDK-online.com forum to come down to give me a hand with mapping the ECU – he'd got

the engine started for me originally and is a bit of a whizz at all this ECU lark. Well, with the laptop plugged into the ECU, Tim struggled to make sense of what was happening. Whatever adjustments we tried to make to the fuelling, the car didn't run any better. And then silence: the fuel pump seized! That was the end of that.

I ended up buying a new pump and fitting it in the smuggler's box at the front, replumbing the fuel lines to suit the new location. Trouble is, there was now no fuel pressure at all! After some head scratching, it turns out the supply and return connections to the tank had been reversed (don't ask). Once I discovered that – and modified the supply fitting to accept a larger-diameter hose – all was good.

The difference was amazing: suddenly the engine would rev freely and sounded stronger than ever. Out on the road, the car went like a scalded cat, except it now wouldn't run very well at small throttle openings. It is also reluctant to start from cold, so the ECU map is clearly all over the place after our efforts to adjust fuelling with the failing fuel pump. That is something that ought to be relatively easy to sort out.

I've now booked the car in to Tipton Garage near Sidmouth for a rolling road session in a few days' time. I can't wait to see (and experience) the results.

Oh, and the 'faulty' oil level gauge? Easy fix – put more oil in it... Dummy. **PW**

Contact:

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www.reapautomotive.com
www.canfordclassics.co.uk
www.webcamshafts.com
www.arp-bolts.com
www.turbothomas.com

Above: On the brake rollers at Oak Tree Garage – the car passed the MOT with only a couple of advisories, including a loose steering column bush, which has now been fixed. Next stop: get the car registered with DVLA



Left: A rather gratuitous photo, I grant you, but I'm pretty pleased with the way the interior has turned out. Now, if only I could get the tacho to work...



Porsche 911T 1972 Targa 2.4L
Manual Gearbox, LHD, Red with Black
interior. RED "Oil Klapper" Version.



Porsche 911 1974 Coupe 2.7L
Manual Gearbox, LHD, Ice Green
Metallic with Black Interior.



Porsche (911) 930 Turbo 1985
3.3L Manual Gearbox, LHD, Finished
in the most desirable colours Black
with black leather interior.



Porsche 911T 1969 Coupe 2.0L
Manual Gearbox, LHD, Bahia/Guards
Red (originally - Bahama Yellow) with
Black interior.



Porsche 911T 1970 Coupe 2.2L
Manual Gearbox, LHD, Irish Green
with tan leatherette interior.

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TECH: Q&A

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911 & Porsche World



PAUL STACEY
Northway Porsche



PETER TOGNOLA
Tognola Engineering



ROBIN MCKENZIE
Auto Umbau Ltd



PHIL LONG
Dove House Motor Co

Welcome to 911 & Porsche World's Q&A pages, edited and assembled by the magazine's technical man and do-it-yourselfer, Chris Horton (above). The format is much as you would expect – you ask, and our experts do their best to offer a practicable, real-world solution – but we also pass on some of the knowledge that we gain during the course of our own work on the magazine and our cars. Either way, we routinely add as much detail as possible – including part numbers and costs, contact and website details, and any relevant illustrations that we can find. Prices quoted are to the best of our knowledge correct – for the UK market – at the time of writing, and generally exclude VAT unless otherwise stated. Naturally we do our very best to ensure that the advice and information given is accurate, but we can accept no responsibility for any effects arising from it.

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924S FRONT-END 'FEEL': AN EXPERT RESPONDS

Chris, you asked me, as a chassis-tuning specialist, for my comments on Roger Bracewell's theory in your August issue's Q&A section about why the 924S might feel different when running on the slightly wider wheels that you now have on your metallic-grey car. Suffice it to say that a full explanation would read more like a university degree thesis. But I will try to summarise the situation, and briefly give you my opinion. I shall have to assume that your readers have some knowledge, however, so please bear with me if it all begins to sound just a little bit technical!

Essentially, Roger seems to be suggesting that the standard 924S generally feels 'better' in terms of its front-axle response than the 944, and he argues that this is due to a significantly narrower effective track width than its bigger brothers. He has come to this conclusion in part based upon his own experience of both setting up and driving racing karts.

He is almost certainly correct. Altering the effective track width of an axle, while all other variables remain unchanged, effectively creates a greater rate of gain for a tyre's vertical load force as a function of lateral 'g'. This will be only a part of the story, however, because unlike in Roger's karts the front axle of the 924 has articulating suspension between the tyres' contact patches and the chassis proper, and the forces communicated both to and from those contact patches must be transmitted via the various bars, rods, arms and springs, and also around the various fulcrums that make up the front suspension.

The net result is that the forces generated by the tyres' contact patches are, for want of a better term, 'split up' and then passed through these various



Horton's 924S has been put on slightly wider later-type 944 wheels with a different offset since this photo was taken, but no chance yet to compare front-end 'feel' by driving on a circuit. Body roll will remain one of the bigger issues to deal with, though! Photo by Peter Robain

suspension components, only finally to converge again somewhere over on the chassis side. The virtual point at which this takes place (some dynamicists call it an instant centre) will have a geometric relationship to the centre of gravity at the front of the 924, but this relationship can migrate and change as the chassis rolls due to lateral 'g', and as it pitches or squats due to either longitudinal or vertical 'g'. The nature of this moving relationship is what is really critical for the 'feel' of the front end of the car.

Thinking about a chassis

trait as subtle as front-end feel in single-issue terms, such as narrow or wide effective track width, does on the surface seem to be helpful, but in truth is not so, because it ignores the other critical pieces of the puzzle, which can have an equally significant effect. The physical construction of the tyre and then its dynamic performance, the front axle's net roll resistance, any forces added or eroded by dampers, and let's not forget steering-system rate; all have their part to play in the car's crucial front-end feel.

With regards to dual spring

rates, by the way, in truth these are a bit of a myth, because all coil springs are by their nature progressive, in that the force required to reduce their length by half doubles and doubles again until the spring become coil-bound, so a dual-spring set-up such as that proposed by Roger would actually create a shaped continuum of force reaction (spring rate) against compression, rather than the two rates cleanly handing off from one to the other at the point at which the weaker spring becomes coil-bound.

In reality, these systems

do exist – of sorts – due to the flexing of suspension mounting points, and I can tell you that the maths is the stuff of nightmares. I am, of course, assuming that there isn't an enormous disparity between the proposed rates, as would be the case when, for instance, we use low-rate helper springs in order to prevent the primary road springs becoming physically loose when jacking up a vehicle fitted with short coil springs.

Sam Borgman,
Technical Director,
Torque Developments
International, Essex

MORE ON THAT 'SMOKING' GEN II BOXSTER

Many thanks for your help with my query about my Gen II Boxster 2.9's oil consumption, which you published in the September edition of *911 & Porsche World*. It was, indeed, reassuring to read what Northway's Paul Stacey suggested, because I had previously spent some time wondering if I might have bought a lemon. Anyway, I thought I would share an update with you.

I reckon that during the service I had paid for just before collecting the car the sump had been overfilled – possibly because there is no conventional dipstick in the Gen II, just an electronic gauge within the instrument panel. Certainly the oil level was above the maximum mark once the engine had warmed up. I took the car to a little-known but amazing Porsche expert I have used since the 1990s. (A chap called Rob, who is ex-PH Sportscars.) He looked after my 944S2 for many years when I had it. He dropped the best part of a litre of oil out of the sump to obtain a full but not over-full reading – and even suggested that had there been much more lubricant in the engine the catalytic converters might have been damaged.

So all was well. Until three days later, that is, when one morning there was a single huge plume of smoke as I drove out of my garage (which, I might add, has a perfectly level floor). Fortunately that soon dissipated, though. That was about three weeks ago now, as I write this.

I read in the car's

handbook that the Gen II runs better on 98 RON fuel. I had previously thought all this Super Unleaded sales talk was nonsense, and always dismissed it. But I decided that I might as well give it a go. A full tank of Shell V-Power Nitro+ and £65 later I drove to Goodwood and back, and have had no oil-smoke issues since. I also put in some Forté Advanced Formula Gas Treatment. I have always been a big fan of Forté products, particularly their Injector Cleaner, the above-mentioned Gas Treatment, and not least their Advanced Formula Motor Flush for the lubricating oil. (For full details of their entire product range go to www.forteuk.co.uk.) The upshot was a 400-mile trip, multiple starts, and all seems OK. And the car averaged 36mpg – must be that sixth gear. No oil used, either, which was good!

So fingers crossed, and thank you for a very good magazine. I have been buying it since issue number three, which must have been in about 1992. (*It would have been late 1990, actually – CH.*) One thing I would mention, while I have the chance, is that I think you should publish more readers' running reports, like you did back in the old days. Just normal folks' experiences with their own cars, basically.

If anyone would like Rob's number, by the way – he didn't want it too widely publicised – contact me on Twitter via @porschesauc. **Paul Lowe, Derbyshire**

I DID NOT KNOW THAT!



I try hard to be as accurate as possible in everything that I say, and certainly everything that I write, and not to allow what I think I know to cloud my judgement. Sometimes, though, it seems as though the very facts are conspiring to confuse and even defraud.

A few months ago I wrote a feature for Porsche Club GB's monthly magazine, *Porsche Post*, about the lovely little 911T owned by Arfor Jones from Denbigh in north Wales.

The story in a nutshell: in 1968 Arfor, temporarily back in his native UK, after emigrating some years earlier to what was then Rhodesia, admires a Tangerine-coloured 911 on the Porsche stand at the Earls Court Motor Show. Some time later, out in Rhodesia again – or Zimbabwe as it then was – he spots a Tangerine-coloured 911 outside the garage where he is working as a back-office accountant. Implausibly, if not incredibly, it turns out to be the very same car, and to cut a long story short, in 1975 Arfor buys it from the then owner, and many years after that repatriates it to the UK when he returns to live here himself.

No less unusually, the car appears to have been fitted from new with the same type of 'static' seat-belts that were standard equipment in many early P6 Rover 2000s – a model close to my own heart. (I have certainly never seen them in any other 911, and I doubt in any other make of car, come to that.) The sound the flip-over aluminium buckle makes as you secure it in the fitting on the lap-and-diagonal section of the belt is highly distinctive, if not unique, and closing my eyes as I strapped myself in to Arfor's car immediately took me back literally half a century.

Later, proof-reading the story for the magazine, I happened to look closely at the photo of one of his car's seat-belt buckles (above), and had one of those classic double-take moments. The maker's

name on the admittedly tiny badge was quite clearly shown as Irvin – yet previously I had always read the company name as Irving and, indeed, had written it thus in both the text and the accompanying caption. Fortunately there was just enough time to make the necessary change before the magazine went to press, but naturally it irked me that I could apparently have made such an elementary mistake.

A few weeks after that I unearthed from my attic the surprisingly heavy box of Irvin – or Irving – P6 seat-belts that I have collected over the years. Well, you never know when they will come in useful, do you? (And these days they are possibly quite sought-after – not that I'm overly interested in that.) And there on a section of the webbing on each, as clear as daylight (above right), was the proof that I had been right all along. It was Irving! And yet, when I double-checked one of the many buckles, that said Irvin. What the deuce...?

Leslie Leroy Irvin, born in the United States in 1895, was one of the pioneers of parachute technology. He made his first jump in 1909, and in 1914 was one of the first people successfully to jump from an aircraft (and survive, in other words). By 1919 he had developed a parachute with the three key elements that most of us are now at least vaguely familiar with: a soft pack, worn on the back; a ripcord, for releasing the chute within; and not least a pilot chute that draws that main chute out of the pack. Just a few months later the Irving Air Chute company was formed in Buffalo, New York.

Legend has it that Irvin's name was changed during that process to the doubtless more common Irving by an inattentive typist, and it wasn't until 1970 that anyone bothered officially to correct it to Irvin Air Chute. (In 1996 the company's name was changed once again, to Irvin Aerospace,

Inc, and today it is known as Airborne Systems.) So a small mystery is solved. Quite where that leaves the accuracy – or otherwise – of my *Porsche Post* text and caption is another matter, although since Arfor's car was built before that first name change in 1970 I suppose we should stick with the published Irving, irrespective of what it might say on each buckle badge.

I shall conclude this piece with a reminder, too, that both these and just about any other type of classic Porsche seat-belt can usually be restored – and should most certainly be if you have any doubts at all about their integrity.

Here in the UK the pre-eminent player is Quickfit Safety Belt Service in Stanmore, Middlesex (020 8206 0101; www.quickfit.sbs.com), and sales manager Pawel Podchorodecki tells me that although they can't do very much with corroded or damaged fittings on these belts – which unsurprisingly, given their origins, are made from lightweight aluminium – they can still easily replace the webbing. The only material now available is very slightly narrower than the original, he adds, and not necessarily exactly the same familiar grey, but close enough to retain both the belts' essential character and, perhaps most importantly, their distinctive sound.

And it's not as if it's an expensive process. Thirty quid apiece plus VAT, suggests Pawel (who, I was encouraged to hear, was as intrigued as I was by that Irvin/Irving anomaly), and only a little more if you take the entire car to the Stanmore premises and have Quickfit remove and refit them. That's a small price to pay for safety and nearly 100 per cent originality, I reckon.



Boxster and 996 introduced dashboard oil-level gauges in 1996 and 1997, respectively. Great idea, but unsurprisingly the sump-mounted sensor and wiring (above, arrowed) are not necessarily to be relied upon – which can be an issue in cars such as Gen II (or 2) Boxster, which doesn't have a corroborating dipstick

FORMER PROJECT 924S GOES ON STRIKE – AGAIN!

I had an understandably plaintive e-mail a few weeks ago from the current owners of my old red 924S, which since 2012 has been living up in the beautiful Highland region of Scotland.

'The Porsche has been fine all the time we've had it, and passed its annual MOT test again a few weeks ago, but this week the engine suddenly cut out, and so far won't restart. We went over three potholes – very slowly – and then tried to accelerate, but the engine simply died, and all the dashboard lights came on.

'Direct Line's helpful breakdown service brought the car home for us, but not unreasonably for a vehicle of this age and nature their man was unable to do any meaningful diagnostic work. We replaced the (DME?) relay that you kindly left in the car for us as a spare, but that doesn't seem to be the problem. Could it be just a loose electrical connection somewhere else? Or maybe a faulty fuel pump?'

Good question. My first port of call was Paul Stacey at Northway Porsche in Beenham, Berkshire: confident, patient and methodical, and a reassuring mine of information on just about every 'Q' that I have pushed his way for an 'A' over the last five years or so

– including a similar tale of woe from me back in 2011 or perhaps even early 2012, when I still owned this very same car. (That turned out to be a waterlogged ECU, but I don't believe that will prove to be the problem now.)

'They need to start with the basics,' he responded immediately. 'But it would be useful to have a little more information about the problem, as well. For the moment, though, I am going to assume that the engine turns over on the starter, as normal. The battery is good, in other words, and the timing belt is intact. Oh, and there is enough fuel in the tank, of course – regardless of what the dashboard gauge might be suggesting.

'If that is the case, then they need to check the electrical feed to the fuel pump – although that is active only when the engine is being cranked, or is actually running. If that's OK they will need to disconnect the fuel line in the engine bay, and see if there is fuel coming out – under pressure – when the engine is being cranked. Making absolutely sure, of course, that the petrol can be collected safely, and doesn't spray all over the place. Obviously if there is voltage and no pressure then the pump will require replacing. Does the car have

any form of immobiliser?' (No. That went into the dustbin many years ago!)

'The other obvious thing to check is whether there is a spark at the plugs. Remove one of the leads – number one, at the front, is the easiest – and connect it to a spare plug. Best not to remove one of the engine's own plugs, in order to avoid the possibility of flammable fuel/air mixture exiting the combustion chamber and igniting. Wedge the body of the plug firmly against the cylinder head, crank the engine over again, and look to see if there is a fat, healthy spark. Don't touch the lead or the plug while this test is being done, of course. There is a risk of a dangerously high-voltage electric shock.

'No spark could mean a faulty coil, spark-plug leads (or cap or rotor arm), or ECU, or what are known as the speed and reference sensors. Those last two items, as I know you know, Chris, are tucked well out of the way down on the clutch housing, but I would be surprised if either was the problem in this case – they usually prevent the engine starting, rather than stopping it while it's running. If there is no injector pulse – you will need to check for that with an LED-based tester; a normal incandescent lamp bulb



Back in 2011 what was then Horton's red 924S suddenly stopped because of a waterlogged ECU, itself the result of some halfwit drilling holes in the scuttle immediately above it to mount an alarm siren. Four years on, the current owners have a similar issue, but a replacement control unit, sent up since the text below was written, suggests that this time the cause lies elsewhere. Watch this space

probably won't react quickly enough to show the pulse – then this could be due to either the speed or reference sensor, or to the ECU.'

Watch this space, then. I have a feeling – based on my

not dissimilar experiences with my 944 many years ago – that this one is going to take a bit of solving. Not always easy at the best of times, let alone from hundreds of miles away.

993'S WHEEL WOBBLE SOLVED AT LONG LAST

Q Further to our on-going discussion about my 993 Carrera's annoying front-end wobble – last aired on these pages in

the September 2015 issue of the magazine – I thought I would drop you a line to give you an update.

Well, in the end I decided to bite the bullet and took the car to the Porsche

Centre in Amsterdam – they have a Porsche Classic department. The technician there took the car for a test-drive, and his immediate diagnosis was that the wheels were not correctly balanced. You might remember that I had jokingly suggested that I would eat my hat if that proved to be the case!

It turned out that the Porsche Centre had made the correct call – as, indeed, had your own expert, Paul Stacey from Northway. The big difference compared to previous attempts at this was that their balancing machine simulates the conditions when the wheels are under load. Sadly, my specialist here in Alkmaar doesn't have such a machine.

The other problem the

Porsche Centre solved for me was partially seized pistons in the brake calipers. Apparently this was accentuating the wobble problem under braking. The calipers were stripped, cleaned, overhauled and refitted, and all is now fine.

Had I not gone to the Porsche Centre I could have ended up throwing a lot of money away, buying new dampers and other components, which almost certainly wouldn't have solved the problem. I guess the moral of this story is always to obtain a second – or even third – opinion.

We took the car to Cornwall for our summer holiday – photograph attached – and it was an absolute joy to drive! Thanks for all your help. **Nick Payne, Netherlands**

A **Chris Horton, 911 & Porsche World:** Many thanks for taking the trouble to let us know about that happy outcome, Nick, and naturally I am delighted that we were able to point you in the right direction. Looking back through our e-mail exchange once again, and also at what Paul Stacey wrote, I think I can safely say that is essentially what we diagnosed – albeit at a distance – all along. And experience has taught me that it's always best to start with the things that are the simplest and the cheapest to deal with, before moving on to more complex and expensive potential solutions. Anyway, it's a great result – and long may it stay that way.



Wheel wobble in expat Brit's 993 – pictured here during recent trip from Holland to Cornwall – was precisely that: incorrect balance

BARGAIN-BASEMENT BOXSTER REJUVENATED

I hear from my colleague and friend Robin McKenzie at Auto Umbau in Silsoe, Bedfordshire (www.classicporscherepairs.co.uk), that the Boxster 2.7 that I borrowed for our recent *Your first Porsche* extravaganza (see the September issue), and which aroused so much interest from the assembled hacks, is in the process of being modestly restored to at least some of its former glory.

The out-of-character after-market stereo has gone, replaced by a second-hand original-equipment

Porsche unit, the seats are being refurbished – they had been previously ‘painted’ with some rather dubious concoction or other, reckons Robin – and as I write this the car itself is at a local bodyshop for the various dents and other minor blemishes to be sorted out.

Even the air-conditioning now works, thanks to a pair of new condensers and a regas (look how badly distorted one of the old units was, thanks to the rapidly expanding corrosion between some of the lower tubes; right), and the new

radiator fitted at the same time (far right) should help to prevent any engine-damaging overheating.

Robin has promised me another drive in a few weeks’ time – just for fun; he still intends to keep it, at least for the foreseeable future – but I shall doubtless work it in to my various *911&PW* contributions in some form or another, and I suspect that I will be even more sorry that I didn’t persuade him to sell it to me. It just goes to show that not every slightly down-at-heel old water-cooled Porsche is a pig in a poke.



993 RUST THE TIP OF AN APPROACHING ICEBERG?

I imagine that it’s easy to feel quite smug if you own a 993-model 911 Carrera. Famously the last of the fully air-cooled 911s (although both the 996 Turbo and the GT3 no less famously retain elements of the iconic Hans Mezger-designed engine), it is arguably appreciating faster than just about any other legally held commodity in Britain today, and by reputation has the bullet-proof build-quality that should see even a neglected specimen reach its 50th anniversary with ease.

Or does it? Yet another recent trip over to Auto Umbau produced this

‘M’-registration car (below) up on the lift for some urgent attention to the inner rear wheelarches. The underlying cause of the problem, as usual in these scenarios, was mud. Porsche went to all the trouble and expense of fitting plastic shields to prevent the brown stuff being flung into the foremost recesses of the ‘B’-posts, where it would hold moisture against the metal like a corrosive poultice, but for some unaccountable reason didn’t see fit to bother about the area at the rear of each wing, just above and ahead of the light clusters.

The problem is further compounded by a bracket

secured to two studs on the inner wing, and which supports both the outer wing and the wraparound bumper moulding. The ledge it forms offers a natural mud-trap, with the added madness (let’s call a spade a spade here) that the normally quite effective under-body sealant was applied only *after* the body shell was fully assembled – so you get much the same ‘shadow’ effect as in the Carrera 3.2 and earlier models, with significant areas of metal protected by nothing more than a perilously thin layer of ordinary paint. Brilliant.

If you are lucky, and get in

there quickly enough, you – or perhaps your chosen body specialist – will be able to remove the bumper and the brackets, clean off any remaining paint, sealant and surface rust, and after suitable protective measures (more paint and sealant, basically) put it all back together again. Plaster everything with rust-inhibiting wax (with further soakings every year or so), and that should be it. Job done for perhaps £300–400 all in.

Leave it too long, however, which given that even the youngest 993 is now nearly 18 years old could mean even just another winter,

and you will be facing the prospect of not only buying new brackets – £200 per pair, plus sundries – but also having the perforated inner wing(s) patch-welded. And which, despite that rather simplistic terminology, has to be done properly if it is not in itself merely to exacerbate the situation in the years ahead. Call it a grand total of around £500 per side including VAT.

The 993 is a wonderful car, and I would be delighted to have one as part of my fleet. But please don’t run away with the idea that it needs next to no maintenance. Rust never sleeps.



Inside rear part of each 993 rear wheelarch is this plate, designed to support both the outer wing and the lower part of the bumper moulding. It’s factory-fitted after the shell is painted, but before any thicker under-body sealant is applied. Result is the same ‘shadow’ effect seen in earlier 911s’ kidney-bowl area, or again their rear inner wings, and the inevitable corrosion that follows: the plate forms a platform on which mud collects. Catch it early enough and you will be able to deal with the issue relatively cheaply, but in severe cases body will need to have a plate(s) welded in – and new bracket(s) fitted. Metal here has been treated with Auto Umbau’s ingenious portable ‘galvanising’ kit



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TECH: DETAILING

DETAILING SCIENCE: PART FOURTEEN

PAINT CHIP REPAIR

TIME REQUIRED: 1HR PER TREATED AREA

Stone chips, scratches, road rash, call it what you will, but our precious paintwork takes a hammering on the road and the track. Here we look at how to use the Chipex system to effect a paintwork repair that is near impossible to spot

As owners of track-bred machines, it's only polite to hoon around the odd circuit of a weekend. Alas, this can be murder on the paintwork, with stones being thrown up by the car you've been about to pass for the last five laps chipping the shiny bits. Even on the road, regardless of how carefully we drive, there will always be a rep-mobile trying to prove its 1.9 litre diesel is more potent than our flat six with an audacious overtake. Scratches, road rash, stone chips and scuffs – they are all nigh-on unavoidable, but thankfully they can be fixed quite easily. In the old days your only option was a body shop, which involved big bills and irritating logistics. With the turn of the century 'Small to Medium Area Repair Techniques' (SMART) repairs became available, which offered the convenience of a mobile service. A conventional smart repair required masking off a large area, sanding the paint down, then re-spraying paint and lacquer on top – essentially a mobile body shop. Though effective, it was still rather expensive and not something to be attempted as an amateur. Chipex revolutionised the market by providing a product that could be applied quickly and easily, either by a home user or a professional, at a fraction of the cost of a bodyshop or smart repair.

Kevin Ford of Goldcrest Valeting in Croydon shows us how to fix some scratches on this 996 Turbo using the Chipex system. The first step is to clean the scratches and carefully mask around the area. Kevin is using a special trim tool to gently hold back the rubber to make the masking process more accurate. Then use the Chipex blending solution to remove the ingrained dirt in the scratch itself, which will allow the new paint to bond properly.

Chipex produces custom colour-matched paint for all Porsche models from the paint code, which can be found on the driver's side door sill (except Cayennes, which have their code in the boot). Remember to shake

the paint bottle well before opening, particularly for metallic paint. Use the micro brush to gently dab a blob of paint into each scratch and then smooth it along the length of the mark. For the best results it is always wise to use multiple thin layers rather than laying it on thickly. Ideally, leave the new paint standing slightly proud of the surface. Unlike normal automotive paint, the Chipex solution dries within ten minutes and contains lacquer so it is much easier to use. One can also further accelerate the drying process using a heat gun on a low setting. The paint also has filling properties and we have seen chips up to 1.5mm deep being repaired successfully. Once the paint has dried, a special cloth combined with a minute amount of blending solution can be used to smooth the surface.

Though Chipex originally designed the solution to be applied by the home user, they have recently teamed up with the Professional Valeters & Detailers Trade Association to create a UK network of approved repairers. As an approved repairer, Kevin has some extra tricks up his sleeve to turn a 90% perfect repair into a 98% perfect repair. The first step is to use an eddy-current paint depth gauge to measure the paint thickness in microns around the scratch. Once it has been established that there is sufficient clear coat to machine polish, Kevin uses a dual-action polishing machine to refine the surface. Finally, a coat of protective wax is applied over the treated area to give that extra bit of protection and gloss.

Although not completely invisible on close inspection, the repair has had a dramatic effect on the overall appearance of the Turbo. The repaired section only took an hour to fix, and there was more than enough paint left over to treat all the stone chips on the nose and some road rash around the arches. As a long-term client of Kevin's, the proud owner of this car gets any new chips fixed every time he has the car valeted – a perfectly valid excuse to go on monthly track days! **PW**



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The three Ps, which is, of course, preparation, preparation, preparation! The scratch is isolated by masking round it. Ingrained dirt is removed and the Chipex paint mix is applied and built up layer-by-layer, before finally being cut back and blended in

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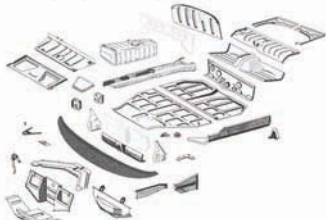


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BOXING CLEVER

Porsche's second generation Boxster (designated 987) built on the good work of the original – that is to say that it's one of the most accomplished mid-engined sports cars at any price. Fortunately, though, the price you'll have to pay is eminently reasonable secondhand



WHAT TO PAY:

The 987 Boxster was in production from 2005 to 2011 and, of course, went through a number of model cycles. There is, then, a fairly wide range of prices, but one thing that holds true across the board is that values have held up pretty well.

You might find a very tired example for sale at under £10,000, but in the main you'll be looking at mid teens for early 2005–2008 cars with moderate mileage. Into the £20k and beyond bracket and Gen II Boxsters are plentiful, and for really late cars then £30k+ is not unusual at a Porsche Centre

When Porsche's Boxster was first launched all the way back in 1996, it created a lot of excitement. The first mid-engined road-going Porsche since the VW-Porsche 914 of two decades earlier, the new roadster was to be the company's new 'entry-level' model. It was also the car that saved Porsche from almost certain extinction...

The first generation cars – known by the factory code 986 – were powered by a new 2.5-litre, water-cooled flat-six, producing 201bhp. But from the outset it was clear the chassis could handle more power and in 2000 the basic Boxster got an upgrade to 2.7-litres and 217bhp, while a 3.2-litre, 249bhp Boxster 'S' was also introduced.

In 2004, at the Paris motor show, a second-generation Boxster was shown for the first time. To the casual observer, the new model – internal code 987 – looked little different to its predecessor, but there were many differences. The most obvious was the redesigned front end, with more aggressive styling, reminiscent, some say, of the Carrera GT.

The headlights certainly looked far better – gone was the 'fried egg' design of old, replaced by a simpler ovaloid shape, with turn signals relocated in the tops of the

huge front air intakes.

Porsche claimed that the new car shared only 20 per cent of its components with the outgoing model yet the major redesign was handled in such a way that the older Boxsters weren't rendered obsolete overnight.

There was more to come, though, with the launch of a 'Generation II' 987 in 2009. Like all 987s, it was well-built, refined – but better. It could quite justifiably be regarded as the perfect everyday Porsche.

PRODUCTION & MODELS

Assembled at the Valmet factory in Finland up until May 2011, and then at Stuttgart, the 987 was first on sale in the 2005 model year. The original 987 continued until the 2009 model year, when it was superseded by the face-lifted Generation II model. This has now been replaced by the new 981 model.

The 987 line-up began with the 236bhp 2.7-litre Boxster and 276bhp 3.2-litre Boxster S, launched together in 2005. In 2007, the basic Boxster received a power boost of just 6bhp, while the 'S' was offered with a 3.4-litre engine boasting an extra 15bhp. Both six-speed manual and five-speed Tiptronic were available.

The Generation II version, offered for the 2009 model year, came with a 2.9-litre,

251bhp engine in basic form, or 3.4-litres and 306bhp in 'S' specification. Both models were available with a six-speed manual gearbox or Porsche's seven-speed PDK transmission.

Watch, too, for the lightweight (by 80kg compared to the regular 'S') Boxster Spyder. Destined to be a collectible in years to come, it was introduced in February 2010.

STYLING/BODYWORK

A Boxster is a Boxster is a Boxster, right? Wrong! The second-generation cars are different fish altogether to the original 986-series models.

It's easy to spot a 987 Boxster from afar, thanks to the all-new front bodywork. Gone is the wide-mouthed styling of old, replaced by a more aggressive design with two large grilles either side of the centrally-located number plate. The 'S' features a third grille below the plate.

A small lip spoiler completes the look, but the biggest change at the sharp end was the introduction of new headlamp units, similar to those used on the Carrera GT.

Moving around the car, the door handles are new, as are the side vents. The rear-end styling is heavier, its design following through the line of the front lip spoiler and sill panels.



Interiors were much improved over the 986 Boxster and are robust if looked after

Build quality is right up there with the best Porsche has to offer. It may still have been the entry level model, but no corners were cut in its production.

INTERIOR

Three overlapping dials in a curved dashpod – it's all typical of a modern Porsche, regardless of model.

The chunky steering wheel sits in front of the central tachometer. There's a large digital read-out of speed – useful as the difficult to read analogue speedometer is relegated to second fiddle, in typical Porsche fashion.

The standard seats are comfy and supportive, if not exciting. However, overall it's the fit and finish that impress most of all. Layout is still a little haphazard but that's probably true of every Porsche ever built...

Porsche's well-spec'd communication system offers sat-nav and hands-free phone facilities.

ENGINE

The 987 Boxsters started life with a choice of 242bhp 2.7-litre or 306bhp 3.2-litre water-cooled flat-sixes according to model. They benefited from revised inlet and exhaust systems compared to earlier units, Porsche's VarioCam Plus system and a free-flowing *auspuff* helping to increase both power and

torque compared to their predecessors.

The 2.7-litre unit had a bore and stroke of 85.5mm x 78mm to give a true capacity of 2687cc, while the 'S' gained its extra capacity from a larger cylinder bore of 96mm. Of the Generation II 987s, The base model came with an all-new 2.9-litre engine (89mm x 77.5mm – 2893cc) rated at 251bhp and 214lb ft of torque, while the 'S' had a 3.4-litre flat-six producing 306bhp and 266lb ft of torque, thanks to a bore and stroke of 97mm x 77.5mm (3387cc).

All the VarioCam Plus engines produced their maximum torque over a wide rpm spread, roughly 4500–6000rpm – part of the reason these cars are such a pleasure to drive...

TRANSMISSION

The 987s all came with the option of a six-speed manual gearbox and it's a real joy to use. If it isn't, then start to ask questions. Early cars were available with the five-speed Tiptronic semi-auto – great for everyday use and not to be regarded as second best.

Generation II models came with a six-speed manual or Porsche's blisteringly-fast seven-speed PDK. It's been said many times before, but you can't shift a manual 'box as fast as this. It may not appeal to everyone, but it's damned impressive!

Styling cues come from the 550 Spyder, which gives the Boxster a sense of Porsche heritage

SPECIFICATION

Porsche Boxster 3.2S

Engine: 3179cc flat-six
Transmission: 6-speed manual
Max power: 276bhp at 6200rpm
Max torque: 236lb ft at 4700rpm
Brakes: Vented discs, 318mm/299mm front and rear
Wheels & Tyres: 8x18in (f), 9x18in (r)
235/40x18 (f), 265/40x18 (r)
Weight: 1345kg
0–60mph: 6.2secs
Top speed: 166mph

WHAT THE PRESS SAID

"The Boxster wins group tests for the same reason that the 911 does; for its brilliantly honed dynamics and feel, finely judged ride and handling compromise (even less of a handling compromise with PASM), and its reassuring integrity."

EVO

"It's easy to drive the Boxster quickly and sensibly and underlines why so many drivers have chosen the Boxster for their first Porsche experience."

911 & Porsche World

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TECH: BUYERS' GUIDE

SUSPENSION

All 987s use struts and coils, front and rear, mounted to lightweight aluminium subframes. Hub carriers are identical, front and rear, too. The track, front and rear, is wider on the 987 compared to its predecessors, which is why the front and rear wheel arches are more bulbous.

Braking is by servo-assisted discs all round. The rears are 299mm diameter on all models, but the fronts vary according to spec: 318mm on the 'S', 298mm on others.

WHEELS AND BRAKES

The first 987 Boxster came with 17in rims measuring 6.6J at the front, 8J at the rear. These were shod with 205/55 and 235/50 Z-rated tyres. The Boxster S was equipped with 18in wheels, 8J front and 9J rear, shod with 235/40 and 265/40 ZR tyres respectively.

Generation II models wore 7J and 8.5J x 17in rims with 205/55 and 235/50 rubber, while the 'S' models came with 8J and 9J x 19in wheels, covered by 235/35 and 265/35 tyres. The quest for greater luggage capacity meant no spare wheel...

WHAT TO LOOK FOR

The first topic of conversation always seems to relate to IMS bearings. Well, we're happy to say that, by and large, that is a thing of the past as far as the 987 is concerned. By and large, but not totally...

The first generation 987 models can suffer from this problem (look for telltale oil drips) but, as is the case with contemporary 911s, the chances are that most examples would have been fixed by now, either under warranty or by an independent. Check the service history for evidence one way or the other. The 2006 model year cars came fitted with a larger-diameter IMS bearing, which appeared to cure the weakness.

The majority of posts placed on on-line forums regarding 987 reliability issues relate to the electrically-operated roof. It's certainly a complex design, but probably no more so than any other similar set-up. But all it takes is one failing micro-switch...

Listen out for excessive wind noise and what many describe as a 'cracking' sound from the hood mechanism. In some cases this has been cured with the application of lubricant, in others it warranted a trip back to the Porsche Centre. An annoyance rather than something serious.

Damp carpets can be a problem, too – this is usually attributable to blocked drain tubes around the rear of the roof. It could also be caused by a badly installed windscreen following replacement.

On the whole, though, the Boxsters are pretty trouble-free. Look for obvious signs of accident damage – misaligned panels, etc. Above all, ask for proof of regular servicing at a Porsche centre or a recognised independent. **PW**

The practical sports car? Absolutely. With two luggage compartments, you can get much more than your toothbrush into a Boxster

IN THE CLASSIFIEDS

2005 Boxster 987 2.7
60,000 miles GT Silver
kerridges.co.uk
£13,495

2010 Boxster S 987
37,000 miles, Seal Grey
cavendishporsche.co.uk
£27,995

2011 Boxster S 987
21,000 miles, Basalt Black
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911

**2000 996 GT3 Mk1**

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£65,000

P1115/018

**911SC**

This my much loved 1982 Porsche 911SC Coupe, she has only travelled 69,000 miles and has a full service history, I have really enjoyed owning her and I am only selling due to a new baby on the way in September and I need my garage back and the money for a new baby wagon! Looks stunning with its Guards Red paintwork and Fuchs alloy wheels, and is in excellent mechanical and structural condition. Tel: 07921 830544. Email: s-blakeley@sky.com (Hampshire).

£28,500

P1115/035

**1994 911 (964) Turbo 3.6**

This black 964 Turbo Coupe is one of 288 designated for the United States market and features European front turn signals, an electric sunroof, rear window wiper system, and polished 18-inch factory-issue polished Speedline wheels with Porsche crest centre caps. Supple leather front and rear, the Matador Red leather wraps the power adjustable and heated front as well as rear seats, black leather extends onto the dashboard which includes an upgraded head unit, the power lumbar seats are trimmed in black piping with the headliner in black, headrests have Porsche crests, the trunk is carpeted in matching Matador Red plush velour. This iconic Porsche comes with books and records, all documentation and manuals, a copy of the window sticker, and the requisite 3.6 Turbo badging under the rear spoiler, 3.6L engine rated at 360HP, 5-speed transmission, limited slip differential, Porsche of North America Certificate of Authenticity. Tel: +1 617 818 5665. Email: gene@groveservices.com (MA, USA).

£225,000

P1115/022

911

**911 (993) Targa**

Manual 6 speed, P-reg, only 76,000 miles, full Porsche documented service history, comes with comprehensive history file including all bills/lots of receipts, Varioram engine, met Ocean Blue with grey comfort seats/interior/carpets, e/w, e/glass Targa roof, e/blind, e/s, e/m, Kenwood radio/CD/MP3 player, rear hoop spoiler with 3rd brake light, 17" Targa alloys, r/c/locking, alarm/im, full toolkit/bookpack. Tel: 07966 454645. Email: paulgills@hotmail.com (Leeds).

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P1115/036

**2.7 RS Evocation**

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£87,500

P1115/014

911

**911 (993) Targa, manual 6 speed**

P-reg, 111,679 miles, full Porsche documented service history, Varioram engine, met black with marble grey seats/interior, carbon black hard back Sport seats, e/w, e/glass Targa roof, e/blind, e/s, e/m, Sony cassette/radio with 10 CD autochange, RS front and side skirts, 17" Targa two piece split rim alloy wheels, PAS, ABS, remote c/locking, alarm immobiliser, full toolkit/book pack, keys, MOT. Tel: 07966 454645. Email: kamgills@hotmail.com (Leeds).

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P1115/008

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944



1991 944S2 road legal track car

Prepared and built by RPM Technik with KW V3 fully adjustable suspension set up, 968 CS front and rear anti-roll bars, Porsche LSD, Promax exhaust and engine management chip, Performance Friction (PFC) brake pads and Castrol SRF brake fluid, 6 point Roll Centre National spec cage with harness bar fitted by Faze1 Motorsport, Sparco Pro2000 seats, Sabelt harnesses, cambelt and tensioners changed May 2014, fully road legal and surprisingly comfy on long trips, MOT till July 2016. Original and solid sills with no signs of corrosion inside, recent cavity wax treatment, bonded in place sunroof, some original carpets and rear load mat available, recent service history, clean and tidy car in good overall condition. Tel: 07966 158492. Email: rossandjo911@btinternet.com (Herts).

£9995

P1115/020



944 Turbo 1989

Guards Red with pale grey leather, superb car with Sport seats, excellent Design 90 alloys, fabulous condition as you would expect from such a low mileage car, everything works as it should – even the clock! 75K, 5 owners, 26 stamps in two service books and just had service at Zuffenhaus inc belts and rollers, new discs and pads all round, new tyres all round, more details at www.zhporsche.co.uk. Tel: 01564 823144. Email: info@zhporsche.co.uk (West Mids).

£18,995

P1115/003

9 - Apart
Parts specialists for 944
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1986 2.5 8V 944, only 95K

Genuine 95K 1986 944 Lux, 5 speed manual, 15" teledial alloys, full Porsche main dealer service history, rare big bolster electric seats in excellent condition, needs respray and recommissioning, comes with private plate, more photos on request. Tel: 0121 533 1965. Email: bsj79@hotmail.com (Birmingham).

£2250

P1115/038

968

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Midnight Blue 968

968 manual Coupe, Midnight Blue with grey leather interior, owned by me for last 6 years, 194,525 miles, MOT March 2016, excellent to drive and in good condition, Hartech engine rebuild with Gold service and full report in March 2011 20,000 miles ago, new clutch 25,000 miles ago, power steering pump replaced 500 miles ago, part respray by Porsche body shop, wheels refurbished in 2014, small rip to passenger's seat, full folder of receipts and MOTs, car is located in the NE of Scotland. Tel: 07730 487645. Email: roynbaker@sky.com.

£6750

P1115/039



968 Sport, FPSH

L-reg, 1994, 6 speed manual, 123K miles, full Porsche documented service history, 17 service stamps, Guards Red with black Recaro cloth Sport seats, 4 seats, e/w, e/sunroof, e/m, Kenwood radio/cassette player with 10 CD autochanger, 17" Cup alloy wheels, rear bridge spoiler, PAS, ABS, c/locking, Porsche alarm/immobiliser, plus all 968 Sport refinements/extras, 3 owners, all old MOTs/work bills. Tel: 07424 734139. Email: petersinghs@hotmail.com (West Yorkshire).

£12,995

P1115/040

CAYMAN



Cayman 2.7 2009

2 owners and 15K miles only, FSH, second owner purchased in Oct 2012, a Porsche fanatic now interested in buying a 944. MOT, Seal Grey metallic with black leather interior, 19" Carrera Classic alloys, sat nav, Bose sound system, built in phone, park distance control, dual zone climate control, ASR, Porsche security system, on board computer. First service at 3577 miles plus brake fluid change at Porsche Centre Exeter, second (major) service at 10,005 miles plus brake fluid change, third service (oil change only) at 13,819 miles, both at Northway Porsche; new N rated Michelin Pilots fitted 20.8.14 and 2000 miles ago by Mid Sussex Porsche Centre who also carried out a vehicle health check. Current owner is fastidious in caring for the car having had it serviced well inside the recommended mileage intervals, he has also kept it in superb condition, never taking it out in the rain and always keeping it garaged, it is regularly polished with Zymol Concours Glaze wax and the wheels protected with Rimwax, the underside and suspension also get regular cleaning sessions, all books are present with two sets of keys. If you are looking for a nice 2.7 Cayman I think you will struggle to find a better one, it really needs seeing in the metal to appreciate how good it is, if you have a really nice 944 then a deal may be in the making. Tel: 01243 774216 (West Sussex).

P1115/007

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TRIED & TESTED

With 911 & Porsche World's consultant editor, Chris Horton

BOXSTER 'S' (986) 2000/'W' 79,034 MILES £8986

There is nothing particularly unusual about this Boxster 'S' at Allesley, Coventry-based PCT – since 2012 the sole occupant of the A45 site it formerly shared with specialist dealer Autobahn – and it is all the better for that. Sometimes you just want a Porsche that – metaphorically speaking, anyway – does no more or no less than it says on the tin.

Externally this 986 is in good to very good condition – and we are talking about an eight-owner 15-year-old here. Black, whether 'solid' (as on this car) or metallic, is an unforgiving colour, invariably showing far more blemishes than a lighter one, but I can't foresee too many major complaints. There is a small dent in the trailing edge of the left-hand front wing, and the inevitable crop of small stone-chips scattered around, but no serious abrasion behind the front wheels – an increasingly common issue on both 986s and 996 Carreras.

The front bumper appears to have been resprayed recently, and apart from some seemingly fresh minor scrapes beneath it the underside is unmarked – although the vulnerable air-con pipe next to the right-hand front jacking point has been partially squashed by careless use of a jack or lift, and part of the right-hand front section of the plastic undertray is displaced. The air-con condensers could do with a thorough vacuuming, and even on this cool day the system didn't feel hugely effective. Rare, though, is the 986/996 that doesn't now show broadly similar symptoms, and they are no great problem to deal with.

The hood, apparently recently redyed, is nice, although some minor fraying and a slightly deformed – but neither creased nor cracked – plastic rear window suggests that it may have spent quite a long time in the lowered position. The edge trim behind the right-hand door glass needs assistance to seat correctly as the structure closes, but again that's a pretty common scenario these days, and something you could most likely learn to live with.

A little disappointingly, all four 17-inch wheels and their securing bolts and centre caps show signs of rather hastily applied silver paint, but there is no obvious kerb



damage. Shame, too, about the mix of tyres across the front axle, and themselves both different to the pair at the rear, but some spirited driving should see off the remaining tread soon enough, allowing you to choose perhaps a more uplifting combination of rims and rubber. Neither am I overly keen on the LED-look after-market rear lights, but a pair of good second-hand orange-indicator units will quickly and easily address that.

Inside, there are the usual signs of the modest wear and tear you would expect for the mileage – especially on handles, gear knob, centre console, lid-release levers, handbrake etc – but nothing more serious than that. The grey carpets are clean, apart from a single small burn mark, and there are some faint wiper marks on the windscreen, but again nothing out of the ordinary. Front and rear lid struts are OK, and both compartments themselves are similarly fresh and respectable.

The car drives well: a smooth and willing engine, a good clutch and gear shift, sharp and wobble-free steering, and powerful brakes – although the discs look like they could do with a hard workout on the Stelvio Pass to clean them up a bit. Like I say, nothing remotely unusual, but these days that works just fine for me. **PW**

First registered in March 2000, PCT's 3.2-litre Boxster 'S' has solid black paint with a black hood and grey leather interior.

Transmission is the standard six-speed manual, wheels 17-inch 10-spokes. Front lights are the familiar 'fried-egg' type, but rears have been replaced with after-market LED lookalikes.

Equipment includes Comfort seats, air-conditioning, a Porsche CDR-22 radio/CD player, and CDC-3 changer in the front compartment, a storage box behind the seats, wind deflector, and a top-tinted windscreen.

Car pre-dates the 2003-model facelift, so the hood has a plastic rear window, and the front and rear lids the original sill-mounted release levers rather than the

later-type electric switches; no glovebox, either, of course. Crested valve caps hint at an enthusiastic previous owner, and it's nice to see a full set of handbooks and two keys – although both of those appear to be quite well worn. Car has a good service history at both Porsche Centres and independents, and evidence of useful work done and parts fitted – most recently a new water pump (at PCT) in July this year. Was about to be serviced when we viewed it and drove it, and the MOT runs to July 2016.

Good to go, then!

CHECKLIST

BACKGROUND

A run-of-the-mill but still appealing 986-model Boxster 'S' with the standard manual gearbox and 17-inch wheels. Black with a black hood, and a grey leather interior. Eight previous owners, one or more of whom was enthusiastic enough (if perhaps slightly misguided) to have fitted LED-look rear light units. MOT-tested to July 2016, and sold with PCT's usual three-month mechanical-breakdown warranty on both parts and labour, plus six months' RAC recovery

WHERE IS IT?

PCT, which also offers full servicing and repair facilities, is on the westbound side of the A45 Dunchurch Highway at Allesley, between Coventry and Birmingham. (Access is via the entry sliproad from the A4114 Pickford Way.) To discuss this or any other Porsche in stock – all backed by a three-month warranty – call Simon Corbett on 02476 407770, or go to pctcars.co.uk

FOR

Not the most conventionally exciting of Porsches, but looks and feels like a good, honest and straightforward car that should repay caring ownership with many thousands more miles of reliable, quick and stylish service. Drives well, still an attractive colour scheme, and backed by a highly reputable vendor

AGAINST

One or two areas that we think would benefit from attention – rear lights, wheels/tyres, air-con; see text – and, like any ageing M96-engined Porsche, could be argued to be a ticking timebomb. And there are probably cheaper ones out there, too. But will they be as good?

VERDICT

Not the most eye-catching of Porsches, and a couple of minor issues to sort out, but basically very sound, and should respond very well, indeed, to a modest renovation process. Well worth a look

VALUE AT A GLANCE

Condition	●●●●●●●●
Price	●●●●●●●●
Performance	●●●●●●●●
Overall	●●●●●●●●



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BOXSTER



Boxster
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£3795 P1115/002

LES I90

'LES 190' registration for sale
Until recently on my 964 but have now decided to sell the registration, on retention certificate until 3/2/2017, no VAT or other charges to pay, telephone with offers. Tel: 07425 153194. Email: lezdawes@gmail.com.
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Porsche 911 Arsenal plate
Great plate for any Porsche 911, lovely plate for any Arsenal fan, the ultimate plate for any Gooner, player or fan with a Porsche 911, 'P 911 AFC', it doesn't get any better, it is on a retention certificate, so very easy process to become yours. Imagine this rolling up at the Emirates!! If you want it, get in touch now. Tel: 07779 767605. Email: ticktock88@yahoo.com.
£3500 P1115/001

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P911 SAB

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'GT03 DKT'
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'3 HYG' cherished registration
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£2995 P1115/046

REGISTRATIONS

P30 RSE

'P30 RSE' plate on a 2000 Jade Boxster
2.7, MOT Aug '16, 77,000 miles, nice car, service history, new hood, no offers. Tel: Lee Croad, 07436 072583.
£7500 P1115/025

911 LP

'911 LP' registration plate for sale
On retention until July 2025, assignment fee already paid, no auction/commercial sellers thank you. Tel: 07920 773345. Email: lcpearson@hotmail.com.
£7600 ono P1115/045

PARTS



Porsche/Becker CR 21 radio cassette player
Mint condition and has never been used, comes with fitting cage, handbook, code card and window decal, removable security face plate and storage box, price does not include postage and packing. Tel: 07854 685516. Email: t.hartney@btinternet.com (Herts).
£150 P1115/042

Boxster hard top for sale
To fit a 987 model in Seal Grey, collection only from Brackley, perfect condition. Tel: 07711 182888. Email: pr@trade-events.co.uk.
£1000 P1115/004

Carrera 4 blue steering wheel
Top condition. Tel: 01483 766972. Email: sue@asbmash.co.uk (Hampshire).
£100 P1115/021



Porsche 911 space saver spare wheel
Space saver spare wheel from 911 Carrera, never used. Tel: 07872 490760. Email: jimmydawson20032001@yahoo.com.
£60 P1115/010

PARTS

The following parts are for sale
Having accumulated while building my '70 914-6, as a 'package' for \$4500 + shipping. Payment: bank wire transfer or personal check (will ship after clearance). 911.613.904.01 (1): Steering lock with buzzer contact with stipulated key (includes 4 keys). 914.613.303.10 (2): T/S switch NLA. 914.613.302.10 (1): Wiper switch NLA. 914.563.082.11 (1): Roof catch rear right (new gen Porsche) NLA. 914.563.081.11 (1): Roof catch rear left (new gen Porsche) NLA. 914.552.501.10 (1): Inner glove compartment (used) NLA. 914.559.258.10 (1): Grille chrome, right, not for additional fog lights (new) OEM NLA. 914.559.257.10 (1): Grille chrome, left, not for additional fog lights (new) OEM NLA. 914.531.822.10 (2): Door seal, inner right (new). 914.531.821.10 (1): Door seal, inner left (new). 914.531.813.10 (1): Door seal, outer left (rough shape). 914.531.814.10 (1): Door seal, outer right. 914.559.265.10 (1): Roof pillar lining, left. 914.559.266.10 (1): Roof pillar lining, right. 914.563.039.10 (1): Seal, windscreen frame (new genuine Porsche). 914.631.934.11 (2): Lens, US front turn signal (no screws). 914.531.037.10 (4): Door support (used). 914.563.077.11 (1): Roll bar gasket (new in bag from 914.rubber.com). Steel roller door stay repair kits (2). Rear bumper plug, chrome, perfect condition. 911.731.015.40 (1): Sun visor support, left (new). 911.731.016.40 (1): Sun visor support, right (new). Tel: Frank Gregg, 001 828 692 3178. Email: greggfm@bellsouth.net (USA). P1115/028

Air grilles

Gen 2 Boxster, or black S, with body coloured front air grilles? Enhance your car with: Porsche aluminium look front and rear side air grilles, as new, half price! Tel: 07922 335060. Email: chrisculley@hotmail.com. P1115/029



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£50 P1115/023

TRIED & TESTED

With *911* & *Porsche World*'s consultant editor, Chris Horton

911 GT3 (996) 2004 26,765 MILES £79,995

I have always had a soft spot for the original 996 GT3. To find one as good as this left-hand-drive Japanese import, then, is hugely satisfying – despite the fact that I shall almost certainly never own it, or even one like it. I have had the privilege of washing it and photographing it – both processes, and especially the former, an excellent way of getting to know a car in a very short time; see below – and above all of driving it, even if for only a dozen or so miles. It will make someone very happy.

'As good as this'? Absolutely. You might expect that, for the price of a brand-new Gen II Carrera, and with fewer than 30K on the clock, it would be pretty tidy, but that is by no means a given with machines of this specialised nature. A lot can happen in a decade and more, even to a car standing idle in a garage. And who or what is not to say that the vast majority of those miles haven't been racked up on a circuit, with the engine bouncing off the rev-limiter? Or street racing in downtown Osaka?

Well, its condition, for a start. Plain white paint can conceal all manner of sins, but here it is almost entirely spotless – and I believe entirely original. There is some very slight abrasion on the wing edges, immediately behind the front wheels, and if you look hard enough you might just find one or two tiny stone-chips on the nose panels, but by and large the body feels like polished glass. Same story underneath: the floorpan is not just clean, or even pressure-washer-clean, but *factory*-clean. The front lip spoiler, too, shows faint signs of grounding, but so low-set is it that frankly I would be more surprised if it didn't. And its modest replacement cost makes it effectively a consumable.

Wheels, too – the 18-inch single-piece rims of the 'S2' GT3, rather than the today often troublesome split-rims of the S1 – are immaculate, and again seemingly original, and even their almost invariably corroded fixing bolts here look brand-new. The four Dunlop Direzza tyres are perhaps 50 per cent worn, but more significantly have none of the ragged edges indicative of being driven on, well, the ragged edge. The red calipers are still the bright red that comes from only moderate use, and the discs, too, are reassuringly smooth.

A long, hard look at the underside of the engine is similarly encouraging, with no sign of oil or coolant leaks (not that I would expect any of a power unit derived from the classic 'Mezger' motor, but you never know for sure), and a nice, solid-looking



exhaust system. Lifting the rear lid reveals yet more evidence of the car's remarkable originality, and no fewer than 13 decals recording the service history. I have no Japanese, but both the dates and the mileages (most recently 29th May 2014 and 38,746km) are clear enough.

Same story in the cabin. Carpets, pedal rubbers, steering wheel, gear knob and handbrake are all clean and unworn, and the leather seats would need no more than some gentle 'feeding' to make them look as new. There are some very minor scuffs on the left-hand sill kickplate. The left-hand door handle (and/or window) needs some adjustment – the glass is a bit slow to react as you lift the handle – and the right-hand glass is itself rather slow to lower fully, but neither is a deal-breaker. The front boot space is immaculate, and although again labelled in Japanese the battery looks new.

If the GT3 looks good, then the driving experience it offers is truly sublime. Like any of its kind it has the usual firm ride and 'lively' steering you would expect – or should expect, anyway; why else buy one? – but it is by no means unbearable, even on rural Hampshire's typically pockmarked Tarmac. The performance and its accompanying soundtrack are electrifying, the gear shift and clutch action tactile enough to make you use them almost for the fun of it. Brakes, as always, make you question why anyone would ever pay more for PCCB ceramics when good, old-fashioned steel discs can be this effective.

I shall leave the last word – literally – to the handwritten notes I made, sitting in the car in a lay-by. 'Perfect!!' Indeed, it is. **PW**

Plain Carrera White this second-generation, Comfort-specification 996 GT3 may be, but it is anything but plain to drive – and closer inspection reveals the effectively as-new and entirely standard condition that are guaranteed to draw any real enthusiast's attention. Inside, you get black leather Recaro sports seats with fixed-position, hard-shell backs (and black safety-belts), plus the usual black Alcantara headlining. There is no sunroof. There are no rear seats, either, of course – and reassuringly no signs of a roll-cage.

We believe the car had been fitted with a Japanese after-market radio, but a standard Porsche CDR23 head unit was positioned loosely in the fascia during our visit, waiting to be installed. Inevitably the car's early history will probably remain something of a mystery – all of the few pre-import documents it has are in Japanese, as are the handbooks – but VIN shows it to be a 2004 model (the GT3 'S2' was current from late 2003 to about 2005), and like many of 4Star Classics' cars it was sourced via a trusted contact in the country, specifically for import and sale in the UK, although with LHD that's not to suggest it couldn't just as easily go to mainland Europe. You'd best get in there quickly, then...

CHECKLIST

BACKGROUND

Arguably the 2.7 RS of its generation, the first 996-model GT3 was launched as a limited edition in 1999, but in the late summer of 2003, with 996 production heading towards a close, Porsche announced that it would be building a second batch. This car, sold new in Japan as a 2004 model, is one of those. Japan, like the UK, drives on the left side of the road, but left-hand-drive sports cars – and particularly left-hand-drive Porsches – have long been the height of fashion there. This low-mileage car was imported to order within the last few months, and will be sold with a full year's MOT

WHERE IS IT?

4Star Classics is based in Kingsley, Hampshire. Call 01420 479909, or go to www.4starclassics.com

FOR

It's a 996 GT3. Arguably not quite as iconic as one of the 1999 cars, but not far off it – and that is more than made up for by its frankly astonishing condition. Genuine low mileage, apparently rarely, if ever, tracked, and a timeless colour scheme. Price, too, of course. What might it be worth this time next year? Not less, that's for sure

AGAINST

Not a lot that should deter any genuine GT3 enthusiast. Some might bemoan the white paint, or the Japanese-language history, such as it is. Others won't want left-hand drive. Their loss; simple as that

VERDICT

No car, even a brand-new one, can be genuinely perfect (see end of main text), but this one comes just about as close as you'll get after a decade and more out in the real world. Price and performance, too, can always be lower and better, respectively, but put all of those factors together and you have a car that for the first time in this section of the magazine warrants an overall 10 out of 10 – below

VALUE AT A GLANCE

Condition	●●●●●●●●
Price	●●●●●●●●
Performance	●●●●●●●●
Overall	●●●●●●●●



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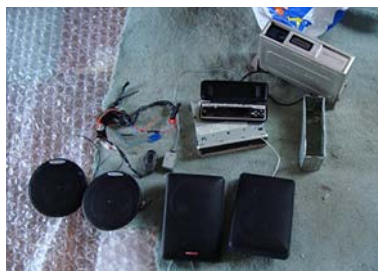
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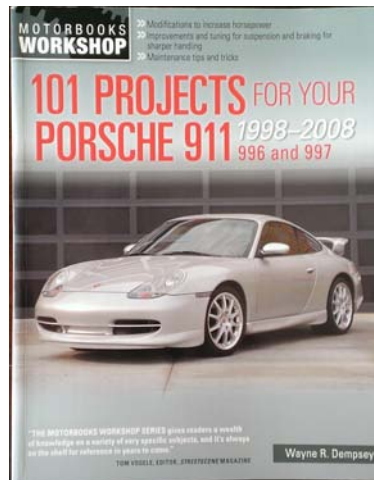
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THE WAY WE WERE

TIME MACHINE

A nostalgic look back at *911 & Porsche World* from days gone by

NOVEMBER 1999 (ISSUE 68)

It's very easy to get distracted flicking through the back issues of *911&PW* and compiling the 'Time Machine' page. Issues are generally picked at random for perusal and quite often some quite startling parallels (or is that paradox, where time travel is concerned?) can be drawn between the now and then.

When a mag has been around for as long as *911&PW*, there is a certain inevitability that there will be some cross over as we compare this issue, which, for the record is no 260, with its predecessor of 16 years, also known as issue no 68. So in this issue we have the full technical lowdown from Chris Horton on the 911's new turbo engines, and very interesting it is, too. Wind back 16 years, and Chris is still in Stuttgart on a Porsche tech briefing trip, this time to bring us the lowdown on the new 996 Turbo and its sensational new Mezger derived turbo engine, with a staggering 420bhp. Fast forward again to this issue and the new 911 Carrera 2S, with its twin turbo 3-litre engine, is producing an exact same 420bhp. That's progress for you!

Elsewhere in the November 1999 issue, we dropped in on Pelican Parts, then very much a fledgling e-commerce Porsche parts business headed up by Wayne Dempsey and Tom Gould. Back to the present and in this very issue we're back. Gosh how things have changed. Back in '99 we saw fit to illustrate our visit with crude looking web pages, such was the novelty of this internet malarkey. Now, of course, everyone knows what a web page looks like, so we've concentrated on Pelican Parts and Wayne Dempsey's collection of Gp C cars and the like. Obviously the intervening 16-years have been good for the business!

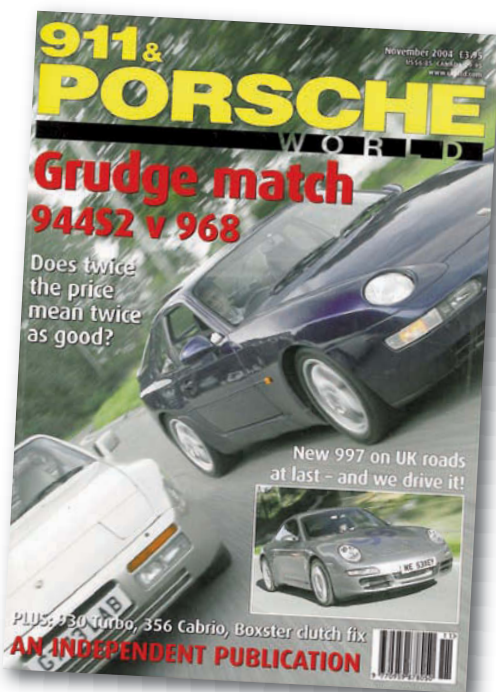
NOVEMBER 2004 (ISSUE 128)

Money, money, money. Apparently it makes the world go round. Well, it certainly makes Porsche's world go round, and in the November 2004 issue we reported on Porsche's first 1 billion euro profit. This was at the height of the Wiedeking era, when Porsche was on a Cayenne propelled roll. This announcement, at the Paris motor show, alongside the launch of the 987 Boxster, was made with much fanfare, but interestingly, we noted that some senior Porsche personnel were rather keen to play down the achievement, clearly feeling slightly embarrassed by their leader's confidence. Doubtless we will return to the fallout of Wiedeking's attempts at automotive world domination in a future instalment of 'Time Machine'!

Back in the real world – and on the front cover – we pitched the 944S2 against the 968, drove the new 997 on UK roads for the first time and got our hands dirty changing the clutch on a Boxster. Tipler managed to cram his entire family into his Carrera 3.2 for a trip to Spain, complete with roof box for their luggage. They still haven't forgiven him.



Any more parallels from the *911&PW* universe? Well, it's hard to ignore the fact that we tested two orange 2.4 911Ss, one being a road car and the other a race car, but we'll leave it at that. We further indulged the 911 Turbo theme, with a 25-year celebration and a nine page buyers' guide. Meanwhile in the classifieds, you could have bought one for £16,000. If that didn't tickle your fancy, then a lovely metallic gold 911E could have been yours for £7950. If only time travel were possible!



NOVEMBER '06 (ISSUE 152)

A leap of just two years, but significant because this is a refreshed and relaunched *911&PW* with an all new logo and look. The logo we've stuck with, but we've had a couple more redesigns since then.

To reinforce our Porsche credentials the entire *911&PW* crew gathered at Castle Combe with their respective Porsches for a photoshoot. Of those present only Paul Davies and Delwyn Mallet still retain their machines – a Carrera 3.2 Targa and a 356 Speedster, respectively. Gone is Editor Bennett's Carrera 3.2, Tipler's 964 (The Peppermint Pig) and gone is Horton's 996. Gone is Peter Morgan and his Boxster, and Seume was there, but in between Porsches at the time. Of course we all still run Porsches and our day-to-day Porsche experiences remain an important part of the mag, if only only so that readers can vicariously live life on the Porsche edge, as we explore all ways and means of running a Porsche on a real world budget.

Typically, our new-look issue remained an eclectic mix of all things Porsche. Ex F1 driver, John Watson, invited us for a drive in the 2.7 RS that he bought new in 1973. We revisited the days of mega-boost 1980s 911 Turbo Rallycross weaponry, when Finns and Swedes ruled the rough stuff, and had names like Alamaki and Nittymaki, both guaranteed to get Murray Walker in a muddle on Grandstand!

A look at the classifieds? Oh, go on then. You know the score: SCs at sub £10k, Carrera 3.2s and 964s at £15k all day long and a 964 RS Lightweight at £28,000.



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