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GT PORSCHE

FEBRUARY 2015 £4.50 Issue 159

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996 TURBO

PORSCHE'S EVERYDAY SUPERCAR TURNS FIFTEEN



02



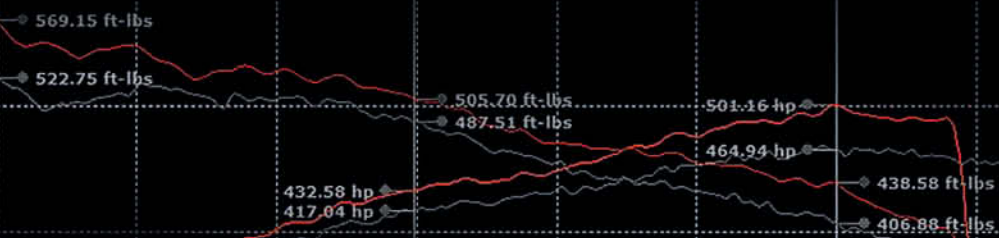
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AN INDEPENDENT PUBLICATION

ALSO INSIDE

- 996 GT2
- FORMULA TWO RSK
- TAG PORSCHE F1 YEARS
- 997 CARRERA ULTIMATE GUIDE

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Simon Jackson
Editor [@retro_jackson](#)

Issue 159
February 2015

It's hard to believe that the 996 Turbo is fifteen years old. Porsche's 'everyday supercar' was a key landmark along the 911 evolutionary timeline, and today it represents an awful lot of car for not an awful amount of money. Adam Towler remembers his first road test with the car vividly and recalled how he was blown away at the time. We were keen to discover if his opinion might have changed all these years later with the benefit of hindsight. Does the 996 Turbo deliver a rawer, or more exciting, driving experience than the force-induced 991s of today? You can find out starting on page 72.

Talking of 996 Turbo prices, it's interesting that, for a similar outlay, a 997 Carrera is now within reach. Everything you need to know about 997 Carreras is covered in our *Ultimate Guide* in this issue. The second generation 997 was the first 911 I ever drove, in fact it was the very car you see on this page from when outgoing editor Stuart Gallagher lent it to me. I'd always promised myself a 911 by the time I was 30, but as I watched that milestone birthday arrive, sail past and disappear into the distance I realised that I might have to adjust my expectations. Soon afterwards, the base-spec 997 Carrera I drove, with PDK and

that infamous 'A 911' number plate, lit up my world. It's an experience I certainly won't ever forget – do you remember the first time you got behind the wheel of a Porsche icon? Today that special feeling is one I always get whenever I slide in behind the wheel of any generation of 911.

Also in this issue you'll find an exclusive interview with Porsche 919 Hybrid Works driver Neel Jani. I was lucky enough to sit down with Neel a matter of days after he crossed the finish line to claim Porsche's maiden LMP1 win following its return to endurance racing – you could almost still smell the champagne and Brazilian party atmosphere on him. Neel is a very down to earth and personable chap, and it was refreshing to meet a modern motorsport professional who is so encapsulated by the brand he displays on his overalls. Read his thoughts on page 20.

Lastly, before I sign off, I would like to thank former editor Stuart for his hard work on *GT Porsche* during his 13-year tenure. The magazine is in great shape and I'm looking forward to the adventures, cars and stories that lay ahead.



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INDEPENDENCE
 GT Purely Porsche is published monthly by Unity Media plc for owners, drivers and enthusiasts of the Porsche marque. It is wholly independent of Dr Ing hc F Porsche AG, its subsidiaries, Official Porsche Centres and Porsche Club Great Britain. The word 'PORSCHE', the 'PORSCHE crest' and the 'PORSCHE script' are registered trademarks of Dr Ing hc F Porsche AG.

DISTRIBUTION:
 If you have difficulty finding GT Purely Porsche in the shops, please contact:
 Seymour Tel: 020 7429 4000
 PRINTED BY: William Gibbons & Sons Ltd

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GT Purely Porsche, established November 2001 (ISSN 1050 – 182X), is published on the second Thursday of every month (12 times per year) by Unity Media plc and in North America by Unity Media Communication Ltd c/o USACAN Media Dist. Srv. Corp. at 26 Power Dam Way Suite 51-53, Plattsburgh, NY 12901. This issue is on sale 08 January 2015. The March 2015 issue will be on sale 12 February 2015

GT Purely Porsche is available for international licensing and syndication.
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With an official importer now in the UK, might we soon see more Gemballa examples on these shores?
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TECHART 991 TARGA 4

TechArt has turned its hand to one of the most popular versions of a modern 911...

Porsche's 991 Targa 4 is the latest 911 to undergo the TechArt treatment. The German specialist has developed a full programme of additions to the model, from an aerodynamic package to exhaust and suspension upgrades.

From a styling point of view the exterior makeover is eye-catching, comprising a front spoiler with integrated splitter, rear spoiler, and a rear diffuser. Aero wings are integrated into the front air inlets, while a front grille syncs the car with others in the TechArt family.

As an additional option, the grille, wings, rear diffuser, rear spoiler and mirrors can be ordered either in

carbon fibre or painted forms. TechArt side skirts and headlight trims further the individualisation process.

Two wheel options are available for 991 Targa 4 customers. The TechArt Formula IV lightweight alloy wheel is available in either 20- or 21-inch sizes, with limitless colour options on tap. Coming in 21-inch size only, the second wheel option is the TechArt Formula III forged wheel, again available in a single colour, bi-colour or ceramic gloss finish.

TechArt's sport spring kit lowers the front of the Targa and includes the firm's Noselift system. This allows drivers to raise and lower the front of

the vehicle at the touch of a button, generating 45mm of additional ground clearance when roads dictate.

Ensuring the 991 Targa sounds as good as it looks, TechArt offers either a traditional sports exhaust or its valve-controlled exhaust system, which works much like the Porsche factory versions.

Naturally there are various interior permutations available, including a three-spoke TechArt steering wheel, decorative stitching and carbon fibre trim details.

For further details visit www.techart.de, UK customers can call Tech 9 on 0121 4255 911.



RPM SPECIAL PROJECT DEPARTMENT



Hertfordshire-based Porsche specialist RPM Technik has launched a Special Projects Department that will produce a limited number of hand-built Porsche models. The unique cars will be created in-house, and will feature details such as bespoke interiors, custom bodywork, paintwork, plus suspension and brake upgrades.

Of course, RPM Technik will also

offer its engine building expertise to customers too, which means customers will be able to treat the firm as a one-stop shop.

Builds can start with customer-sourced or RPM-sourced chassis, and can be created within each individual customer's budget.

For more information visit www.rpmspecial.co.uk



GERMAN 'BAHN-STORMERS' AT GOODWOOD



Goodwood has just announced dates for the tenth season of its popular Breakfast Club meets, which will take place on five Sunday mornings throughout 2015, and as usual, entry is free.

New for 2015 is 'Bahn-Stormers Sunday', which is scheduled as the season closer on 1 November. The event is sure to prove extremely popular for Porsche owners, who may see the diary date as an opportunity to give their car a final run before tucking it away for the winter months.

Before that, 'Supercar Sunday' will take place on 3 May, 'Soft-Top Sunday' will happen on 7 June, pre-1966 machines will take centre stage on 'Thoroughbred Sunday' which is scheduled for 2 August and finally Vee-Power Sunday, for all cars powered by 'vee' engines, returns on 4 October.

For more information and to pre-register your car for the event, visit www.grrc.goodwood.com



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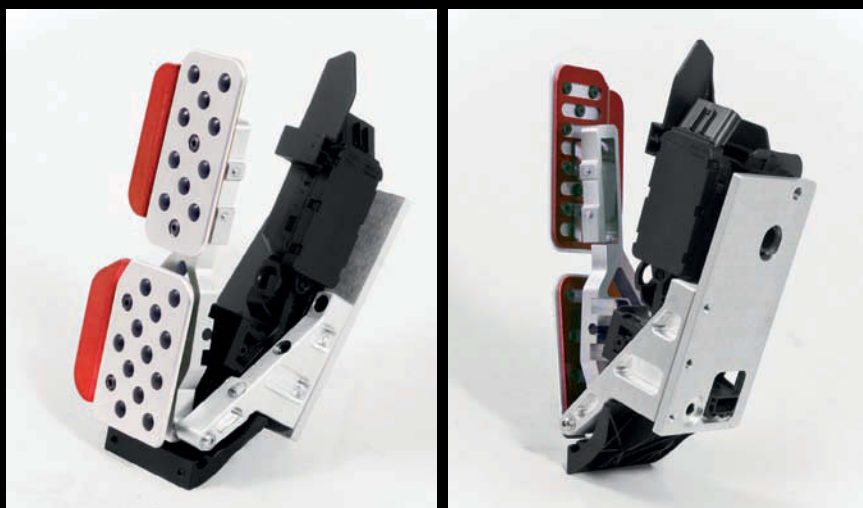
964/993/996/997

Replacing your compliant factory mounts will decrease engine movement resulting in better acceleration, handling and significantly increased shifter feel. Now we have the ultimate solution for your 911 which allows you to tune our mounts for the way you drive. Our mounts are CNC machined from billet aluminum and include three pairs of dampers in varying densities. Tune your mounts by using the softer inserts to reduce engine slop and avoid missed shifts in your street car, or utilize the stiffest inserts for a more focused track car. You can even mix and match, giving you 9 possible combinations to let you dial in our mount to your specifications.



High Density Bushings

The all new Rennline High Density collection provides enthusiasts a perfect compromise between solid bushings and standard, run of the mill OE replacements. These bushings, mounts, shifters and more will provide a more connected and planted feeling between you, your Porsche, and the road. Sport durometer pieces offer an increase in stiffness of approximately 25% over factory replacements, which is enough to significantly improve performance without added road noise and vibrations associated with solid mounts. Whether on the street or at the track, trust us to provide the best balance of performance and streetability; there is no substitute for the Rennline High Density line.



Adjustable Gas Pedal

986/996/987/997/981/991/Pano

Rennline's fully adjustable gas pedal system is an industry first, and finally solves the problem of the weak and unstable throttle assembly found on the late model water cooled cars. These factory plastic assemblies are notorious for hinge and housing failure due to its flimsy construction that was designed strictly for street use. The factory replaced these assemblies on their race cars with a true metal to metal mount system, and now so can you. Rennline's fully adjustable pedal is a very unique system that gives you that true metal to metal mount, yet retains all your necessary electronics and or cables. Additionally, this pedal system can be adjusted in any direction, not only for height and depth, but also laterally and angularly, as well as width-wise using the supplied throttle extensions. You'll never again have to struggle to heel-and-toe, or be towed into the paddock due to a pedal failure.

NEO 1:43 #58
PORSCHE 968 RS TURBO

How much? £67.99

Where from? www.grandprixlegends.com

This 1:43 resin model is new from Neo. It is a faithful reproduction of the #58 Porsche 968 RS Turbo raced by John Nielsen, Thomas Bscher and Lindsay Owen-Jones drove in the 1994 Le Mans 24 Hours.



EE BUZZARD 2
IN-CAR WIFI

How much? From £15 per month (two-year contract)

Where from? shop.ee.co.uk

Keeping everyone entertained in the car nowadays usually requires you to keep your passengers connected, and the best way to do that is give them WiFi. Designed to be used in the car, EE's new Buzzard 2 USB dongle plugs into your 12 volt power socket, and turns your car into a hotspot for up to ten phones, tablets or laptops. EE promises 73% UK coverage, and if you sign up before the end of the month, you'll get 100MB of free data to use every month too.



CLASSIC TOOL CASE

How much? From £210

Where from? thetoolbagcompany.com

This stylish leather tool bag will complement the storage space of any Porsche, both for its looks and for its primary purpose – its functionality. Measuring 44x30x12cm, it is neat and incorporates 21 fully adjustable loops to hold a good selection of tools. The lower section has a useful document pouch, space for essential spares and larger items. It comes with the option of matching tool roll and parts box, all made from dark brown hard-wearing dry milled full grain leather. YKK coil zips and quality buckles are used throughout. Each bag has a unique serial numbered brass fob, engraved with initials of your choice.

AA 2015 ATLASES



How much? From £7.99

Where from? shop.theaa.com

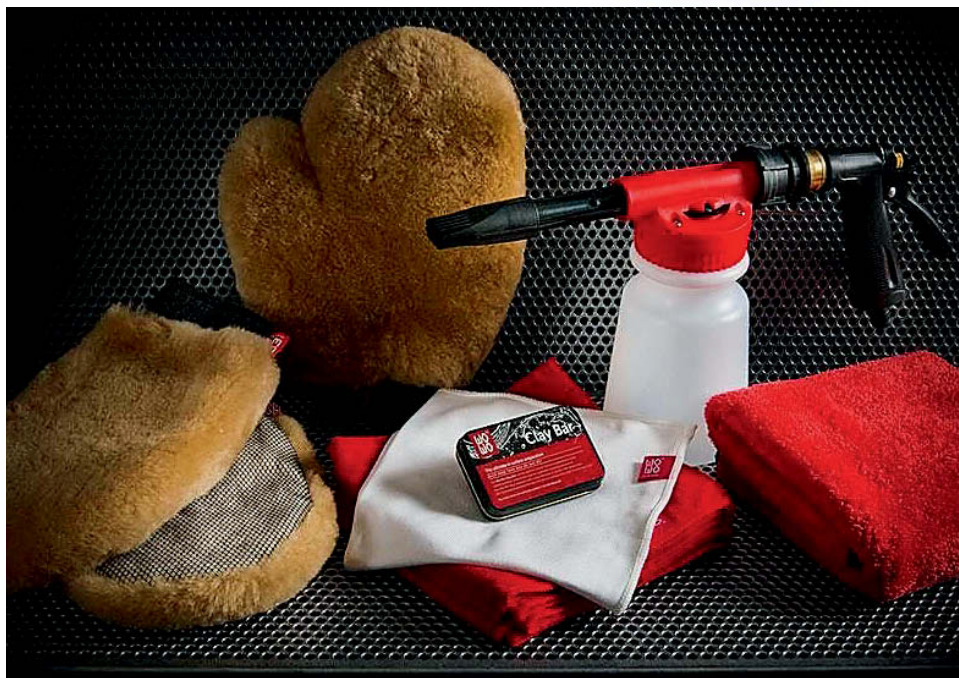
Traditionalists will scoff at the idea of a sat-nav, so it's just as well that the AA has published its latest range of atlases. There's a wide selection available, from the A5 flexibound Driver's Atlas which offers 4 miles to an inch scale, to the £18, leatherbound A4 map for your reference library. Our pick is the A3 Big Easy Read paperback (£9.99) – its maps are easy to read thanks to the huge 2.5 miles per inch scale, and it has clear diagrams for complex junctions.

WO-WO LAMBSWOOL WASH MITT WITH THUMB

How much? £16.99

Where from? wo-wo.co.uk/shop

Lambswool gloves sound like items that should be worn while out for a walk, not while washing the car, but wash mitts are the new sponges, and the latest are made with the high-quality wool of Australian and New Zealand lambs. Wo-Wo is a new brand to enter the car care fray, and its mitt has a deep pile fibres lift and trap dirt and grime, taking the particles away from your paintwork and reducing the likelihood of you creating scratches or swirl marks. Three versions are available, each with a comfort-fit cuff and a mesh drying bag. Our pick is the one with the built-in thumb, which gives greater control.



BLACKVUE DR600GW AND DR650GW 2-CH HD IN-CAR CAMERAS



How much? £199.99 (DR600GW);

£299.99 (DR650GW 2-CH)

Where from? blackvue.co.uk

You never know when you'll want to rewatch one of your journeys. It might be because you were cut up or witnessed an accident, or it might be that you want to relive a scenic drive. BlackVue's new DR600GW camera has a 2.4-megapixel front-facing camera that records in Full HD 1920x1080, and it makes up for the lack of a preview screen as there's an app for Android, iOS and Windows 8 smartphones and tablets. The twin-lens BlackVue DR650GW-2CH adds a rear-facing HD camera, so appeals to track drivers who also want to review their technique behind the wheel.

CONTINENTAL WINTERCONTACT TS 850 P WINTER TYRE

How much? From £125 per tyre (est.)

Where from? www.continental-tyres.co.uk

Continental has built on its award-winning ContiWinterContact TS 850 winter tyre. The WinterContact TS 850 P is the first tyre to drop the word Conti from its name, as part of a new naming structure at Continental. The new tyre has shorter spacing between the sipes compared to its predecessor, and – depending on the surface – braking distances have been reduced by up to five per cent, while snow handling is said to be five per cent better. Porsche has previously given Continental approval for the 830 P on the Macan and Panamera, so expect the 850 P to follow suit. The new tyres are available in 16-20-inch sizes, and prices will likely begin at £125 for a 17-inch tyre.



STEVE MCQUEEN ESPRESSO CUPS

How much? £35

Where from? shop2.porsche.com/uk

These Limited Edition Espresso cups caught our eye. Coming in a set of two, the Steve McQueen cups are made from bone china in Germany and are part of a limited run of 5000 units. Brightly coloured and sure to prove the perfect receptacle for your morning caffeine hit, they are priced at a reasonable £35.



AUTOLOG VEHICLE CHECK



How much?

£49.99 (further credits £7.50 each)

Where from? www.auto-log.com

This clever piece of kit should make the potentially hazardous task of buying a second-hand car all the easier. The AutoLOG is a small dongle device that can be plugged into the OBD port of any car, no matter what make, model or year. It then connects via Bluetooth to a free app on your smart phone. Through this, it first of all performs a basic HPI check, confirming whether the car has been stolen, written-off, the estimated value and potential running costs.

But the really clever part is that the dongle can also make a diagnostic check of the engine. The app shows you where to find the OBD port by the registration number and will also perform a battery and alternator test. It will also list fault codes and describe what they are and inform you when any fault codes were last turned off; especially handy if you suspect the car may be hiding something.

There is a one-off price for the dongle and it comes with five free checks.



CYBEX SOLUTION M & M-FIX CAR SEATS

How much? £135 (M); £160 (M-Fix)

Where from? cybex-online.com

Chucking a child in your Porsche couldn't be easier with the new CYBEX car seats. Designed for children aged 3-12 years old, the seats – which are available in ten different colours to match your interior – incorporate side impact protection to keep your little one safe. Both seats are ISOFIX compatible, but the M-Fix costs more, as it can also be used in older Porsches without ISOFIX.

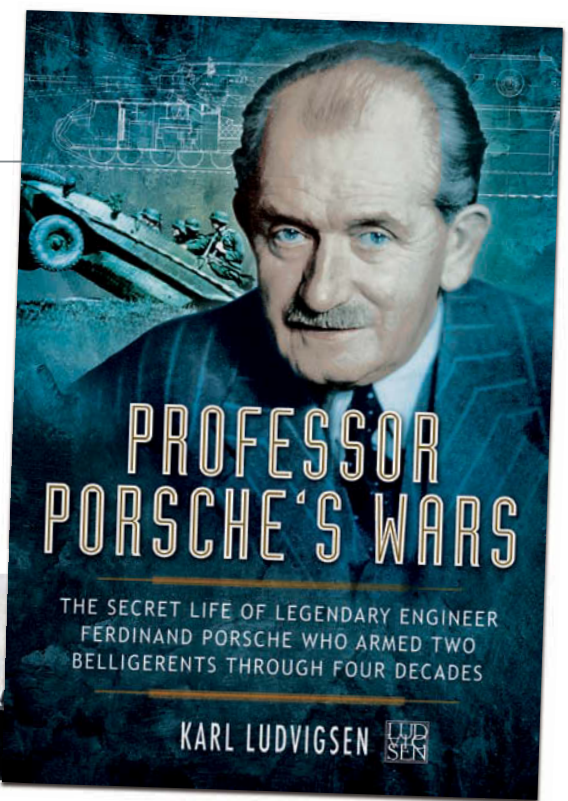


PROFESSOR PORSCHE'S WARS

How much? £30.00

Where from? www.pen-and-sword.co.uk

We're all familiar with Ferdinand Porsche's automotive design work, but an oft-forgotten side of his career saw him designing many military vehicles. This book, entitled *Professor Porsche's Wars*, is a fascinating look at his work for the military, which spanned the first half of the twentieth century through both the First and Second World Wars. This book chronicles Porsche's work for Adolf Hitler as one of his most trusted designers, where he was responsible for vehicles such as the Kubelwagen, the Schwimmwagen, and the Type 205 Maus tank. Porsche's work on aero and tank engines, and his involvement with the V-1 flying bomb, are also covered.



PORSCHE DESIGN ROADSTER LUGGAGE

How much? €625.00

Where from?

www.porsche-design.com

The new Roadster luggage 3.0 weighs around 30 per cent less than the previous series and guarantees even more comfort when travelling. The series features a main compartment with a laptop holder and built-in garment bag. Solid aluminium protectors ensure that the light, smooth rolling wheels are shielded from damage caused by steps or kerb stones.



PORSCHE DESIGN FOUNTAIN PEN

How much? €795.00

Where from? www.porsche-design.com

The Solid fountain pen is a must-have for Porsche Design fans and lovers of classic writing instruments. The fountain pen is machined from a solid piece of titanium and reflects the values of the luxury brand: purist design, innovative technology and optimum quality and workmanship. An integrated 18-carat gold nib, with its high-quality rhodium coating, completes the aesthetic.

CASIO WATCH

How much? £580

Where from? www.casioonline.co.uk

The Casio Ediface (EQB-500RBK-1AER) is a collaboration between multiple Formula One Champions Red Bull Racing and Casio Ediface.

The watch uses Bluetooth 4.0 technology to seamlessly synchronise with a smartphone and display the exact time at home and abroad. Featuring the latest retro-inspired design language from the AW14 range of motorsport chronographs, the tough, black case and bracelet contrast with the sharp gold detailing on the face. Capable of storing up to 300 separate items of lap data to be retrieved later via the Bluetooth connection, the stopwatch's accuracy is to 1/1000th of a second. Tough solar technology also ensures continuous performance whilst vibration-resistant Silicone alphaGEL elements surround the watch, making it even more resistant to shocks and potential damage.

Once you have linked this watch to your phone, should you lose the said item, simply press the bottom right button and it will sound a highly audible alert on the phone, allowing you to locate it easily – even if it has no signal at the time.





PREMIUM X 1:12 SCALE CARRERA 3.2 CABRIOLET

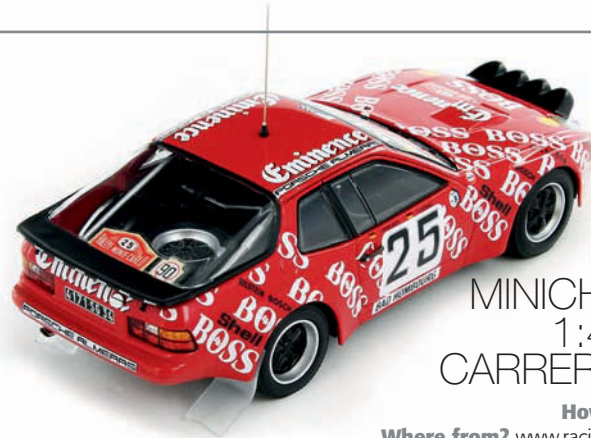
How much? £150
Where from? www.racingmodels.com

This 1:12 scale model includes some really impressive details. At 360mm long and 2 kilos in weight, it is a true, quality collectors' item, of which only 1000 have been produced. It comes with a detachable roof and replacement tonneau cover. Faithful to the Carrera 3.2 Cabrio as built from 1984 to 1989, it boasts stunning engine, suspension and interior details.



711 1:45 996 TURBO

How much? £15
Where from? www.racingmodels.com With our cover feature commemorating 15 years of the 996 Turbo, perhaps now is the perfect time to invest in a model like this. The 711 Collection 2000 996 Turbo is reasonably priced and would make a great addition to any model collection.

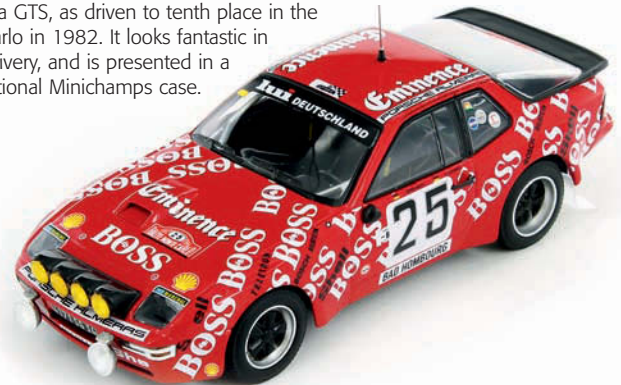


MINICHAMPS 1:43 924 CARRERA GTS

How much? £46

Where from? www.racingmodels.com

This detailed 1:43 scale model faithfully reproduces the Porsche 924 Carrera GTS, as driven to tenth place in the Rally Monte Carlo in 1982. It looks fantastic in its Boss livery, and is presented in a traditional Minichamps case.



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911 Carrera RS (93, LHD, 6-Speed)
Jet Black • Black & Grey Leather Sport Seats
18" Speedline RS wheels • Air Conditioning
111,195 km (69,907 miles) • 1995 (N)
£199,995



911 Turbo (93, 6-Speed)
Arctic Silver • Boxster Red Leather Sport Seats
Sports Exhaust • Air Conditioning • 57,873 miles
1997 (R)
£99,995



911 Carrera Supersport Targa
G-50 Gearbox • Baltic Blue • Linen Leather Sports
Seats • 16" Fuchs Wheels • 3-Spoke Clubsport
Steering Wheel • 15,765 miles • 1989 (G)
£69,995



911 Carrera 2 S (991, PDK)
Carrera White • Black Leather Sport Seats
20" Carrera 'S' III Wheels • Sport Chrono Pack
7,507 miles • 2012 (12)
£66,995



911 Carrera 2 S (997 GEN II, PDK)
Basalt Black • Black Leather Seats • 19" Turbo
II Wheels • Touchscreen Satellite Navigation
9,948 miles • 2011 (11)
£55,995



911 Carrera 2 S (997 GEN II, 6-Speed)
Basalt Black • Black Leather Seats • Sports Exhaust
Touchscreen Satellite Navigation • 31,378 miles
2011 (61)
£49,995



911 Carrera 2 S (997 GEN II, PDK)
Platinum Silver • Dark Blue Leather Seats • 19"
Carrera S Wheels • Touchscreen Satellite Navigation
38,996 miles • 2011 (61)
£46,995



Boxster Spyder (987, PDK)
Carrera White • Black Carbon Backed Bucket Seats
19" Spyder Wheels • Sport Chrono Pack with Sport
Plus • 28,739 miles • 2010 (10)
£38,995



Cayenne GTS (Tiptronic S)
Carmen Red • Black Half Leather Seats With
Alcantara Inserts • 21" Cayenne Sport Wheels
Satellite Navigation • 2008 (08)
£24,995



Boxster S (987 GEN II, 6-Speed)
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Touchscreen Satellite Navigation • 19" Carrera
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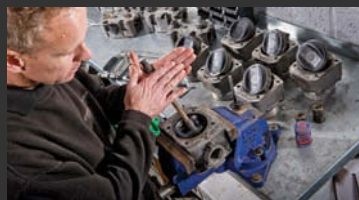
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EXCLUSIVE INTERVIEW: **NEEL JANI**

Fresh from crossing the line in Brazil to claim Porsche's maiden WEC win, we sat with Neel Jani to talk endurance racing, and his history with Porsche cars...



GT: Porsche has announced it will run a third 919 Hybrid in 2015; as a driver does this improve your chances to get results?

NJ: All of us work together as that really improves our chances of winning. It's so tough to do well anyway so having an extra car in 2015 is definitely a good thing. Obviously you have to find a compromise between drivers for the best setup, everyone has different driving styles, but somehow you always find a way to go faster!

GT: When you crossed the line in Brazil that must have been an amazing feeling, but were things dampened by Mark's accident?

NJ: Because I was leading the race at the time I was one of the first cars on the scene after the accident. I radioed the team saying it looked like a big one, and asking if Mark was okay. The team said he was talking on the radio, which means he's okay. After (Jules) Bianchi's accident in F1 we all know how serious high g-force impacts can be.

GT: Where you surprised by Porsche's rate of development of the 919 Hybrid during 2014?

NJ: When we first tested the car before the start of the season we thought 'this is going to be a lot of work!' It's not easy to build a super competitive car, but race-by-race we improved. We were always quick over one lap but reliability was our major issue.

GT: How did you overcome any weaknesses in the car and how

will what you've learnt translate to the 2015 campaign?

NJ: We quickly learnt where the weaknesses were in the chassis but our lack of experience made things tough and we struggled all season with tyre degradation. But if you look at our performances (of the number 14 car) in the last four races (fourth in Fuji, third in Shanghai, second in Bahrain, first in Brazil), we are improving all the time! We will have new chassis for 2015, the new cars are an evolution based on what we have learnt in 2014.



Top: Neel crosses the line in Brazil to claim Porsche's maiden win with the 919 Hybrid
Bottom: New editor Simon caught up with the Porsche Works driver just days after his result



GT: Based on your strong end to the 2014 season, what are your hopes for 2015?

NJ: I think that 2015 will be an amazing year! It will be mega – especially Spa and Le Mans. I'm sure Spa will be a heck of a race! For sure we'll have some strong competition from Toyota and Audi but we will have a strong car, too.

GT: Can you tell us about your history with the Porsche brand – particularly its road cars?

NJ: In the 1980s when I was three years old my dad owned a 2.7 RS. For a holiday he drove me through Switzerland in a homemade cot, strung between the 911's roll-cage – my mother and the rest of the family flew! My dad sold that car to pay for my go karting career!

GT: It sounds like you owe your dad a 2.7 RS then!

NJ: Try finding one, or at least one someone wants to sell! I've bought a 997 GT3 RS to compensate. It's the

first car I have ever bought myself. Through my Porsche contacts I have the birth certificate for the car, I really love it.

GT: You're very passionate about the brand, which is great to see in a professional Works driver these days. How does it feel to be associated with such an iconic motoring brand?

NJ: There are two brands with quick road cars, and who are also fast in motorsport. One is Porsche and I

guess we all know the other one! But to think I am a part of the Porsche story, and that we are capable of rewriting history, is fantastic.

Neel Jani has been a Porsche Works driver since 2014, partnering Marc Lieb and Romain Dumas in the number 14 919 Hybrid prototype. The 31-year-old claimed A1 GP titles in 2007 and 2008 and was crowned LMP1 Le Mans Series Champion in 2011. You can follow Neel through twitter via @neeljani.

PORSCHE EXPANDS LMP1 PROGRAMME

Porsche announced it will run a third 919 Hybrid during 2015, and it has confirmed who will lead its charge...

Porsche will field a third 919 Hybrid LMP1 car for the 2015 Le Mans 24 Hours in June. The move came amid speculation that Jenson Button could follow in the footsteps of ex-Formula One driver, turned Team Porsche Works pilot, Mark Webber, and move to drive Porsche's third entry. But, before Button's future with McLaren could be confirmed in mid-December, Porsche announced another Formula One driver, this time current, would make a surprise move to join its efforts. Force India Formula One driver Nico Hülkenberg was the surprise signing.

Porsche plans to run Hülkenberg in the third 919 at the Six Hours World Endurance Championship (WEC) race at the Spa-Francorchamps circuit in Belgium on 2 May. The event will prove something of a dress rehearsal for Le Mans on 13/14 June. As we went to press there was no

confirmation of who might partner the German single-seater ace but during a test in mid-December Team Porsche held what looked like a shoot-out between three Porsche GT drivers: Frederic Makowiecki, Nick Tandy and Michael Christensen. A further two test dates were booked at three different tracks at the time of writing.

At the test in Aragon, Northern Spain, which was also attended by current Porsche LMP1 Works contender Brendon Hartley, Hülkenberg got his first taste of the 919 Hybrid. Hülkenberg tweeted: "Lot's of new impressions in the new office... like running in the dark." Then: "Great to drive, impressive downforce in fast corners, massive hybrid power."

The deal with Hülkenberg, who will be allowed to race around his F1 commitments, is rumoured to have been born out of an approach by Porsche to the 27-year-old German

driver, with Porsche LMP1 team principal Andreas Seidl quoted as saying: "Nico showed an interest in doing Le Mans, which for us was a good sign. He's not doing it for the money but because he really wants to do it and because he is interested in the WEC, so we really like his spirit."

"He has the right attitude and understands that jumping into the WEC in the middle of an Formula One season is going to be a big challenge."

Seidl believes its work with former Grand Prix driver Webber will help Porsche to prepare Hülkenberg for the challenges ahead.

The six drivers for Porsche's two full-time WEC entries in 2014 have all been resigned for 2015 and comprise: Timo Bernhard (Germany); Romain Dumas (France); Brendon Hartley (New Zealand); Neel Jani (Switzerland); Marc Lieb (Germany); and Mark Webber (Australia).

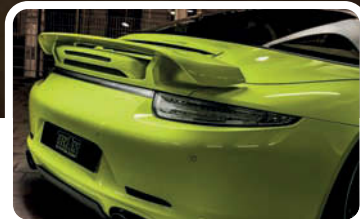


Hülkenberg was impressed by his first taste of the 919 Hybrid in testing back in December



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"This interactive experience enables visitors to explore the technical performance of Porsche"





Sound Check

Sound Of Porsche is a multi-sensory 'pop-up' store designed to communicate the passion of Porsche to the public.

Story: Simon Jackson Photography: Porsche

For all the things they do so well, magazines can never quite effectively convey the hair-raising, smile-inducing and ear-bleeding symphonies that accompany Porsche cars. Naturally I'm an advocate of print publications, but every so often it would be nice to provide a feature spread with an additional audio output – perhaps something along the lines of those tacky birthday cards you can buy which play a trebly, tinny tune when you open them... only better. 'Sound Of Porsche' aims to convey the Stuttgart sports car soundtrack in a unique, contemporary and highly innovative way. And there are no musical birthday cards in sight.

Described as a 'interactive multi-sensory brand experience', Sound Of Porsche is a multi-media 'pop-up' store that began its tour of duty in New York in September and found its way to London's Westfield shopping centre in Shepherd's Bush back in December. Dressed like a cross between the trendy corner of Urban Outfitters and an ultra-slick Apple Store, Sound

Of Porsche allows visitors to journey through the brand's past, present and future using modern technology, connecting them with the Porsche story.

Users are welcomed with the hint of a retro cool record store, but instead of vinyl LPs they can choose from a range of faux record sleeves at individual media stations, each sleeve representing a Porsche film on a different topic. Covering the bases of Porsche's key messages; intelligent performance, the Porsche principles of design, how its work on the race track translates to the road, and the brand's overall historical fervour, each film is experienced through high quality Bose headphones. There's everything covered from personal Le Mans stories to the making of Sally Carrera – the animated 996 from Disney's *Cars* movie.

The concept aims to capture the existing Porsche enthusiast, and the casual impartial passer-by in equal measure, making Porsche more accessible to those who might have seen it in a stuffy light in the past. The environment boasts a sophisticated aesthetic, designed



by Walter Knoll, populated with glossy Porsche coffee table books, a drinks bar and some Porsche Driver's Selection products which are available to purchase.

Bernhard Maier, Member of the Executive Board for Sales and Marketing at Porsche AG commented: "This new marketing format enables us to connect with young and young-at-heart visitors in an appealing way. We are helping people to better understand the brand through our fascinating stories," he said, explaining the idea behind this initiative. "This interactive brand experience enables visitors to explore the technical performance and stylish design of Porsche in depth. It's an innovative way of telling and experiencing the story of our brand."

In addition to the media stations, visitors are able to step into the Sound Lab Virtual Drive Experience, again delivered through a top-draw Bose audio system. In this sound-proofed room sits a new 991 GTS that has been wrapped with a special material allowing it to display projected images. Users select from a touch-screen menu of 'trips' they would like to see projected on to the car (such as a blast through the countryside or a hot lap on circuit) and hear the sound it would make booming around the room. The idea is effective and the sound of the 911's 3.8-litre flat-six is ultra realistic. Using 3D visual mapping, it allows the GTS to depict images from whichever environment is selected, almost as a reflection – clever stuff.

Outside of this experience, the Design Corner features a chalkboard where visitors are encouraged to

draw what Porsche means to them. Artists can then share their work via Instagram with the hashtag #soundofporsche to be in with a chance of winning a rather special prize – in London that prize was an ice-driving trip with Porsche Camp4 in Finland, with further runner-up prizes also on offer. Adding to the social media element of the store, Porsche invites anyone visiting Sound Of Porsche to share their experience with the same hashtag, a compilation of comments and images can then be found at www.porsche.com/soundofporsche.

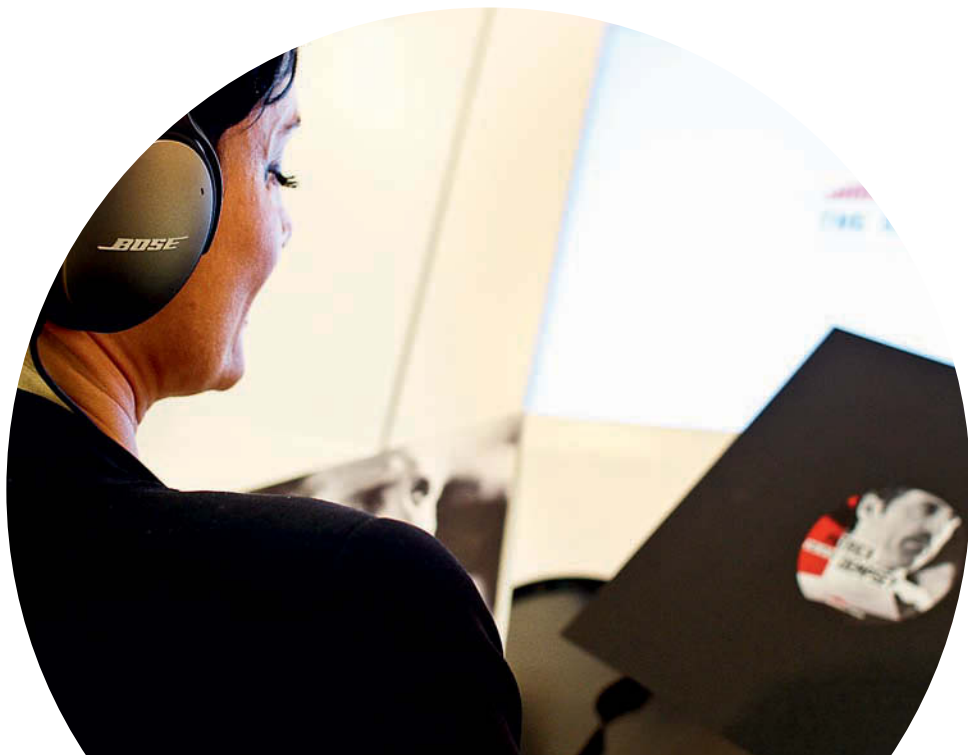
Providing a fascinating insight into the world of Porsche, the passion that drives the brand and the soul behind its cars, Sound Of Porsche goes a long way to showcasing the intangible feeling that we, as enthusiasts, experience. The concept is also an intriguing glimpse at the emphasis Porsche places on communicating with a younger audience, an audience it believes could become future advocates for its brand.

The venue itself is also an interesting move into the world of retail stores for Porsche. A retail presence is increasingly seen by motor manufacturers as the future of selling cars outside of the traditional dealership model, and a key way to brand-building in an environment which shoppers view as 'their' space – somewhere they feel comfortable. Could something like this be the future of buying a Porsche?

The Sound Of Porsche moves on as quickly as it arrives, its next stop will be in Shanghai during 2015 ○



“We are helping people to better understand the brand through our fascinating stories”



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"It seems in the subsequent rush to produce a car that sells, the very essence of the car's sportiness has evaporated"



I came across a new Boxster recently in my local Waitrose car park. The upmarket grocer's parking lot is frequently a microcosm of automobile pragmatism and aspiration. But sat among the usual mix of better quality family saloons and hatchbacks, I was struck by the fact that the Boxster drew attention to itself just by being bigger than it should be. And my first impression was that this once great roadster has become a 50 grand overweight lifestyle accessory that public sector executives might buy with their performance bonuses.

We've seen a trend in modern car design towards, well, not very elegant, outside style. On the top of that list by a long way is that butt ugly big Mini and the Range Rover with the crushed roof, both of which show how far a brain dead styling department can go in pursuit of the best possible taste (with thanks to Kenny Everett). These cars offend the eye when you see them and I'm on the edge of classing the new Boxster in that category.

Porsche's once-lauded roadster has mutated completely away from the gorgeous concept car that was shown first in the UK at London's Design Museum in 1993. The sports car with the irresistible name that cleverly combined a boxer flat-six with a

roadster body ticked all the boxes for visual elegance and performance design. By its launch in 1996 it had grown somewhat. If you'd seen the concept car you had a tinge of temporary disappointment, but we knew this was the car on which Porsche's future depended. If it needed the slightly increased girth in the name of safety that was okay. It was still a great-looking package.

The Boxster was easily the most agile, sporting and confident open two-seater you could buy with any money. As usual with any good Porsche, there were calls immediately for a more powerful engine, but that only underlined how good the rest of the car was.

I've since had two long Boxster ownerships and loved them for their driving involvement and driveway presence. It made the cheaper offerings look crude and the top-end roadsters look like old men's chariots. And if the 986 models were good, the 987s were even better.

There have been a few bugs along the way. In 1996 nobody, except probably the engineers, knew how cheaply the engine (a common design with the new 996 model) had been designed. The obsession with low cost was an unfair disadvantage on an

otherwise brilliant car, and dragged Porsche's reputation for quality down from heights hard won in the days of the 944 and 968. But a much greater problem was overtaking the Boxster. Porsche itself morphed from being a small, inventive car maker that punched above its weight to being the puppet of an automotive Goliath. The 'marque' gave way to the 'brand' in the boardroom and Porsche's product philosophy changed fundamentally. After Mr Wiedeking gambled away the family silver, career VW moguls took control at Porsche and have focused only on production numbers.

Brand became king and in Porsche's case there was a gold plated heritage just waiting to be exploited. As if to justify a new direction that said the Porsche badge could be put on anything with four wheels, requests for huge numbers of cars were coming in from new developing markets. The new buyers really only wanted a Porsche car for that perceived elite status – and the bigger the better. The changes in the product mix have upended Porsche buying habits in its traditional markets, disappointing many repeat buyers but attracting many more nouveau lifestyle buyers. As far as the board and shareholders were concerned, that has been a great result.

Ten or 20 years ago I would have been excited to see a Porsche in among the humdrum fare of my local supermarket car park. Okay, I admit I'm a sports car snob, but when I saw the new Boxster recently in the same setting, it looked just like a big Aston or Jag convertible. I felt let down. It may be harsh to say it, but so derivative is its modern corpulent styling that you really do need to read the over-detailed description on its tail to know what you are looking at.

I fear that after nearly 20 years in production, this is a Porsche that has lost its way – or rather been driven off track by trying to appeal to the wider mainstream. I'm left asking where the Boxster philosophy that we saw back in 1993 has gone. It seems in the subsequent rush to produce a car that sells to a significantly larger number of people, the very essence of the car's sportiness has evaporated like frost on a sunny winter's morning.

When I look at a sports car like the Boxster used to be, I need to feel the electricity beyond the badge that hints at an uncomplicated but thoroughbred driving experience. I'm not so sure the new Boxster is that car any more ○

The views of the author are not necessarily shared by the magazine.

Guilt Trip



With the benefit of hindsight, can a mildly modified 996 GT2 change Andrew Frankel's opinion on a Porsche very different from the current crop of 911s?

Story: Andrew Frankel Photography: Gus Gregory





Guilt is a terrible thing. It eats away at you. The only thing I've ever stolen in my life was a Curly Wurly chocolate bar when I was about nine years old and I felt so bad about it that when, 20 years later, I passed the scene of my crime I tried to repay my debt, had the shop not turned from a newsagent to a launderette in the interim I would have succeeded.

I also thought I felt guilty about the 996-generation of Porsche 911 GT2. I only drove one once, when it was new in 2001 and I didn't like it. How could I not like a Weissach-tuned 911 with rear-wheel drive and 462hp, more even than a 959? Although never intended for racing, the GT2

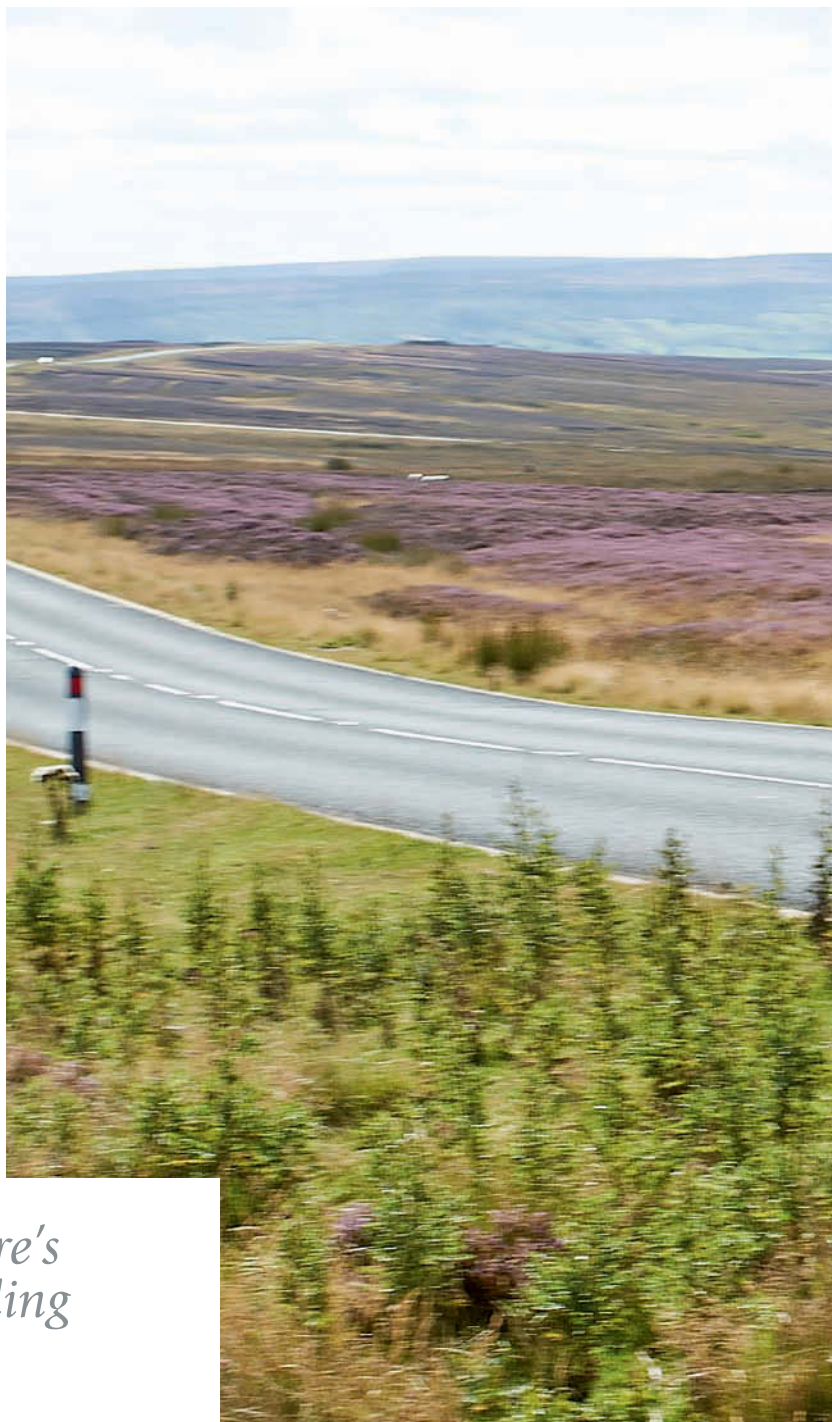
was so much more than a revved-up, stripped-out Turbo. All the hallmark touches of the motorsport department were there, from its multi-adjustable roll bars to the variable camber struts. You could order one with a fire extinguisher, roll-cage and fireproof upholstery, while the stuff it lacked such as front-driveshafts, traction and stability control was more evidence of the focus and dedication of the team behind it.

So from that day until I borrowed a mildly modified example from Specialist Cars of Malton, I'd feared I got it wrong. Misread the signs. Got out of the wrong side of bed that morning or even had one too many the night before. It happens. Show me a motoring

journalist who's been reviewing cars for a decade, and who reckons he's never misjudged one, and I'll show you someone so deluded they have no business being a motoring journalist.

My uncertainty about the car meant I did even more than the usual amount of due diligence before I headed north. I even read some other contemporary views of the car which is something I'd normally never do for fear of clouding my own judgement, but I was interested: was mine a minority of one? It turns out it was not: while some hacks seemed predictably overwhelmed by the power and speed of the car, at least some of the voices I trusted most questioned the car and Porsche's approach





There's no linear shove, there's just an almighty wallop to fling the GT2 down the road

to it. It wasn't a road legal racing car which is the best description of a 993 GT2, the only previous car to bear the badge, but nor did it seem to be a track-savvy road car. In fact it seemed a mess.

It is this reputation as the least clearly resolved of all the Porsche GT cars that lies behind the fact that this 40,000 miler with a completely rebuilt engine is priced at £50,000. The fact that it's mildly modified with the engine remapped to provide about 500hp, 19-inch multi-spoke rims, a sports exhaust, that Gemballa rear wing and colour-coded air intakes, wheels and mirrors probably adds nothing to its value – indeed if you set it back to factory standard you'd probably be able to charge

more for it. But with factory Club Sport seats and harnesses plus an FIA roll-cage, you can't say it doesn't look the part. But can it deliver?

On our way from Malton to my favourite North Yorks moors roads I'd like to say it was a friendly and cooperative companion, but I can't. The GT2 was curmudgeonly bordering on the cursed. The ride quality was uncompromising, the engine unwilling to prise itself from its off-boost languor. Those fat front tyres seemed better at following cambers than the road itself and those Club Sport seats gnawed away at my, ahem, fuller frame. So far was resolutely rejecting the too-often pedalled notion that all 911s make

perfectly reasonable everyday cars. They don't.

I'm not sure why I was so surprised. It appears I'd forgotten that the most uncompromising water-cooled 911 I'd ever driven was not a 997 GT2 RS, but actually a 996 GT3 RS. It felt more track-focused than any 911 I've driven since, including the 997 GT3 RS 4.0 and GT2 RS. And this GT2 comes from that era of comical Weissach nuttiness.

So what's good in here? The six-speed gearbox is splendid, and the way it darts into corners even taken nowhere near the limit is encouraging. One thing is clear: when we get up on to the moors, I am going to have my hands full.



Which, of course, is exactly as you'd want it, and precisely as Porsche planned it. The very reason Porsche deleted those front driveshafts and swept away all the electronic safety nets is because it wanted to put nothing between the driver and the driving experience. In this GT2 like no other 911 I've driven, save its forebear the 993 GT2, you are utterly alone. Screw it up and you'll have absolutely no one else to blame.

It's quite liberating, really. Children left alone on climbing frames fall far less often than those with anxious parents standing arms outstretched beneath them. They create a sense of security that is, if the average parent is anything like me,

entirely false. If one of my children fell off a climbing frame all my presence would ensure is two trips to A&E rather than one. Left alone to confront the hideous consequences of getting it wrong, they'll still go just as far, but take more care getting there.

So it is with the GT2. When the roads finally clear and I'm able to let it go, three things become immediately clear. First, this car is fast, and I mean properly fast and by the standards of 2015 machinery. Even without this particular car's engine mods, standard GT2s would pop four-second runs to 60mph and that, remember, is without four-wheel drive, launch control or

seamless shifting from a paddle-shift transmission. This car feels quicker than that.

Second, this car is also old school. By the time the GT2 came to market, Porsche had been bolting turbos to 911s for a generation but the electronics are still a dozen years old and they feel it. The power comes at commendably low revs but there's little that's subtle about it. There's no linear shove or inexorably increasing urge, there's just an almighty wallop to fling the GT2 down the road. You might call it crude and I won't disagree, but it's also thrilling in the same way as is a roller coaster that's just been cranked up to the top of its run and is teetering on the

edge before crashing down towards earth. You know what's going to happen and there's damn all you can do about it. Except lift, of course. And what would be the point of that? There's no happy middle ground with this car, no space between disinterested truculence and balls-to-the-wall aggression you can both happily occupy together. You drive it fast and hard or there is simply no point in getting it out of the garage.

So I did. And only now did those old feelings start to return. I'd expected it to feel ragged compared to a modern Porsche GT car because I have the benefit of that hindsight but there's

something else here too. It's not just a bit wayward, in the same way as uncle Harry, the perpetually drunk, Hawaiian shirt-wearing family black sheep is almost endearingly wayward. The GT2 gives the impression that if you gave it a long and sharp knife, it would take the greatest pleasure in plunging it between your shoulder blades. Which isn't very endearing at all.

But it is interesting and it is challenging. And it makes you a better driver. You find yourself thinking about the simple business of driving in a way you don't have to anymore, even in a modern GT3. You need to read the road to see

where the grip is, you have to manage the car's mass, sacrifice some turn-in speed and make it back by getting on the gas early and exploiting its phenomenal traction. In the wet I expect it would focus your mind even more.

So the car is the same old menace it always was. But its context has changed. As a new car it was seen as the best Porsche could do, the flagship model, the car that spoke more about Porsche's capability for engineering a pure driving machine than any other. And the picture it painted wasn't that impressive, so we said so. Now it's not that at all – it is a curio, a blast from Porsche's past here



today to remind us of a different kind of Porsche, a car you could not trust and which was all the more exciting for that.

And that's the point: the GT2 is not a thrilling car despite its failings but because of them. Drive it fast, feel you're on top of it and you'll have a different kind of satisfaction at journey's end than that you'd enjoy in a modern GT3, but it's no less real for that. Truth is, like many wicked pleasures that probably shouldn't be allowed, it is hard to resist being drawn in by the 996 GT2. You just need to make sure it doesn't spit you out the other side too ○

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TAG

You're It

Despite its success in sports car racing, the McLaren-TAG partnership of the 1980s was Porsche's most successful adventure at the pinnacle of motorsport – Formula One...

Thirty years ago, in 1984 and 1985 to be precise, McLaren won back-to-back F1 constructor's World Championships for the first time in its history. It won both drivers' titles too, and would win a third in 1986. It marked a spectacular return to form from an F1 team that had fallen equally spectacularly off the pace following the departure of its superstar driver, James Hunt, at the end of the 1977 season. Only once in the following six seasons had it finished better than fifth in the Constructors Championship, whereas in the previous six seasons not once had it fallen out of the top three. What brought McLaren back to the top? Some will tell you it was the carbon fibre chassis it pioneered, but that had been racing for three seasons before such unprecedented success visited the team. I suspect a far more real difference was made not by the car, but the engine that powered it. A Porsche engine as it happens.

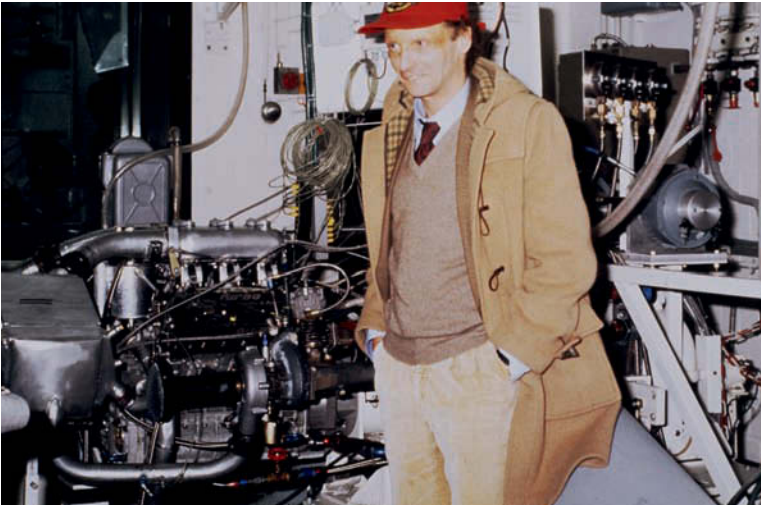
If there was ever any surprise at Porsche's participation as an engine supplier in F1 during the 1980s, to me it is not that it took part, but that it took so long to get around to it. I say this not because I think Porsche and F1 are natural bedfellows – their time together in the 1960s suggests they were anything but, because for a while at least they had a clear advantage over the rest of the field.

People call the rules that governed F1 from 1966 the '3.0-litre formula' because for its first decade that's precisely what it was. In fact the regulations always provided for an alternative power supply, namely a 1.5-litre forced induction engine. No one built a turbo motor because while there were some clear potential benefits in the size, weight and power of such an engine, the downsides in terms of mechanical complexity, unreliability and lag were too great to be considered.

But then in another formula in a land far, far away, one company decided to see what this



Story: Andrew Frankel
Photography: Porsche Archive



turbo technology had to offer. That company was Porsche, the land was the North American continent, and the formula the Canadian American Challenge, known as CanAm. Porsche's humiliating dominance of that series in 1972 and 1973 with what were then the most powerful racing cars ever constructed has become the stuff of legend. So, Porsche knew turbocharging unlike anyone else. What better engine supplier could there be to a team prescient enough to spot the potential of this newfangled science?

The problem was that very few did. We all remember the turbo-era of F1 as one of cars with 1200hp engines that could spin their wheels in almost every gear, even in the dry. But it wasn't always like that. When in 1977 Renault bravely became the first team to race a turbo F1 car, its

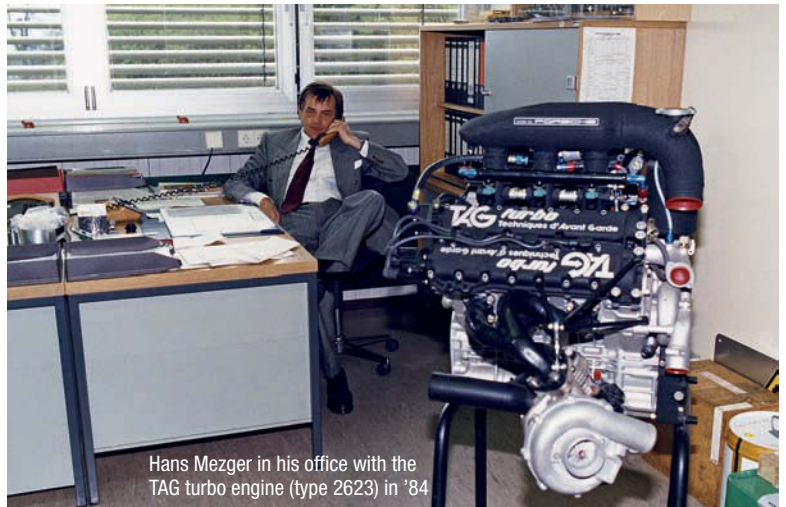
RS01 offered around 500hp, which was probably around the same as a 3.0-litre Ferrari flat-12 motor of the era – and little better than the Ford Cosworth DFV could offer. Worse, it had horrendous throttle response and was in the habit of unstitching itself. Even when enough power and reliability had been found for it to start winning races in 1979, many were of the view that turbocharging was a dead-end for such cars, among them Porsche. Sure the 917/30 had 1100hp, but it came from an engine with a 5.4-litre capacity: a 1.5-litre engine with the same specific output would have just 306 brake horse power...

The turning point was 1981. Now not only did Renault have a turbo engine, but so did Ferrari, and both were winning with it, Ferrari despite its 126CK possessing all the elegance of an elephant

on roller-skates. Brian Hart had designed a four-cylinder engine for Toleman and BMW was to supply Brabham from the following season. The rush to turbo power was on.

For McLaren there was no obvious supplier. It could hardly have Renault or Ferrari engines and BMW was exclusive to Brabham. With no powerplant available, it would have to have one made. From scratch. The only clear advantage was that if a partner could be found and the finance sorted, the engine could be designed not as some off-the-peg one-size-fits-all motor, but to the precise requirements of McLaren chief designer, John Barnard.

McLaren was now run by Ron Dennis, and it seems he knocked on near enough every door only to have each one slammed in his face.



Hans Mezger in his office with the TAG turbo engine (type 2623) in '84



Keve Rosberg follows team-mate Alain Prost at the 1986 Monaco Grand Prix

Indeed it was more in the spirit of having nothing left to lose that he rang Porsche. Who also said no. Weissach might have once known turbocharging, but the game had moved far beyond the point they'd reached a decade earlier, the flat-six was the only race engine on the peg and it was clearly unsuitable for such an application. Crucially at Porsche there was neither the money to develop an all-new engine, nor the inclination to race in a discipline the works had avoided for almost 20 years.

I expect Porsche did not see Ron's next move coming. He agreed to pay Weissach to design and develop the engine, and that was an entirely different matter: McLaren would then be a client and the engine a paid-for engineering project. That Porsche could do.



All Dennis had to do was find someone to foot the bill. And in Mansour Ojeh, he found him. Ojeh was (and is) a Saudi venture capitalist with a company called Techniques d'Avant Garde (TAG for short) which was already sponsoring Williams. Ron could have simply tried to nick the business and use TAG money to pay for Porsche's engine, but he'd just taken over McLaren and had grand and long-term plans for its future. So instead he decided to look at a potential tie-up in a more strategic sense. Rather than simply sponsoring McLaren, Dennis offered Ojeh the opportunity to buy into the company and put TAG's name not just on the car, but on the engine too. TAG ended up with 60 per cent of the shares in McLaren, Ron ended up with the finance for

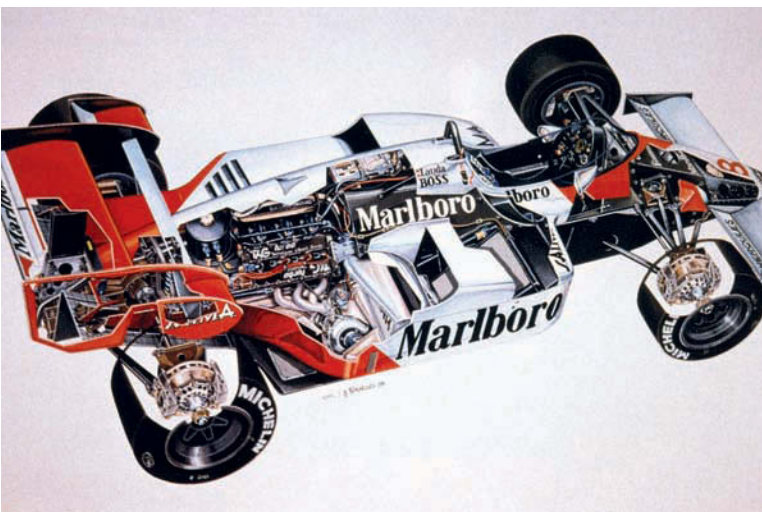
his engine and a long-term business partner, that to this day, continues to own a quarter of the shares of the McLaren Group.

What sort of engine should it be? All options were examined and a V6 settled upon because it seemed to provide the best package in terms of size, shape, power and fuel consumption. Unusually, it was to have an 80-degree vee angle to provide optimum space beneath for Ground Effect venturi rather than the 60-, 120- or even 90-degree vee convention would suggest for such an engine. Had Porsche or McLaren known such venturi would be banned for the 1984 season, the engine would have been designed differently.

So the scene was set. Porsche went to work on a schedule that would see its engines in the back

of the McLaren MP4/1 from mid-season in 1983, allowing time for them to be debugged and made durable before a proper assault on the F1 championship in 1984 in the entirely different MP4/2 chassis for which it had been designed. The engines would display the words 'TAG Turbo' on their cam covers, all reference to the company that actually designed, developed and built them relegated to the plenum chamber where a small sign saying 'Made by Porsche' could be found.

The engine was ready for testing by the spring of 1983, and instead of handing it over to McLaren for installation in an F1 car, Porsche seemed unable to resist the temptation to first run an engine that was hardly to bear its name in





Bottom right: John Wetson evaluates the Porsche V6 bi-turbo at the Weissach test track in June '83



a car that undoubtedly did. Which is how it came to pass that the first car ever to be powered by the TAG Turbo motor commissioned by McLaren was, in fact, a Porsche. A hack 956 as it happens. It was not to run in a McLaren until the summer.

The engine's race debut came at Dutch Grand Prix in Zandvoort in late August. Just one engine was available and it went to superstar driver Niki Lauda, who nevertheless was able only to qualify in 19th position on the grid, four places behind team-mate John Watson in the standard, Cosworth-powered McLaren. According to Karl Ludvigsen's *Excellence Was Expected* even at that point the TAG V6 had 715hp – which was probably 200hp more than Cosworth's DFV on the sunniest of days, but it seems the car in which

it was installed was not in a position to deal with it. Lauda retired after just 25 of the 72 laps with brake issues – they were ultimately never designed to cope with such power and well and truly cooked. The rest of the season was characterised by a lack of reliability, though in the last race of the year in South Africa, Lauda's McLaren was faster than all bar the Brabham-BMW of Nelson Piquet – before retiring once more.

McLaren fronted up in Brazil for the first round of the 1984 season not only with the brand-new bespoke MP4/2 chassis, but with a new driver too. Alain Prost replaced Watson as Lauda's partner. Astonishingly, over the winter alone a further 100hp had been found and McLaren, for the first time since Hunt's departure, looked like

it might be in for a tilt at the title.

In fact there was no contest at all. The Porsche-powered MP4/2 lifted McLaren not back to where it had been in the Hunt era, but far beyond and on to a plane enjoyed by few F1 constructors up until that time. In a 16 race season just four failed to fall to one McLaren or the other. In the end Prost missed out on his first World Championship by a mere half point (thanks to the curtailed race at a drenched Monaco), leaving Lauda to claim his third and final title. In the constructor's championship, the team known as McLaren-TAG Porsche scored 143.5 points, smashing both the outright record for the number of points scored in a season and the margin of victory over the second-placed



manufacturer. In this case that was Ferrari, which scored a trifling 57.5 points.

It was clear the car and engine package had a vast advantage over the rest of the field so changes to both over the winter were limited. Even so, power went up again and by the start of the 1985 season over 900hp was available in qualifying trim. It was a far tougher season, the opposition in general, Ferrari and the Honda-powered Williams in particular, rising strongly to the McLaren/Porsche challenge. Poor reliability and bad luck ran Lauda out of the reckoning early on, but the fledgling 'professor' Prost kept his head to win six times and even though that became five when he was disqualified after the San Marino Grand Prix for his car being underweight, he did enough to secure his first world title and for McLaren to retain the constructor's title, albeit by a slender eight point margin over Ferrari.

Lauda retired for good at the end of the season, so former world champion Keke Rosberg joined the squad, which soon turned out to be a retrograde step. The Finn, also looking towards retirement managed to get on to the podium just once all season following Prost home at Monaco

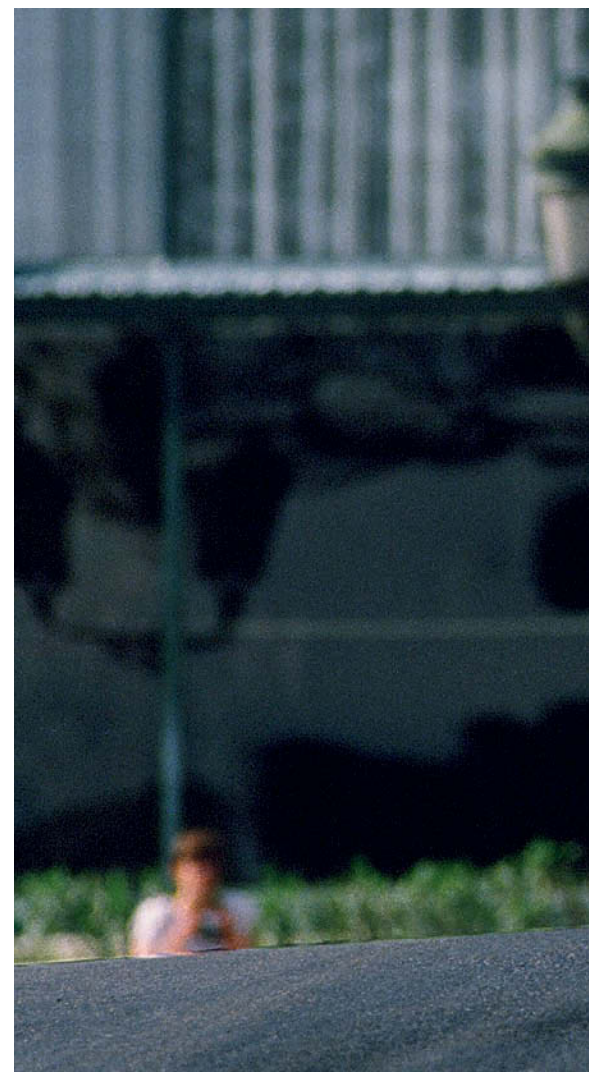
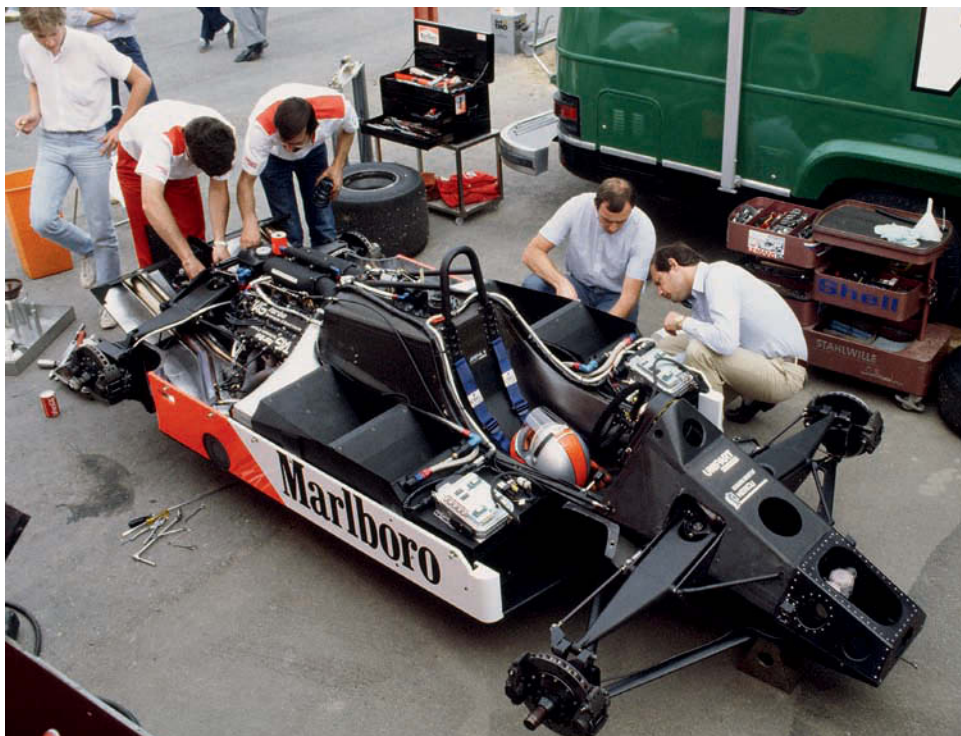
to the team's only one-two of the year. Moreover the Porsche engine was now probably one of the less powerful engines on the grid in this season where F1 engines had more power than any before or since. An awful lot of rubbish is talked about just how much power these engines produced, not least because teams were happy to leak information open to misinterpretation and to let the rumour mill do the rest, but certainly the four cylinder BMW motor in the back of the Brabham was good for over 1300hp in qualifying and over 1000hp in race trim with Honda's V6 probably not that far behind. Ludvigsen says the Porsche engine didn't break four figures, even in qualifying.

The result was a package that was clearly not as quick as the Williams-Honda, whose driver line-up of Nigel Mansell and Nelson Piquet may have been a PR man's nightmare, but was devastatingly effective on track. So hats off to Prost for steering a course through all this and arriving in Adelaide for the last race of the season with at least a mathematical chance of winning the title.

You'll have seen what happened next on the telly. Mansell had a substantial points advantage and for Prost the maths was simple and stark. To

claim the title he had to win the race against the far faster Williams and hope Mansell placed fourth or worse. And with 63 of the 82 laps remaining that didn't look like it was happening. Prost was second, but Piquet led with Mansell safe and sound in third. But then Mansell's left rear tyre exploded at 180mph putting him out of the race while Piquet was gaining on Prost at a rate that left no doubt that had the race taken its natural course, Nelson would have won and Nigel would have been champion. But in a move that did the team huge credit, Williams called Piquet into the pits for a precautionary tyre change and despite closing the gap to Prost from 15 to little more than four-seconds, the Frenchman hung on to win back-to-back world titles and the third driver's championship in succession for a Porsche-powered McLaren. But without Rosberg contributing meaningfully to the results, Williams ran away with the Constructor's crown.

It is too simplistic to say that, at the start of their relationship, the McLaren-TAG Porsche team won titles because of its engine and at the end despite its engine, but a slew of engine and alternator belt failures for Prost and new arrival



Stefan Johansson couldn't disguise the fact that the 1987 McLaren-TAG Porsche MP4/3 was, at best, the second best car out there. Moreover the gap to Williams was greater than ever and greater than even Prost could bridge. Being Prost, he still managed to win three races but behind this success lay a harder truth: in 30 race starts that season, the McLarens recorded just two fastest laps and not a single pole position. For Ron Dennis at least, the writing was on the wall.

And the words it was spelling said 'Honda.' Having poached TAG and Rosberg from Williams, Dennis now nicked their engine courtesy of a useful young driver called Ayrton Senna, who'd been doing spectacular things in a Honda-powered Lotus. Between him and Prost they would win all bar one of the 15 races of the 1988 season – but that is another story for another magazine. As for Porsche, it closed its account as an F1 engine supplier with two constructors' and three drivers' titles in four years to its very great credit, not to mention 25 wins from 68 starts. And save a short but disastrous flirtation with an overweight and underpowered V12 for the Footwork team in 1991, it has remained closed ever since ○

Below: Alain Prost at the wheel of his Marlboro McLaren in 1986



Porsche in modern Formula One

The last time Porsche appeared in Formula One was back in 1991, with an ill-fated partnership with Footwork Arrows.

Photography: Porsche AG

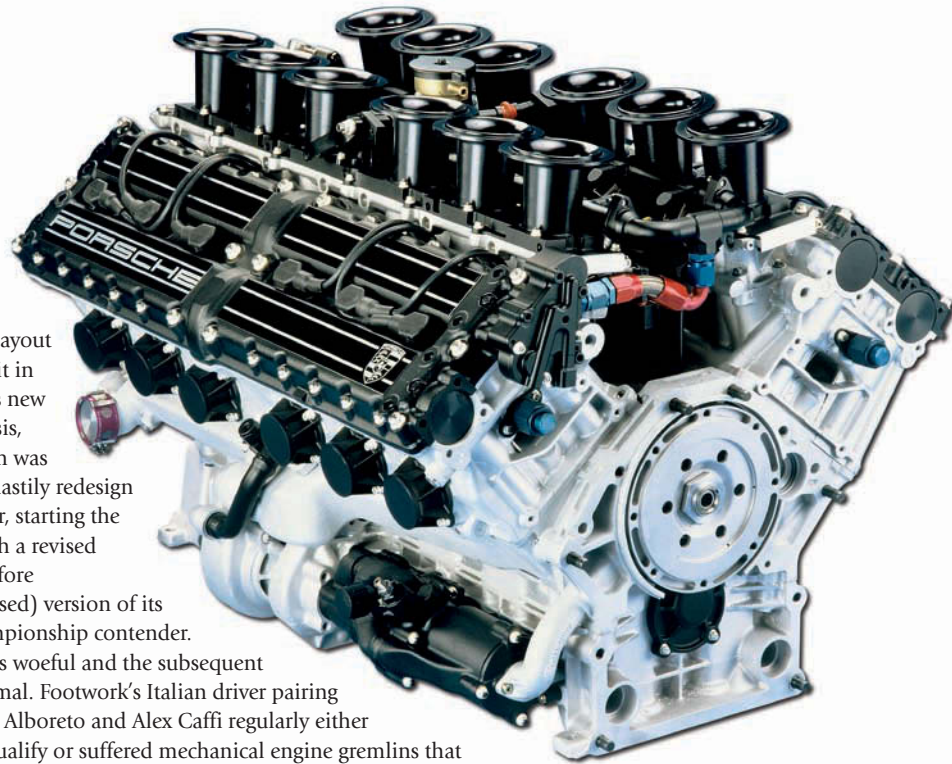
After the relative success of its years partnering McLaren with the TAG-badged turbo engines of the 1980s, Porsche made a return to Formula One in the 1990s. Turbochargers had been banned since Porsche last competed in 1987, so this new foray into the pinnacle of motorsport would see the creation of an all-new naturally-aspirated V12 engine to suit F1's new 3.5-litre engine regulations. In the intervening period McLaren had switched to Honda power, while the rest of the grid had struck deals with the likes of Renault, Judd, Lamborghini and Ford. Porsche signed an agreement to supply the Milton Keynes-based Footwork Arrows squad for the 1991 season.

Hans Mezger designed the all-new 80-degree V-angle 3512 V12 that took its power from the centre of the engine, unique in F1 circles. It took much of its inspiration from the flat-12 in the 917. But the 3512 V12 was large and overweight for an F1 mill, around 100lb heavier than some of its rivals, and this created a couple of major problems. Chief amongst them was that the

3512 V12 layout wouldn't fit in Footwork's new FA12 chassis, so the team was forced to hastily redesign its 1991 car, starting the season with a revised (and therefore compromised) version of its 1990 championship contender. The car was woeful and the subsequent results dismal. Footwork's Italian driver pairing of Michele Alboreto and Alex Caffi regularly either failed to qualify or suffered mechanical engine gremlins that sidelined them before half race distance.

A new hope might have come with the eventual debut of Footwork's reworked FA12 chassis at round three, the San Marino Grand Prix, but Alboreto destroyed the one and only example of the new car during practice with an off at the formidable Tamburello corner. Caffi picked up an injury during a road accident, so for race five in Canada and round six in Mexico he was replaced by Stefan Johansson – the Swede seemingly couldn't match Alboreto's pace.

By the summer of 1991 Footwork and Porsche parted ways having never seen the full potential of what they might achieve together. It would be the last time we would see Porsche in F1



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Ultimate Guide:
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It's the best-selling Porsche 911 of all time and, in Carrera trim, an undeniably competent all-rounder. Is 2015 the year you should buy a 997?

Story: Simon Jackson Photography: Various

The arrival of the 996 in 1998 represented a sizable departure from the 993 generation 911 for Porsche. Aside from the obvious changes under the rear lid, moving from an air- to water-cooled propulsion system, some argued the 996 was a somewhat svelte number versus its predecessor in terms of on-road presence. Whatever your viewpoint, the leap from the 993 to 996 is remembered as perhaps one of the most pertinent in 911 history, and some say in future we'll be looking at the step from the 997 to 991 in the same light. For all the things the latest generation 911 does fantastically well, and it really is hard to fault, there's a school of thought that says the 911 has gained too much around the hips, that the 991 offers too many creature comforts as a result has diluted the DNA of the 911, losing something of its 'edge' as a true out-and-out sports car. This, they say, is what makes the 997 such a no-brainer when it comes to selecting your next secondhand 911. Could the 997 be, they quiz, 'the last real 911'? Well, we may indeed have heard all this before but whether you sit on the 997 or the 991 side of this argument, or you prefer to relax on the fence and play referee, there are few Porsche fans that will argue against the merits of owning a 997. And today, with prices falling within the reach of a whole new audience, perhaps they make even more sense?

CARRERA & CARRERA S

Criticisms of the 996, Porsche's first all-new 911 since 1963, led to heavy revisions to the formula for the arrival of the 997 in 2004, designed to take Porsche's icon back to its roots. To the layman it was the loss of the 996's Boxster-style headlamps that caught the eye but a closer look would reveal wide-ranging changes to the new 911's bodystyle in order to prepare it for the modern era. In came flared, more muscular arches, flowing purposeful shapes and squared-off aggressive character lines. Out went the 996's curvaceous aesthetic. Inside it was much the same story, yet while the 997 retained that classic 911 style and feel, it also moved the game on. An integrated screen in the centre console now faced passengers and boasted an evolution of the Porsche Communications Management (PCM) system, and more angular shapes featured around it leaving you in no doubt that this was a new take on a classic recipe – a generational step forward. Underneath the obvious changes made



by the exterior design team the 997 was largely the same car as its predecessor, with a couple of key alterations. Flat-six fans could now choose between two powerplants: the M96 3.6-litre engine as found in post-2001 996s (now tweaked to provide 325hp at 6800rpm); and a 3.8-litre M97 engine running larger cylinder bores, with a four-tailpipe exhaust, putting out 355hp at 6600rpm. This larger displacement engine was only available in the Carrera S variant and came complete with a healthy 295lb ft torque. It marked a welcome return of the 'S' badge to the 911's rump, too. A new six-speed manual transmission was fitted to both of the new coupés that was capable of managing the additional power and torque. A Tiptronic S was available for those who desired an automatic gearbox.

A new variable transmission ratio was added to the rack-and-pinion steering to offer smooth and precise responses to driver input, and, for the first time, Porsche debuted its active Porsche Active Suspension Management (PASM) damper



CARRERA
CABRIOLET/TARGA

At the same time as launching the Carrera 4 and 4S, Porsche unveiled the 997 Cabriolet. Four versions were available: a pair of two-wheel drive cars and a pair of all-wheel drive cars. Again power came from the 3.6- and 3.8-litre engines pushing out the same horsepower figures but Porsche was keen to ensure the reinforcement work required to maintain chassis rigidity didn't compromise the Cabriolet's performance. The roof was based on that of the 996 Cabriolet, refreshed with new materials, it weighed just a smidge over 40kg and moved from top down to lock down in a mere 20 seconds – even while driving at speeds of up to 31mph. A hard-top was available as an option. Thanks to low drag coefficients, (0.30 Carrera 4, 0.29 Carrera 4S), the Carrera 4 Cabriolet lost just two-tenths of a second on the dash to 100km/h, and just one-tenth in 4S guise. The popularity of drop-top 911s grew larger as the down sides to owning one

system. Porsche offered uprated four-piston callipers with drilled discs on the 997; S customers could specify Porsche Ceramic Composite Brakes (PCCB) for fade-free, low weight, low maintenance stopping power. With the addition of the Sports Chrono Package Plus, and, for the first time, the availability of optional adaptive sports seats, the specification spelt out that this was a 911 refined and focused on the driver more than ever before.

CARRERA 4 & CARRERA 4S

Twelve months after the launch of the two-wheel drive 997 came the arrival of the all-wheel drive versions, the Carrera 4 and 4S, with the same engine displacements and power outputs as the standard Carrera models. The split of drive was where things differed, of course, delivered via a viscous multiple-plate coupling which sent between five and 40 per cent of the available engine power to the front wheels as and when required. Flared arches, 22 millimetres wider

than on the two-wheel drive Carrera, swallowed wide 11x18-inch wheels shod with 295/35 rubber (Carrera 4) and 11x19-inch wheels running 305/30 tyres (Carrera 4S). Directional stability on the road and increased traction were the obvious benefits to handling, and stopping distances were optimised with Porsche Stability Management (PSM) featuring two new functions: pre-filling of the brake system to allow for increased responsiveness under hard braking and a subsequent reduction in stopping distances; plus a hydraulic brake assist system that provided increased brake force to all four wheels.

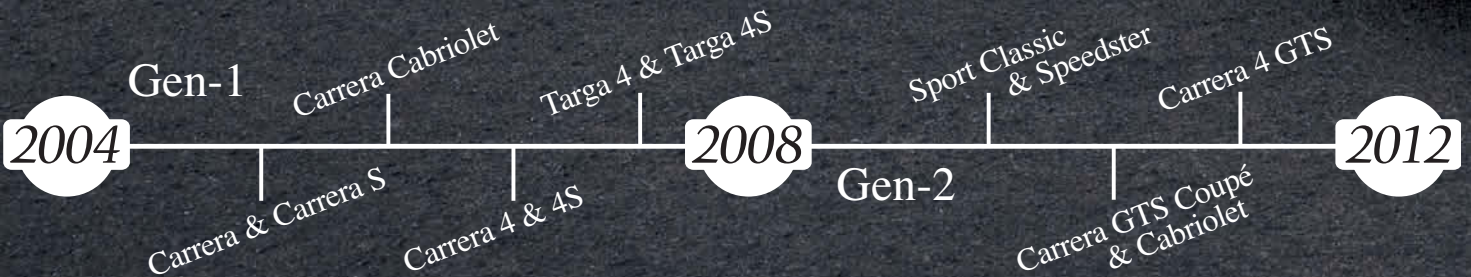
PASM was fitted as standard to Carrera 4 and 4S models, a specially fettled sports suspension setup was available as an option to compliment it. Porsche's TPC system (tyre pressure control) was also optional, capable of monitoring tyre pressures and providing feedback to the driver. Like the two-wheel drive Carrera, Porsche's Sports Chrono Package was available as an optional extra on 4 and 4S 997s.



*Which variant is the 997 to own?
That really comes down to
personal preference...*



997 Carrera Timeline





versus its coupé brethren became practically non-existent.

Buyers had to be patient for the arrival of the 997 Targa, which arrived in late 2006. It retained the clever glass roof arrangement from its predecessor. Constructed from lightweight glass, the roof system weighed 1.9kg, which was 4.2lb lighter than any Targa before it. The Targa was only available in all-wheel drive form, customers had the choice of Carrera 4 or 4S Targa models and other than that the specification remained consistent with the other Carrera 4 997s.

GEN-2 997 (2008>)

With the 997 Porsche had created a hot cake, and customers were lining up at the bakery window for their slice. But despite easily selling 100,000 examples, in 2008 Stuttgart announced it would be adding a cherry on top of the 997 recipe with a revised version of the car, commonly referred to as the Gen-2 or 997.2. The Gen-2 997 introduced an all-new engine in the form of the A91, replacing the ageing M96/97 units, which have since become the source of some reliability debates. More on that later.

The all-new engine used around 40 per cent less components and at the same time it was more compact, no longer featuring the troublesome Intermediate Shaft (IMS). All this made it, so said Porsche, more reliable. The A91 offered 997 Gen-2 Carrera owners both 3.6-litre (345hp) or 3.8-litre (385hp) capacities, much the same as its forebear. Increases to horsepower provided a 20hp and 30hp hike respectively over the outgoing 997. The A91 engine's real party trick, though, was its increased fuel efficiency, which achieved combined consumption figures of around 28 miles per gallon thanks to Direct Fuel Injection (DFI) technology.

Accompanying the new engine was, for the first time, Porsche's new transmission system, Porsche Doppelkupplung (PDK), which replaced the Tiptronic system of old. The double-clutch transmission combined the best features of a manual gearbox with those of an automatic. Honed on the track through Porsche's motorsport activities, it shifted through seven speeds electrohydraulically in an uninterrupted, seamless fashion. PDK would become a hit. An optional mechanical Limited Slip Differential offered a 22 per cent locking action under power, and 27 per cent on overrun – aiding traction in slippery conditions for those cars equipped with it.

Further refinements to the PASM system came as standard issue on the Gen-2 Carrera S, and as an option on the Carrera model. Upgraded brakes, larger air filters, Start-Off Assistant (aiding manoeuvring when moving away from a standstill), LED daytime running lights and slightly larger door mirrors were just some of the additional alterations. The more obvious tweak was the revised styling on the rear bumper and shapely rear light clusters. Incidentally, more than a few 911 fans welcomed the return of the

full-width rear reflector (a classic piece of 911 styling) to the Carrera 4 and 4S, too.

In the cabin changes came in the form of enhanced convenience features: seating with a built-in ventilation system; and the latest version of PCM with a 6.5-inch touch-screen and the ability to specify additional modules enabling Bluetooth, navigation and external audio functionality (read iPod/MP3 player 'plug and play').

SPORT CLASSIC, GTS, SPEEDSTER

As if the 911 wasn't already looking in rude health, it was about to get all the more exciting as Porsche revealed plans for further Carrera-based variants of its torch-bearer. In 2010 the 997 Sport Classic was announced, the first product of the Porsche Exclusive department. Shot in a stunning shade of flat grey, the car was a clear nod to the 2.7 RS of old. There was everything to like about this limited run special 911: wide

Carrera 4 arches; ducktail spoiler; curvaceous double-bubble roofline; Fuchs-style wheels; and a throwback brown hide or houndstooth interior. Oh, and then there was the engine. The Sport Classic received the 3.8-litre engine with a Powerkit fitted hiking its output to 408hp, all of which was sent to the rear wheels alone. Just 250 examples were made with an original list price of £140,049 (some £60,000 dearer than a GT3 at the time). Today, just five years on, they still command a premium closer to £200k. The Sport Classic was an instant Porsche classic.

Those with a less impressive bank balance were soon able to opt for a 997 Carrera GTS and Carrera 4 GTS (and there were topless versions, too), which offered almost all of the specification from the Sport Classic at a fraction of the price (£78,371 – Carrera GTS Coupé, £83,145 – Carrera 4 GTS Coupé). Of course, buyers didn't get those ice-cool retro touches but what they did get was the power and chassis upgrades from the Sport Classic, which helped to lend the 997 GTS

a reputation as one of the best 911s ever built, and certainly one of the 997s to own.

Like the Sport Classic and the GTS, Porsche also produced a 911 Speedster before retiring the 997; this was the second 911 to come out of the Porsche Exclusive department. The car followed in the footsteps of the 356, 930 and 964 Speedsters. Priced at £144,100 it was even more expensive than the Sport Classic but just 356 examples were built (we won't insult you by spelling out why that might be!).

The 997 Speedster boasted a shallower windscreen than the standard 997 Cabriolet (77mm lower), lightweight alloy doors, a manual convertible roof and came in a new 'exclusive' colour – Pure blue. Like the Sport Classic, a Powerkitted 3.8-litre engine fed back to the rear wheels only, while a PDK transmission took care of gear changes if the driver so desired, a sports exhaust conducted the audio track and PCCB ceramics and PASM suspension aided the driving experience.



OWNING A 997

Today, purchasing a 997 has never looked like such an attractive option. With the arrival of the 991, 997 prices have begun to fall within the range of a new audience of buyers – buyers who perhaps would not have been able to purchase one in the past. Without doubt, though, there are two three-letter acronyms which will strike fear into the heart of anyone researching 997s: RMS and IMS.

RMS refers to the Rear Main Seal. It stops oil from escaping where the crankshaft exits the engine and joins the transmission... at least it is supposed to. 996 and 997 (Gen-1) cars with M96/97 engines are affected by the failure of this seal, which leads to slight oil leaks. The leak may not affect the operation of the vehicle but it's unsightly and not something you might associate with Porsche ownership. Replacing the component is not expensive but the labour involved in getting to it can be – it's a gearbox out job. Some 997 owners with manual





gearboxes wait until their clutch needs renewing to replace their car's RMS, keeping a keen eye on oil levels in the meantime. As these cars get older, the likelihood is that the previous owner will have dealt with any RMS failure already, which means, in theory, the problem should become less and less of an issue.

The other issue with 997s is the IMS, or Intermediate Shaft, and this issue gets people very hot under the collar. The IMS runs the full length of the engine, driven from a chain via the crankshaft, which then drives the engine's two camshafts on each cylinder bank. It is the bearing at one end of the IMS that fails. It simply wasn't inherently strong enough from the factory, but this issue affects a *very* small percentage of 911, Cayman and Boxster cars produced (some say up to 5%). A number of specialists offer uprated bearing conversions, providing preventative peace-of-mind; others say there is a tell-tale sound which can be heard audibly if a car is due to suffer imminent IMS failure, but ultimately it's



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the luck of the draw to some extent.

Lastly there is the issue of scored cylinder bores, whereby the piston changes shape and touches the cylinder wall – eventually resulting in a costly engine rebuild. But, again, we must stress this issue only affects a small percentage of 997 Carreras. Some specialists claim that cars not adequately warmed-up before hard driving, or suitably cooled down afterwards, are at higher risk of scoring due to component temperature differences or insufficient lubrication. Vehicles that have performed short journeys for extended periods of their lives, and those not serviced regularly, could be at increased risk of this problem and cylinder six is seemingly most affected by the issue. Early warning signs are increased oil consumption, discolouring of the exhaust tailpipes (blackened on the left side), any form of coolant contamination or malfunction of the cooling system, and an audible tappet noise (piston slap) which does not go away as the car warms through. If you are really concerned about

this issue a scope inspection can be commissioned to probe into the bores in order to uncover any potential issues, but naturally this requires time and money.

To avoid all three of these issues, concerned buyers should opt for a Gen-2 997 from 2009 onwards. The A91 engine does not feature an IMS and does not suffer RMS problems. To date the Gen-2 997 has proved a reliable 911.

Which variant is *the* 997 to own? That really comes down to personal preference. Carrera or Carrera S, 4 or 4S, manual, Tiptronic or PDK, Cabriolet or Targa, and, of course Gen-1 or Gen-2 – there are plenty of decisions to be made. So far as options go, it is widely regarded that Sport Chrono, with its uprated throttle response and dash-mounted timer, is a desirable addition to any 997 Carrera. PASM was optional on the Carrera, standard on the Carrera S, so look out for this on the 'basic' entry-level model as it is worthwhile. Of course, much of this is likely to be dictated by your budget.

PRICES

A Gen-1 997 can now be purchased for £20,000, and most have now completed a major chunk of their depreciation. That kind of money will see you behind the wheel of a high-mileage car, possible one that's a little tired. So, keeping in mind how important regular maintenance is on the early M96/97 engines, it might be advisable to opt for a lower mileage, higher priced example. Spending around £25,000 will get you a Gen-1 Carrera S or a Carrera 4S with around 60,000-70,000 miles on the clock.

As the 991 gradually ages, so prices of Gen-2 997s have fallen. Spending £30,000 will buy you a Gen-2 Carrera 2 or Carrera 4 997. Of those 'special' 997s, a GTS will set you back upwards of £55,000, while a Sport Classic won't leave you much change out of £200,000.

Whether you are looking to purchase an early Gen-1 car, or a last-of-the-line high-specification 2012 Gen-2 car, you can rest assured that owning and driving a 997 911 will not disappoint ○





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Gemballa Cayenne & Panamera

OCD Porsche is now an official dealer for Gemballa, which means we may see a lot more of the name in the UK. We took the opportunity to drive a couple of its latest creations. Story & Photography: Steve Hall





If you've ever wondered what the power of a 'brand' is worth, look no further than Porsche. Here is a company that sailed close to financial ruin in the '90s, and dug itself out of the mire by adding a 'budget' model line and a 4x4 to bolster the traditional 911 sports car range. But with a glittering back catalogue underpinning the brand, the cachet of that badge was always likely to endure such seemingly controversial manoeuvres; and as we all know, the strategy worked to a tea, combined with efficient new build processes to launch Porsche on to a path that makes it arguably the most profitable-per-unit that there is.

CAYENNE

So what's all this got to do with the eye-catching example of the now ubiquitous Cayenne we see here? You'll no doubt have noticed the Gemballa logos decorating the flanks, and whilst it may be a long time since you've seen a Gemballa car in the UK, here is another company with an impressive back catalogue that embossed its name in the psyche of any Porscheophile born before 1980.

Truth is, Gemballa has been doing fine on the Continent, with the takeover of the company four years ago providing an injection of cash and expertise at the perfect time to reinvigorate the



philosophy and quality of the product line. And if Gemballa has been a little off-radar on these shores, that looks set to change with the appointment of Merseyside-based specialist OCD Porsche as the official dealer for Gemballa products in the UK.

In fact, the floodgates are open now, thanks to an invite from OCD Porsche to try out a pair of Gemballa cars, here for a week of promotional activities. First up, the (perhaps questionably named) AERO II, based on the non face-lift 958 model Cayenne, dressed in a high quality – and suitably imposing – plethora of body addenda to distinguish it from the standard Turbo. And whilst we slightly mock the moniker AERO II – no two-tonne SUV is going to cleave the air like a bullet – according to Gemballa, there are genuine aerodynamic improvements wrought from the additions. This falls in line with the Gemballa philosophy for all of its products, which whilst serving to give the recipient model a boost of visual verve, must always lead to some form of dynamic enhancement. An admirable stance.

At the dockside location of our shoot, a quick tour of the AERO II's look reveals a pretty cohesive makeover. The wide arches, deep rear valance and vast 22" rims combine to give the rear a butch, broad shouldered stance in tandem

with the existing Porsche roof spoiler. The frontal aspect is a bit more divisive to these eyes; that deep front spoiler opens the front end up with a much more aggressive look that's a long way from the tidy Cayenne Turbo. It's certainly got presence by the bucketload, and as with any aesthetic assessment, beauty is ultimately in the eye of the beholder. Lets face it, you don't give your £90k SUV a makeover to make it more subtle, and the type of buyer the Gemballa package will appeal to are going to love the street presence of the AERO II.

They'll love the quality too. Every item displays a level of fit and finish that would befit anything leaving the Cayenne's Leipzig plant; nothing more than you should expect, but gratifying nonetheless. Gemballa digitally dimension the base car in the first step of its development process, and use the original hard points to affix the replacement parts. This guarantees impeccable fit, and the possibility to invisibly reverse the modifications should you wish to return the car to standard.

The same quality extends to the AERO II's cabin, and whilst 'our' car sported a relatively restrained round of updates (retrimmed wheel mats, pedals and some badges) other AERO IIs we've seen have displayed an altogether more

extensive list of modifications: all beautifully wrought and perfectly integrated, as befits a company whose origins lie in bespoke interiors.

Dynamically, the AERO II runs updated spring and damper units (or updated software on air-sprung Cayennes), the 22" G-Forged wheels are lighter than the standard 20" items and the big brake kit (jointly developed with Brembo) sheds 3kg per corner – losing weight in that most precious area of unsprung mass. The result is extra body control without attendant harshness. Performance is given a boost by a bespoke tune delivering 550hp and 627lb ft whilst the stainless cat-back sports exhaust gives the AERO II a deep, powerful voice when you want it, and refinement when you don't thanks a switchable valve system.

It's hard to avoid the conclusion that the AERO II will sell mainly on its aesthetic appeal; in the real world the dynamic upgrades bring incremental improvements which only the most committed driver would uncover (although some of the punchier tuning options may make the brake upgrade worthwhile!). For a certain type of buyer the AERO II will be perfect, trumping the Range Rovers and AMGs of their peers on overall performance, whilst making a lasting impression outside the trendy local wine bar.





PANAMERA GTP720

And now for something completely different. If the AERO II is likely to sell on the back of its visual identity, here we have a Panamera that we would heartily recommend for the substantial enrichment of the already hugely fast Panamera Turbo's performance prowess. This is Gemballa's 'GTP720' development car which whilst sporting Gen 1 bodywork, has all of the most up-to-date running gear. The flamboyant blue and white wrap is for the visual theatre in pages such as these, but really all you have to distinguish from a standard Panamera Turbo are a set of wheels, a smattering of decals, and a small rear spoiler. Imagine this in black, with black wheels, and it really wouldn't raise an eyebrow any more than the standard car; that would be some car.

Under the skin, though, it's a long way from standard. Gemballa has really pushed the boat out in the pursuit of horsepower here, focusing on the dry sumped V8's ability to convert fuel and air into power with a new inlet system, high efficiency intercoolers, larger capacity purpose-built turbochargers, a high-flow exhaust system with sport catalytic converters, and a remapped ECU. In this very latest iteration of the package, that equates to 744hp and 704lb ft. Containing the rampant excesses of the engorged V8 are a massive set of custom Brembos, identical to those on the AERO II. Machined from a solid billet of aluminium the callipers have shed 3kg per corner, with six pistons up front and four pistons at the rear clamping massive 411mm/380mm grooved and drilled discs. It says a lot for the excellence of the standard car – and Gemballa's wish to retain a Grand Touring feel – that the adjustable air-sprung suspension setup is left completely untouched.

So now it's time to go for a drive, in our case seeking out the perfect spot to nail those action shots that are so much a part of what we do. Your senses are pricked the moment you turn the key as the normally refined, purposeful hum of the Turbo is replaced by a bombastic eruption of V8 thunder from the rear of the car. The body tremors when you blip the throttle is almost old

fashioned in feel but the whole car feels tense and suffused with energy. Being based in crowded Wollasey, we decide to head for the nearby M53, which looks to offer a quick escape towards greenery to the south. This proves highly convenient: the best place to sample the enormous firepower of the GTP720 is on these wide open stretches of three-lane black top.

By the time we reach the motorway, the fluids are already up to temperature; the GTP720 is ready for action. As the miles roll by and traffic thins out an opportunity to back off and find clear space presents itself; what happens next is preposterous. There's just the slightest hint of a delay – as if the car is asking 'are you sure about this?' – before full boost arrives and you're suddenly travelling a lot faster than you intended.

We repeat the process more than once in an effort to calibrate our senses to the level of performance, but truth be told, the acceleration is so far out of kilter with our roads and traffic that you'll need to be – inevitably – on an autobahn to make full use of it. But it is devilishly tempting, and sampling hilarious 3-4 second measures of full noise every now and then would be justification enough to have this engine package. It might be worth it for the noise alone, which builds on its low rev promise and delivers a raucous V8 backing track when you're going for it. How much performance are we talking about? This car has been timed at 25.6 seconds to 300km/h – on a par with a Ferrari Enzo. A 991 Turbo S would be left floundering.

Those enormous brakes are certainly worth the money – they just give absolute, worry-free, assured braking from a solid, feelsome pedal every time. In combination with the lighter wheels, the reduced unsprung weight is always welcome, but of course the GTP720 handles just as a Panamera Turbo does; with precise, feelsome steering that helps you place the considerable width on the road, and an unflustered dynamic makeup that suggests it will handle anything you ask of it. Even deploying 740hp up a motorway slip road... ○

Our invite offered a drive in two cars, but you'll no doubt have noticed a third car in the pictures; something more visually arresting than the (colour scheme aside) GTP720.

Gemballa has a long history of selling complete cars, preferring to offer a cohesive, thoroughly developed package which enhances every element, rather than selling single bits and pieces off-the-shelf. Cars such as the Gemballa Mistrale, which is a mechanical match for the GTP720, but sports entirely new carbon fibre body panels from the roof down. Like the AERO II, the style is entirely subjective – but there's no doubting the lengths Gemballa went to



create something truly special.

Insurance prevented us driving this €350k car, but it's quite something to behold in the flesh – nothing escapes the stylist's pen. From entirely new twin round LED rear lights, exhaust tips fashioned on a jet fighter engine, to doors with huge scallops which contain no handles, but a tiny electronic actuator. After that, the ducts let into the bonnet and triple LED driving lamps seem almost reserved.

The interior offers less scope for radical restyling, but almost every surface is retrimmed in high quality quilted leather, to augment the carbon trim panels, machined aluminium pedals, and bespoke instrument

faces. It takes a team of people several days to complete the makeover, and naturally you can option any colour, material, audio system or any other device that takes your whim – Gemballa can accommodate almost any request, and it'll be of stunning quality.

The Mistrale won't be for everyone, the overall look will prove too much for those who see the appeal in a black Panamera with more performance than an Enzo. But with only a limited number of these 'specials' ever built, the appeal of a four-door with more kerbside mojo than your average supercar is easy to understand. For a certain type of buyer, nothing else will do.





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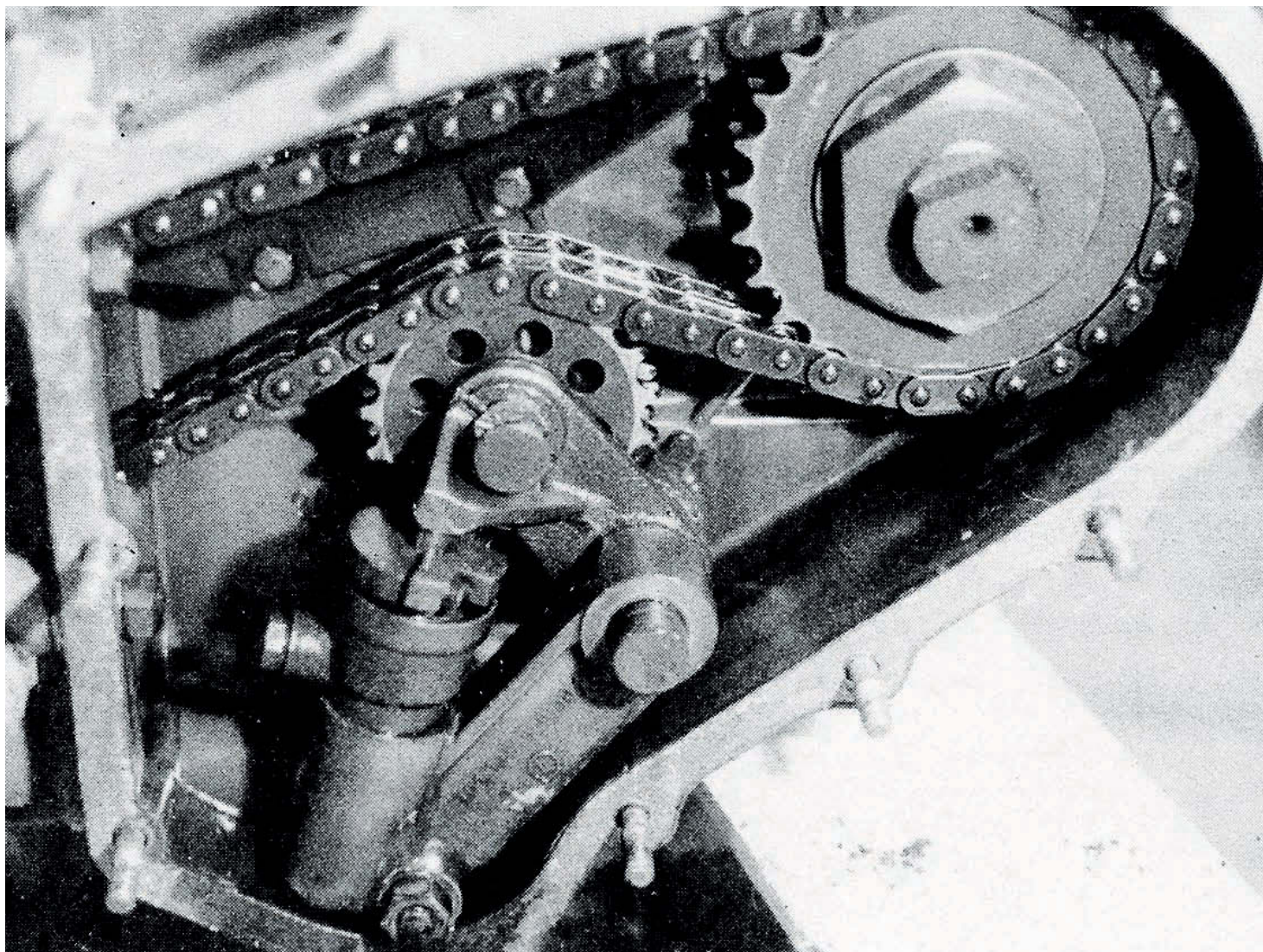
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Chain Tensioners

Mezger believed his new tensioner would only be used by the Repair shop for perhaps 100 cars, so it was something of a surprise when the design was put into full production!

Words: Peter Morgan Photos: Various

You need to be a petrolhead to appreciate engines as works of art. Just a few weeks ago I was looking at arguably one of the finest examples of how brilliant mechanical engineering can be fused with stunning design detail. It was an engine developed for racing of course, where such practicalities as considering a master mechanic's patience, bruised knuckles or how easy the parts were to make were

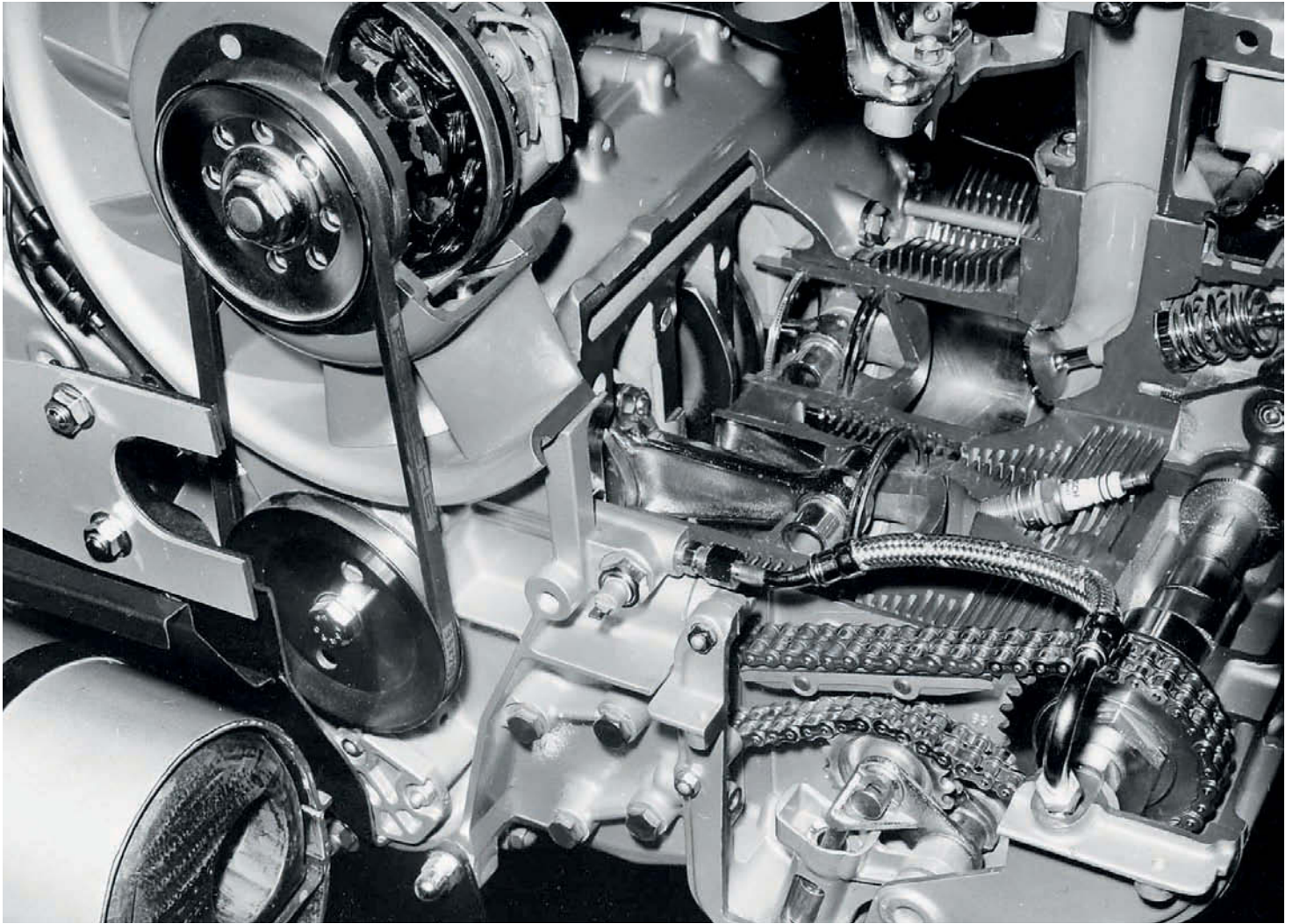
minor irrelevances to the relentless pursuit of maximum power.

Porsche has developed several engines that fall into this premier league of automotive propulsion, but the one I'm talking about is the four-cam, four-cylinder engine designed in the early 1950s by a young engineer called Ernst Fuhrmann. It was a jewel of an engine, intricate in every detail and often took the best mechanics Porsche employed over 200 hours to assemble. Despite a modest 1.5-litres,

the Type 547 flat-4 was producing some 150hp by the late 1950s. It first hit the headlines in 1954, when a 550 Spyder powered by the new engine won its class in the gruelling week-long Carrera Panamericana. The engine subsequently became known as the 'Carrera' engine and anchored Porsche racing activities for the next ten years. In 1959 and mated to the beautiful 718RSK Spyder, Porsche oh-so-very-nearly won the World Manufacturers' Championship against

the significantly more powerful might of Ferrari and Aston Martin.

The four-cam was, like the contemporary street cars, air-cooled but sparkled with ingenuity and deduction from experience. The twin-spark, dry-sumped, all aluminium four-cylinder was given double overhead camshafts for each bank of cylinders. The ten-piece fabricated crankshaft ran in four roller bearings but to appreciate this diminutive engine's exquisite detail design you need only



Mezger's engine design would be simplistic but it would need to perform, too. For his tensioner design he looked to Mercedes



look at how the four camshafts are driven from the crankshaft. Drive was taken from the crankshaft via a speed reducing intermediate shaft to a complex arrangement of shafts and bevel gears to each camshaft. It was Swiss watch complexity that took a huge amount of time to set up the optimum clearances.

The result was an engine that made a glorious sound for a four-cylinder (particularly inside the glassfibre-bodied 904 GTS coupé's cabin!) and delivered a maximum power that was at least 50% better than the pushrod flat-fours used in the production cars of the time. If you have any latent engineer lurking inside you, 15 minutes spent looking at one of these engines really is automotive heaven!

Extreme complexity is acceptable in race design if the results deliver the 'unfair advantage' but that complexity meant that this was never going to be an engine that could be hailed as a

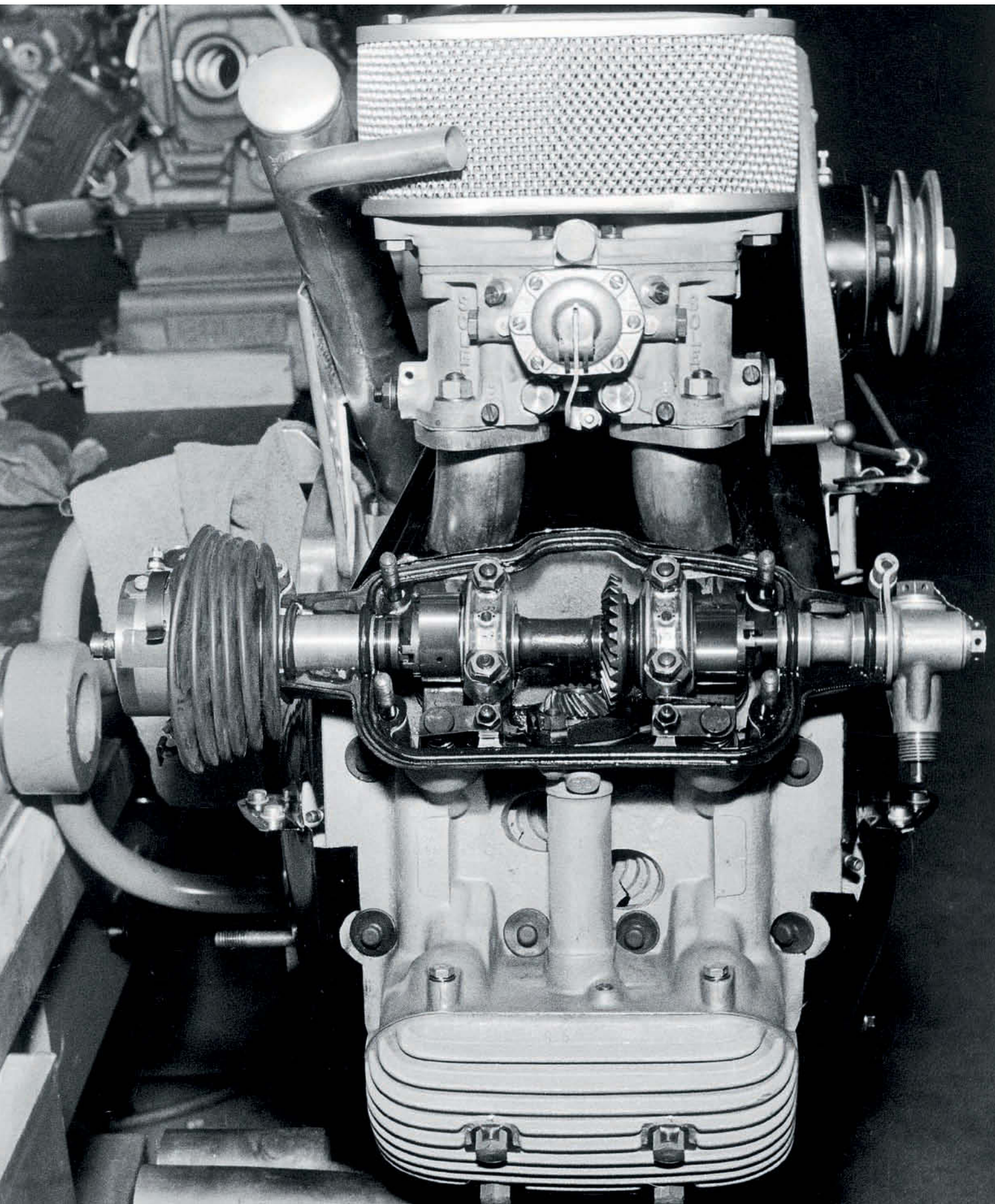
mainstream production sales success for Porsche. It was expensive because of all its finely machined parts. Mechanically it was noisy and the average mechanic would have been defeated by the bevel gear camshaft drive system.

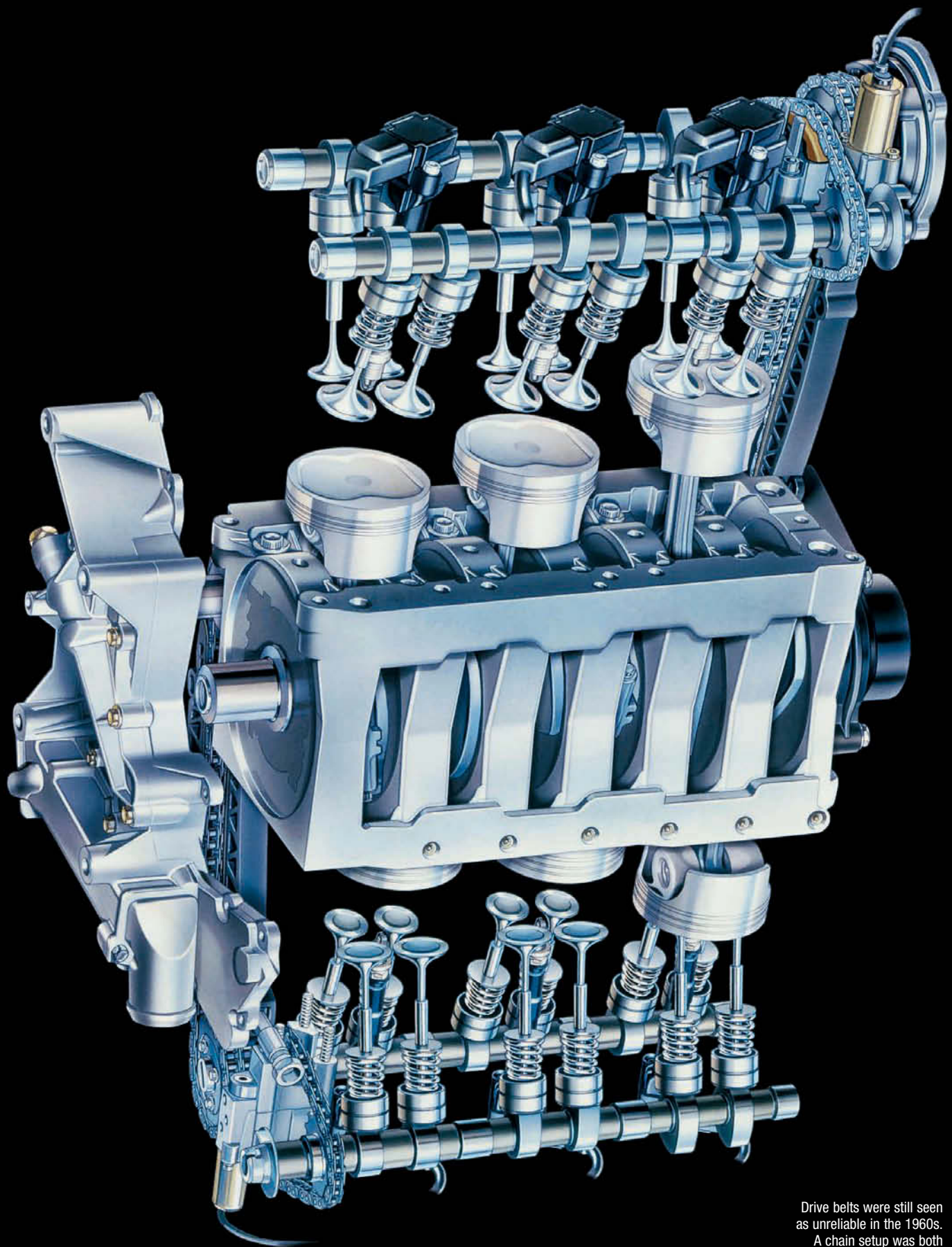
By the early 1960s no self-respecting manufacturer was going to design a sports car engine that didn't have overhead camshafts. In early 1963, when Ferry Porsche's nephew Ferdinand Piëch and engine engineer Hans Mezger began considering the type of powerplant needed for the new sports car that would become the 911, performance with simplicity was high on their 'must have' list. The engine would have to double as both the future cornerstone of powerplant production and be capable of replacing the four-cam four-cylinder in racing. There was never any question that an old pushrod design would be good enough but the challenge of driving the essential overhead camshafts

simply and reliably was no small task.

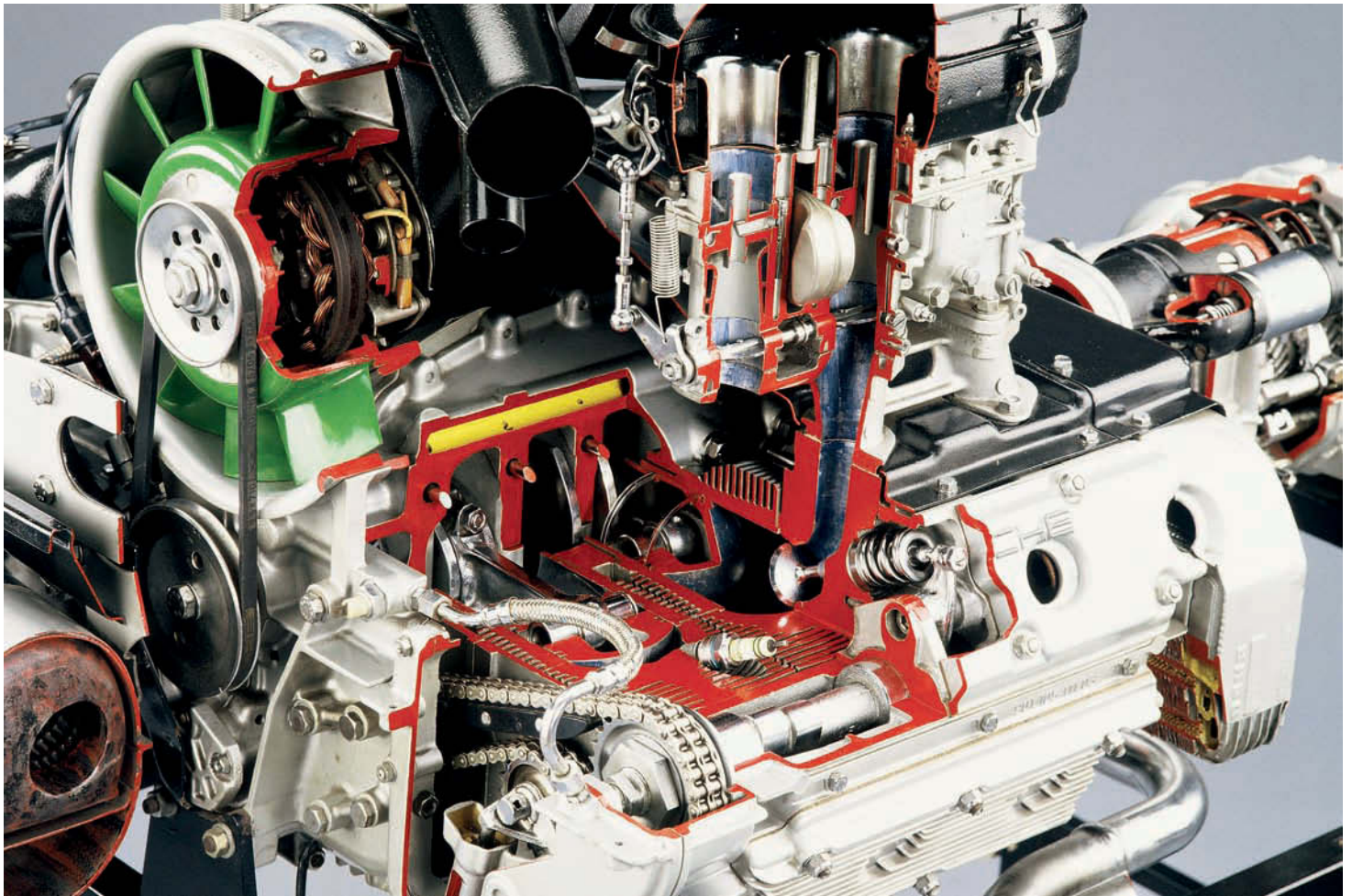
Their practical options were either to use drive belts or chains. Belts were still fairly unreliable in the 1960s and stretched over time. Packaging two belts strong enough, sitting side by side to drive a camshaft on each cylinder bank would use a lot of space. A chain was more compact and had more scope to absorb greater torque in future. The trouble was that both solutions needed some kind of tensioner. And if there is some degree of compensation in the tensioner, the vibration and torque change variances between the crankshaft and camshafts can be reduced, leading to smoother, more reliable engine operation.

It's at that point Mezger remembered Mercedes used a hydraulic tensioner on one of its engines. Through a personal contact, Mercedes shared its design with him and this led directly to the first 'open cup' tensioner used on the 901





Drive belts were still seen as unreliable in the 1960s. A chain setup was both more compact and hardy



engines. This consisted of an idler sprocket that was kept in mesh with the chain by a spring-loaded plunger enclosed in a cast cup. This cup was allowed to fill with engine oil, which acted as a damper on the spring's movement. The compliant action of the tensioner gave a quieter operation. Mezger chose a duplex, or two-row, chain for maximum strength and minimum stretching over time.

The spring-loaded cup tensioners were a much better solution for a normally driven street car but almost as soon as the first car came off the production line, the new 911s were

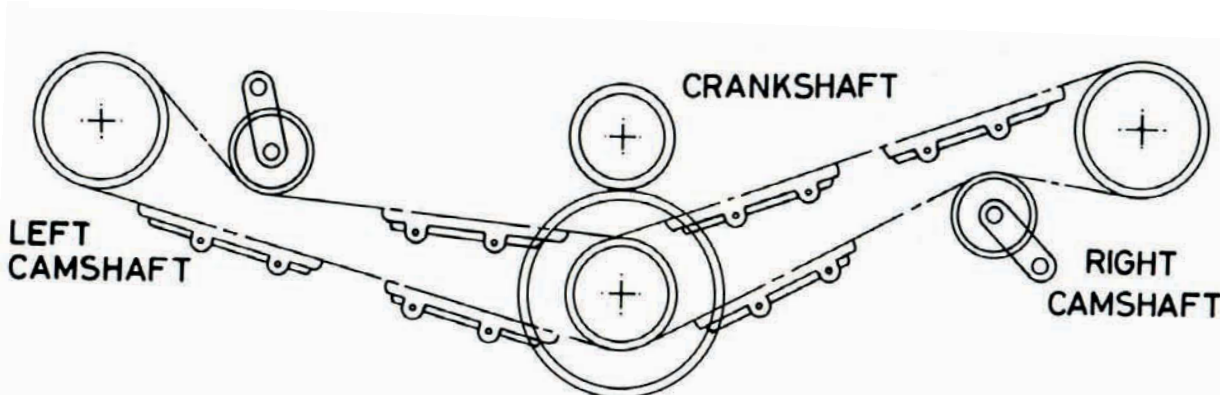
finding their way on to race and rally courses. The problem was that the oil would tip out of the cup, negating the damping effect and causing the chain tension – and so the cam timing – to vary as the plunger oscillated, sometimes with catastrophic results in the cylinder heads. A growing number of cars with damaged engines were finding their way back to the Repair workshop in Porsche's Zuffenhausen factory. In early 1968, Mezger took a coffee break with the supervisor of the Repair shop and learned that some production 911s were being returned to Porsche after

failure of the chain tensioner had caused major engine damage. Despite his heavy workload (developing the new 908 sports prototype, an experimental four-cam six-cylinder, and the 908's flat-eight cylinder engine!) he devised a solution where the tensioner plunger moved up and down inside a sealed, engine oil-filled housing. The result was a tensioner that did the job and the engine oil couldn't spill out under hard cornering. Mezger believed the new tensioner would only be used by the Repair shop for perhaps 100 cars, so it was something of a surprise

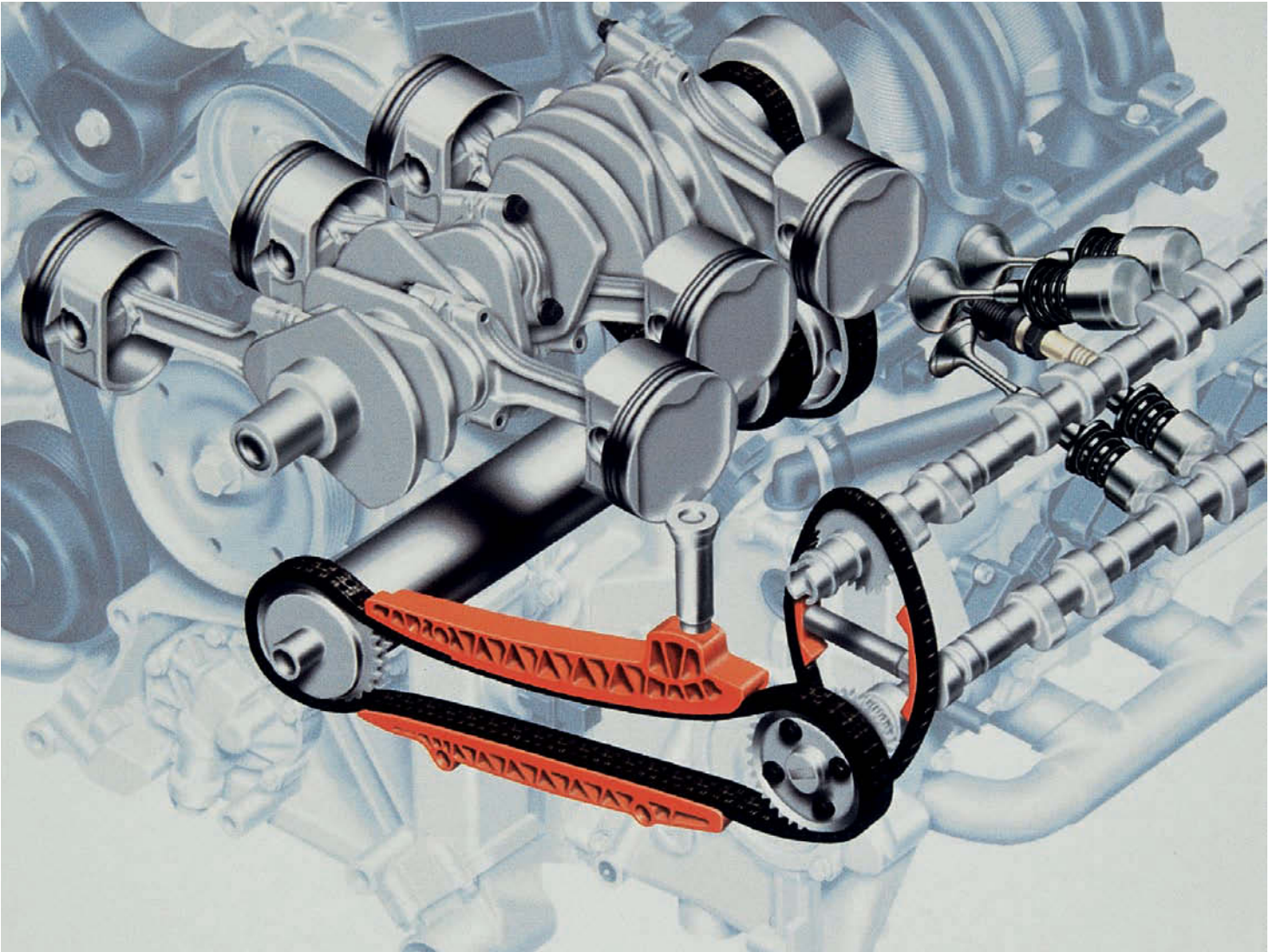
when the design was later put into full production!

By the end of 1968, the new sealed tensioners were on every flat-six leaving the factory. Over the years the tensioners were improved and the adjacent bearing post, idler sprocket and guide ramps were revised to increase their durability.

Unfortunately, these sealed tensioners also had a finite life and experience suggested this was as little as 30,000-40,000 miles. At least by the mid-1970s, the aftermarket was supplying locking rings that clamped on to the plunger to ensure the



Mezger learnt of the 911's chain tensioner issue over a coffee break with the Repair shop supervisor...



Sad to say, after 50 years of development, chain tensioner issues are still not unknown

tensioner didn't collapse when the seals wore out.

Given that Porsche was devoting so much effort to improving the reliability of its cars during the 1970s and early 1980s, it was inevitable that an even further improved tensioner would be devised. This came with the Carrera 3.2 for the start of the 1984 model year (in late 1983).

The new 930 tensioners used a more robust design with engine oil fed from the rear ends of the cam housings to keep the plunger under consistent pressure on the idler. These 'mother of all tensioners'

appeared to consign the earlier failure issues to history. They were soon to be found on all 911 types and were designed so that they could be retrofitted to the earlier models.

For the 1989 model year the original 911 engine, based on the original 901 design, went through a complete regeneration, emerging as the M64 (for the 964 models). While this new engine was entirely based on the original, the detail design was revised throughout and this included the tensioners. The cams were still driven by duplex chains from the intermediate shaft, but the tensioner design became

more integrated into the casings, with the chain guides reduced to two per side with one acting as the tensioner, so that there was no idler sprocket as before. The ramp itself acted as the tensioner (or slapper) on the chain. The tensioner ramp was pressed on to the chain by a spring-loaded piston operating in a sleeve which, as before, was damped by feeding it a supply of engine oil. The new arrangement was quieter than the earlier mechanism and cost Porsche less.

The later M96 and M97 Carrera and Boxster engines continued with a similar tensioner arrangement

although the cam drive layout was changed. In what many regard as one compromise towards cost reduction too many, the engineers chose to drive one bank of camshafts from the front of the engine and the other bank from the back. This probably introduced more issues than it allegedly solved and, sad to say, after 50 years of development, chain tensioner issues are still not unknown.

The camshaft chain tensioner has been a feature of the Porsche flat-six engine since its inception and continues to be an ever-evolving aspect of this iconic engine's technology ○

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Heralded as Porsche's
'everyday supercar', believe
it or not the 996 Turbo is now
fifteen years old. But, does it still
deliver the same level of thrills today?

Story: Adam Towler Photography: Andy Morgan

Flying *At Fifteen*



Can it really be 15 years since the introduction of the 996 Turbo? Yes, it can, a car that at the time seemed otherworldly is now just another milestone along the illustrious 911 timeline. In many ways currently underappreciated, its gestation began nearly 20 years earlier, with one of the most intellectually fertile periods in the company's history.

If you want to find the genesis of the 996 Turbo, you need to look at the 959 project. There's no point in dwelling on the actual 911 Turbo of that same period – the 3.3-litre 930 – nor the 964-based machine that followed it: they were turbocharged 911s cut from a different cloth, macho, rear-wheel drive and forever a slave to the whims of one large turbocharger.

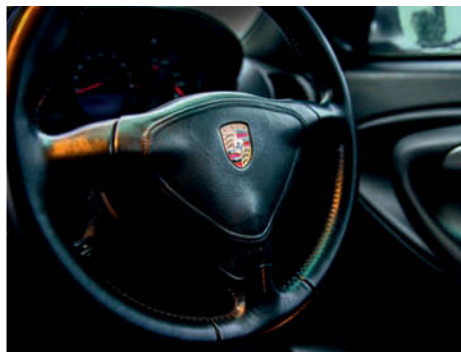
The 959 was different. It was about using

technology that enabled the driver to go faster, in greater safety, and in more comfort. In that sense it was several multitudes beyond its bitter rival, the Ferrari F40, although some interpreted this pragmatism as lacking the emotive fireworks found within that great big red Italian go-kart.

But if I reel off a defining list of 959 attributes I'm sure you'll spot the connection with the 996. Think water-cooled (or at least part-water-cooled in the case of the 959) engines, twin-turbochargers, sophisticated four-wheel drive systems, six-speed gearboxes (if you counted the 959's crawler gear) and a more aerodynamic body, and the link is clear. It's just that in 1987 Porsche asked you to pay rather a lot more for the privilege.

The bridge between these two cars was of course the 993 Turbo. It featured many of the







*I remember bursting into laughter
without warning several times while
we negotiated rush hour traffic*

ingredients first seen in the 959, but applied them to the last of the traditional 911 'shells, albeit modified to a degree. Here was a 911 Turbo that at last gained twin-turbochargers with sophisticated electronic control and a six-speed gearbox.

But it was the 996 that ultimately realised the 959 dream in a mass production car at a more attainable – although still rarefied – price point. Using the modern, refined carcass of the 996, it applied the four-wheel drive concept developed for the 996 Carrera 4 into a wider body, and there was a new heart too, albeit with its roots firmly in the past. The new 'Mezger' engine (as it would colloquially become known, although M96/70 is its actual, less catchy title) would go on to become a legend in its own lifetime.

Derived from the Le Mans-winning 911 GT1, but with roots that stretched right back to the 935/78 'Moby Dick', this engine was an altogether more blue-blooded motor than the regular M96 engines in the Carrera – in fact, it was entirely different. Capacity had been increased over the GT1 by 200cc to a perfect round figure of 3600cc, the engine debuting during 1998 in the Supercup cars and the following year in the road-going GT3 model. Given the Turbo didn't need to rev anything like as high as the GT3, the latter's titanium con rods were replaced by cheaper steel items, while twin KKK turbochargers were fitted, along with twin intercoolers. Like the 959, cool air was ingested via intakes cut into the flanks of the 996.

Outright power wasn't much of a jump over the 993 Turbo, rising from 408hp to 420hp, but the 996 chassis made the car a very different proposition to drive, and there was PSM now to help sort out any unwanted situations.

Plaudits followed, and while 420hp doesn't sound an overwhelming amount today – the new 991 Carrera GTS pips it with 430hp – this amount of power in such an adaptable package was a new benchmark in terms of useable performance for the time. The horribly cheesy term 'everyday supercar' had never been so apt.

Your new editor has asked me to make this reminiscing piece a little more personal, so I'm going to recall my own first 996 Turbo experience, and to be quite honest, I can remember it like it happened last month. Lost in the homely fug of old car magazines, I suppose the date was possibly 2003 or 2004; the occasion was a twin-test on *Autocar* magazine, and as the magazine's then-new staff writer I was seconded to support the author – David Vivian – on a twin-test. Oh, and was it okay if I took the 996 Turbo to meet its foe – or perhaps prey – for the day, the Mosler MT900?

I remember the Mosler was an early road car, almost unique at the time in the UK. It was low and wide, and very yellow, and extremely rough and ready. It was extraordinary thing to drive on the public road, but there my memories pretty much end, because a level of performance bordering on the narcotic had just blown my world apart...

The yellow example hailed from a small industrial unit in deepest Norfolk, so the mission was clear: drive '911 HUL' from *Autocar's* Teddington base in south west London and reach outer Norfolk on time for the photoshoot.

'HUL' made me physically jump up and down and double over in giggles when I clapped eyes on it for the first time that morning. Sure, I'm known for getting worked up over cars but this

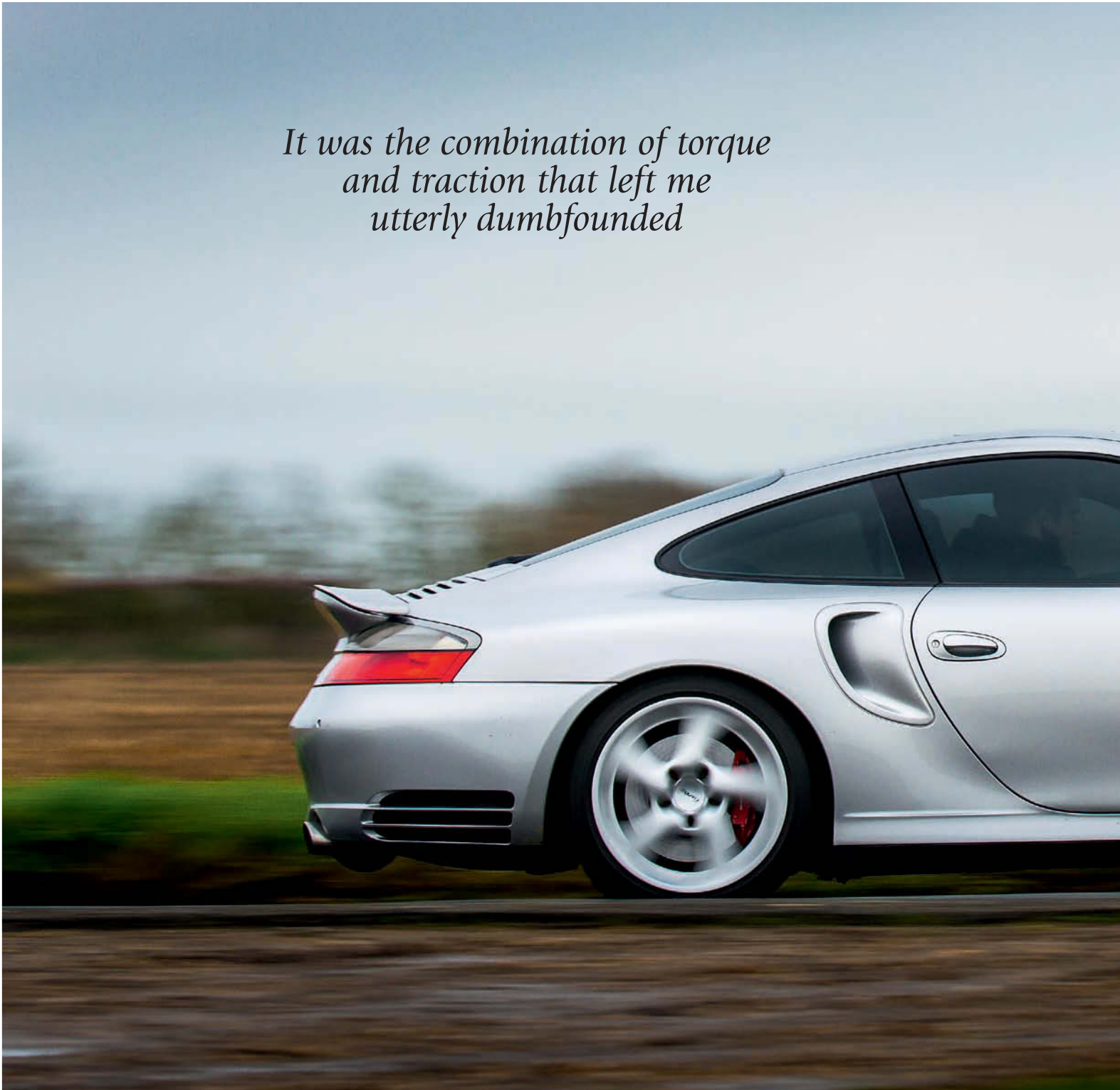
was definitely the sort of slightly weird behaviour best exhibited without an audience. It was also Speed yellow, and I knew off-heart that the spec included the X50 kit. And it would be just me and this ultimate exponent of Porsche's car making art, all alone, for a good few hundred miles during the day ahead.

Grabbing hold of my senses just enough to open the door and sit vaguely still in the black

leather sports seat, I remember bursting into laughter without warning several times while we negotiated rush hour traffic, just at the absurdity of me being given the reins to this incredible car. I must have looked like a complete lunatic to other motorists, but I adored that car.

Of course, the Turbo did the commuting thing brilliantly. I took it very steady to start with, and the Turbo did the same, so that it quickly

*It was the combination of torque
and traction that left me
utterly dumbfounded*



became clear it was no harder to drive than a 1.6-litre Ford Focus.

But naturally, this sedate approach would only last so long, and it was then that the full force of the Turbo's potential hit home. I can't really remember the speeds, but that's probably just as well, because the Turbo and I scythed our way through Norfolk, and from that precise moment onwards everything I'd driven up to that point

suddenly felt rather toothless. It was the combination of torque and traction that left me utterly dumbfounded, and the real manifest of that was in overtaking performance of the type completely alien to me. Overtakes that would have seemed chancy in an ordinary sports car were embarrassingly easy in the Turbo. When I thought a move was being a bit cheeky, there was clear air and the chance to count more than a few

seconds before the oncoming car got anywhere close to our position. In short, it required a whole new mind-set, and it was patently obvious, a very, very responsible attitude. This car was a tornado: I didn't want it ever to end, I was never going to give the car back, and if I made a dash for the Continent maybe they'd never find me...

I did give it back, obviously. I had the very good fortune to drive that particular car in France a







Overtakes that would have seemed chancy in an ordinary sports car were embarrassingly easy in the Turbo

little while later, and there have been a good few other 996 Turbos since, although later ones second-hand. The 997 Turbo came along in 2006 and that was another new experience too: a brutal one at that, but it could never be as memorable as that first sampling of Porsche Turbo power.

Fast forward to the present and I'm in the Cambridgeshire fens on what must surely be the coldest day of the year so far. *GT Porsche* correspondent Martin Spain and I are taking refuge from the chill winds in his silver 996 Turbo, and the memories are all flooding back. Martin's car is typical of the breed, dating from 2002, finished in the almost standard-issue silver with black leather, and having just passed 70,000 miles. A suspected remap and a Milltek exhaust take peak power to probably around 450hp – the same as a standard X50-pack equipped car.

Today has been a reminder of all that's great about this car. There's the ease of use and the long-legged comfort, both of which make the car an entirely usable year-round proposition, and indeed, Martin uses his car for longer family trips without issue. But I also think this easy-going nature tends to diminish the lustre of the 996 Turbo in the eyes of some, who always look to the 996 GT3 as the purists' choice. Of course, they're right in some ways, and it's hard to resist a GT3 in any of its forms, but for me the

exaggerated gap in current values is not reflected in just how enjoyable a 996 Turbo can be.

For a start, it is mind-bendingly fast, particularly when given a little ECU tickle. The flood of torque exiting second and third gear corners puts the world into reverse past the side windows and thumps you back into the seat every time. But it's also a more interactive, natural feeling car than I reckon those who haven't tried one would give it credit for. Yes it'll storm through foul weather and master everything from a tight B-road to a racing circuit, but it has a fluid way of doing it, with great steering and a chassis that while offering loads of grip and traction, isn't afraid to make it clear it's predominantly rear-wheel drive either. The 996 Turbo is not an automaton: compared to a 991 Turbo it feels positively vibrant in personality.

Inside, the Turbo is simply a highly specified 996, so you take it as you find it. Everything works fine, and if the PCM1 infotainment system is archaic, then what piece of electronic technology from the year 2000 isn't obsolete, or antiquated looking, or both? Martin clearly loves his car, and I don't question that for one second – it's a cracker.

Buying a Turbo isn't quite so straightforward as driving one. The golden rule is to remember this was Porsche's top-of-the-range car in period, so



running costs even today reflect that stature. Ray Northway of specialist Northway Porsche said: "You've got to look for the usual Turbo maintenance items to have been done. Tyres, brakes, the clutch and the three radiators in the nose all need replacing at certain intervals and the combined bill if all need doing at once will be very expensive. We have to be careful when we buy one in that it isn't hiding a very big bill". But there is plenty of good news: "There's not really anything you can do to harm the engines, they're

so tough, and we've seen turbochargers still working fine at 120,000 miles." Just as well when a reconditioned pair will set you back at least £3000. "Watch it doesn't jump out of second gear, too," notes Ray. "These days most people want the manual car but when they were new most went for the Tiptronic, so there are more people chasing fewer cars."

The Turbo's legendary hardiness is something Steve Wood at Autofarm agrees with: "They're a really good, solid car, and there aren't too many

issues. We've seen chattering oil pumps and worn-out wastegates, but most of the other faults are standard 996 ones – lower arms, the rads in the nose, etc..."

Both agree that Turbo values are on the rise, but even so, they remain exceptional value for money given the performance on offer, as long as you can stomach the occasional large bill.

I've never forgotten that journey through Norfolk, and driving these cars is a thrill that, 15 years on, never gets old ○

THANKS TO:

996 Turbo owner Martin Spain

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HYBRID THEORY

The debut season for Porsche's 919 Hybrid looked like it might end without a win. Then the LMP1 circus visited Brazil...

Story: Simon Jackson Photography: FIA and Porsche AG

Porsche's return to the top echelons of sports car racing during 2014 was always intended to be something of a 'building' year. With the newly developed 919 Hybrid, Porsche had created its most complex and advanced racing car ever with which to do battle, with it the Stuttgart squad would field two prototype LMP1 cars in the FIA Sports Car World Championship (WEC) – an eight meeting campaign, including the big one – the Le Mans 24-hours. Despite the buzz and a heavy weight of expectation emanating from some corners of the motorsport world, almost certainly no one within the team really expected the brand to roll up and just blow away the LMP1 opposition at the first time of asking.

New regulations introduced for 2014 asked for

increases in economy. The allowable level of fuel usage per lap was reduced by 30 per cent compared with the previous season, and to compensate more was asked of the hybrid systems. The V formation four-cylinder turbocharged engine was good for 500hp through the rear wheels, while the Porsche hybrid system used a KERS energy recovery system, much like in Formula One, and an ERS setup for the recovery of thermal energy expelled through spent exhaust gasses. This system provided a further 250 horsepower to the front wheels. A hydraulically-activated seven-speed transmission, temporary all-wheel drive capability and a recorded weight of 870 kilograms were the other highlights. Porsche wanted to send the clear message that this technology would eventually filter down to its future road cars.

Of course the headline news was the signing of ex-Red Bull Formula One driver, Mark Webber. The 38-year-old would be partnered by former Red Bull and Toro Rosso test driver, and Mercedes AMG simulator pilot, Brendon Hartley. The pairing would be joined by experienced German sports car driver and former Le Mans winner, Timo Bernhard, in the number 20 919 Hybrid. Alongside them in the sister 14 car, would be Frenchman Romain Dumas, a Porsche works driver since 2004, former A1 Grand Prix champion turned accomplished sports car racer, Neel Jani, and long standing German Porsche works driver Marc Lieb. By all accounts Porsche had put together a top tier driver line-up with a strong mix of single seater and sports car racing on their CVs, backed, of course, by a talented team of 230 dedicated Porsche employees.

ROUND ONE: SIX HOURS OF SILVERSTONE

Porsche debuted the 919 Hybrid at Silverstone in April, and made an immediate impact with strong showings in qualifying and the race. The #14 car of Dumas/ Jani/ Lieb qualified on the second row of the grid in third position, recording a time of 1:43.087, just three tenths off the pace of Toyota and Audi. The sister car of Bernhard/ Hartley/ Webber was less than two tenths further back, it lined-up in sixth.

During the race Jani lost his left front wheel necessitating a pit stop for suspension repairs, and subsequently slowed soon after rejoining the race with a hydraulic issue, retiring the #14 car after just one hour 15 minutes.

Things were far brighter for the sister car. Following a red flag being thrown due to adverse weather, the race ran just shy of the expectant six hours, and the cars were brought home under the safety car. The #20 car finished on the podium in third spot two laps down on the leading Toyota TS040 of Davidson/ Lapierre/ Buemi.



Left: Webber sprays the champagne at Silverstone – an impressive debut for the 919 Hybrid
Here: The 919 achieved its first pole in Belgium and led during the early stages

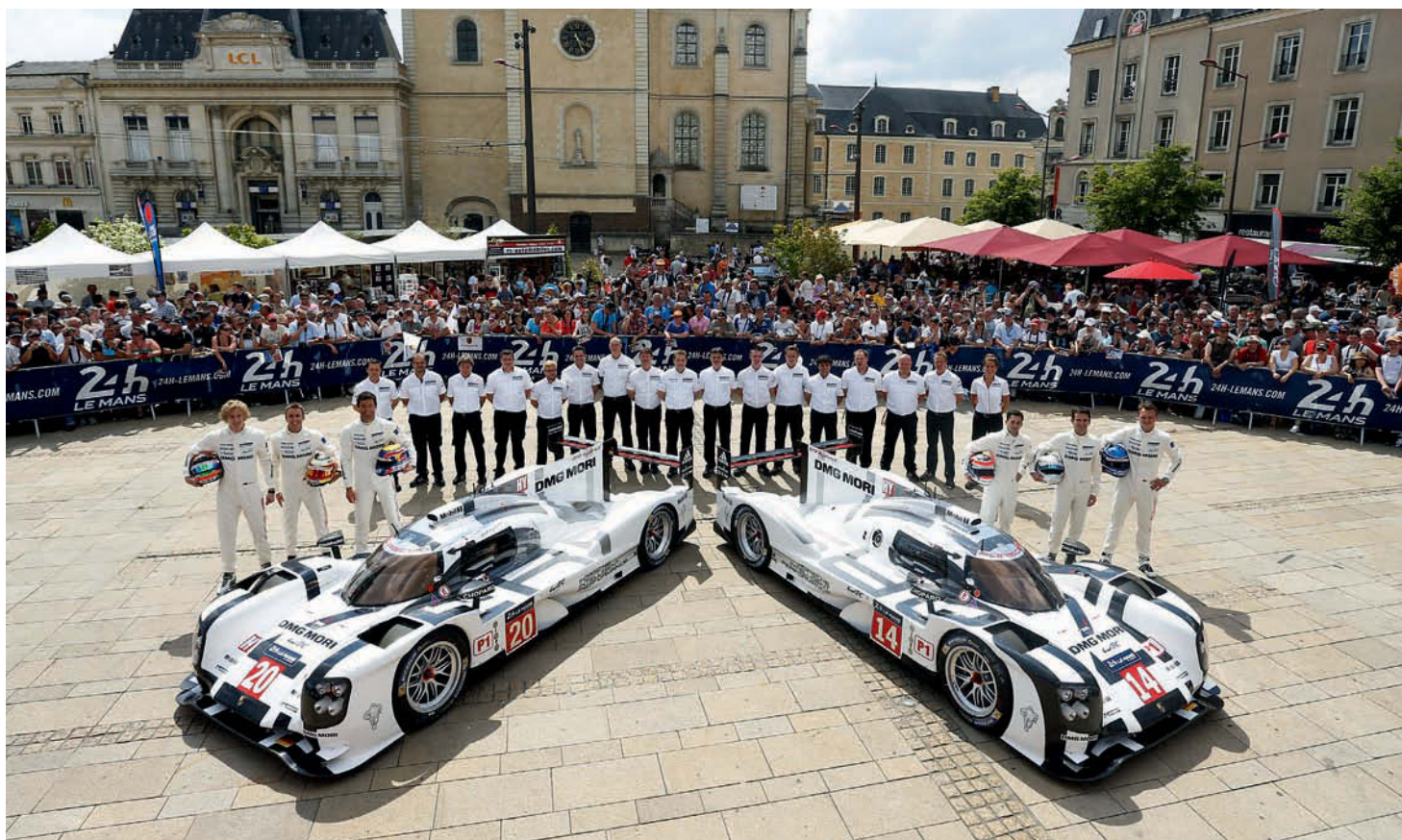


ROUND TWO: SIX HOURS OF SPA-FRANCORCHAMPS

Belgium was ultimately another positive step for the 919's introduction, with the #14 car securing its first pole position and leading the race during its initial stages.

An electrical issue befell the car during Dumas' stint, which required an onboard reset while he was still out on circuit, and during the final stages of the race, Jani was forced to make an unscheduled pit stop after picking up a puncture. The #20 car of Bernhard/ Hartley/ Webber was unable to repeat its strong performance from Silverstone. Having started in fifth on the grid and moved straight into third position, the car suffered technical problems that forced it to drop back through the field. Regardless, the car finished the race, and as the old adage goes, to finish first, first you must finish.

Throughout the weekend the 919 showed strong pace, often it was the fastest car on the circuit, and managed to record the fastest overall lap of the weekend in practice two (1:59.887) in the hands of Marc Lieb.



ROUND THREE: 24 HEURES DU MANS

Porsche's return to LMP1 was largely all about Le Mans. It's the one every manufacturer wants to win. Despite its hopes and dreams, though, the 2014 meeting was not to provide the fairytale story, despite the 919 Hybrid's more than impressive results at Silverstone and Spa. And things were almost so different.

Showing exceptional pace and reliability, the #20 car managed to take the lead with 20 of the 24 hours completed while Bernhard was at the wheel. Handing the car over to Aussie star Webber at 12:26 on Sunday, all that was required was a solid cruise to the finish line, but sadly it wasn't to be.

Webber's prototype suffered a major drivetrain failure with 20 minutes of the race remaining, requiring him to limp the car back to the pit lane under electric power only. The damage was too

great to be repaired. The dream was over.

As if that wasn't enough of a bitter blow, the #14 car, with Lieb at the wheel, was wheeled back into the garage at 12:54, with just minutes of the race remaining with a gearbox failure. Having lost fourth place, the team was able to get the car over the finish line under its own steam, sadly it was not classified.

Matthias Muller, Chairman of the Executive Board, Porsche AG, summarised the whole team's feelings: "Our return to Le Mans has been a strong team effort. It almost happened that our secret dream came true to top the debut of the Porsche 919 Hybrid with a podium finish. For a remarkable period we were leading the race. I want to thank everyone who contributed with hard work. Now we keep our heads up and will plan an even stronger return in 2015."

ROUND FOUR: 6 HOURS OF CIRCUIT OF THE AMERICAS

Austin's night race provided another strong performance for the 919 Hybrid, albeit one that didn't herald another podium finish. Both cars qualified in the top three but lost ground during the early stages, by the time of the first round of pit stops the cars were running fifth and sixth. Then came an additional curve ball. At the 100-minute marker the track was hit by torrential rain, which caused various cars to spin off, including Bernhard at the wheel of the #20 car. The red flag was flown and the race stopped.

Jani took the restart behind the safety car in third place with his 919 Hybrid shod with slick intermediate tyres. Assuming the lead of the race soon after the green flag appeared, Jani handed over to Lieb after 105 laps were complete. But, after the final round of fuel stops, a loss of power relegated the #14 car to fourth.

The #20 car was rescued from its off track expedition and was able to take the restart behind the safety car, Hartley and Webber's stints followed tailing its sister car home in fifth place. In many respects it was another case of what might have been.





ROUND FIVE: SIX HOURS OF FUJI

Building on the lessons learnt and solid performances the 919 Hybrid had shown out-of-the-box, the result at Fuji Speedway was what the team had been waiting for.

A straightforward dry race, Fuji saw the #20 car, piloted by Mark Webber fighting for the lead before its first stop, an unscheduled trip to the pits following a puncture. In order to make up for the damage to the #20 car's strategy, Webber double-stinted the car, as did team-mate Bernhard, which eventually placed it back up the order in third spot. All this allowed Brendon Hartley to bring the car home for its second podium finish of the season one lap down on the first and second placed Toyotas. Webber recorded the fastest lap of the race, a 1:27.759.

Things were equally as positive for the #14 car, although Dumas, Jani and Lieb didn't get to taste the champagne. The car ran well, stopping on laps 36, 73, 110, 147, 187 and 220 for its final splash and dash before crossing the line in fourth place.

At this point in the season, after five rounds, Porsche trailed Toyota (183 points) and Audi (175 points) with a total of 109 points in the WEC manufacturers standings.

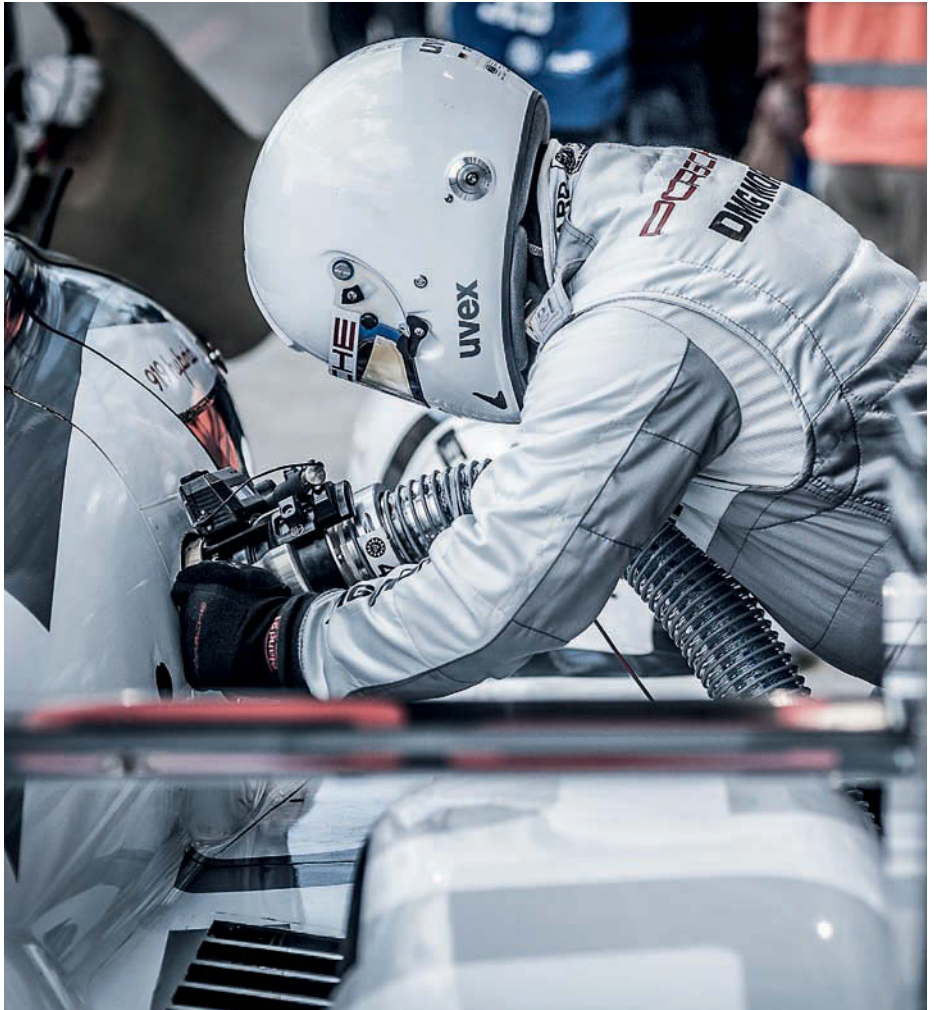
ROUND SIX: SIX HOURS OF SHANGHAI

Further proof that the 919 Hybrid was capable of a WEC win in its debut season came in Shanghai. Dumas/Jani/Lieb qualified their car on pole for round six and led the first 21 laps of the race, which included a seven lap safety car period.

The #20 car took over the lead on lap 21 when Hartley found a way past Dumas, and the #14 pitted for fuel and tyres on lap 33. One lap later a puncture put paid to the #20 car's progress, forcing Hartley to pit and costing the team a lot of time. The result was, despite the best efforts of Webber and Bernhard during their subsequent stints, a sixth place finish for #20.

Lieb inherited the #14 919 Hybrid in third place for his stint, and there it remained for the handover to Jani on lap 126. Jani managed to retain the position after his final stop on lap 158, crossing the line to collect Porsche's third podium finish of the season, one lap down on the leading Toyotas.

Neel Jani said: "I am very happy we finally managed to get on the podium after it had seemed to be within reach several times."





ROUND SEVEN: SIX HOURS OF BAHRAIN

The penultimate round of the championship saw warmer temperatures of over 30°C, and hot performances from both Porsche 919 Hybrids followed suit.

Dumas started the #14 car from pole but was overtaken by one of the Toyotas on the fifth lap. Dumas and Lieb managed to keep the car in contention for a podium, passing one of the Audis for third, then subsequently moving up to second for the closing stages, passing the sister 919 on fresher tyres.

Brake temperature issues meant Hartley's opening stint saw the car move backwards from its second row starting position to fourth, behind the two Toyotas. He pitted on lap 17 for fuel and tyres under a full course caution, and rejoined in fifth. Improving to third before handing over to Bernhard, the #20 car eventually found itself in the lead, slipping to third behind its sister car by the time the chequered flag fell. Both 919 Hybrids finished on the lead lap behind the victorious Toyota of ex-Formula One drivers Alexander Wurz and Stephane Sarrazin, and former Indy Car driver, Briton Mike Conway.

Going into the final round Porsche trailed Audi by 52 points, and Toyota by 92 points.

The #14 crew of Dumas/Jani/Lieb on the podium in Brazil – Porsche's first win for the 919 Hybrid – will more follow in 2015?



ROUND EIGHT: SIX HOURS OF SAO PAULO

The final round of the 2014 WEC season was a bittersweet race for the Porsche team, providing elation and drama in equal measure.

The #20 car started from pole with Bernhard at the wheel. He managed to pull away from the pack, building a 12-second cushion on its rivals during the first stint. Webber took over on lap 38, who in turn passed the car to Hartley on lap 79. A loss of engine power after 119 laps put the car back down into third position, and it subsequently dropped down to sixth following a full course yellow flag period. After his last stop on lap 227, Webber suffered a huge crash coming out of the final turn, destroying the #20 919 Hybrid and causing panic up and down the pit lane. The crash, which also involved the #90 Ferrari of Matteo Cressoni, caused the race to end under the safety car.

Things didn't start well for the #14 car, which began the race alongside its sister car in a Porsche front row lock-out. Losing a place to a Toyota on lap one, the car ran in third place despite some brave jockeying for position with

the Japanese crew. Despite picking up a puncture on lap 105, the Dumas/Jani/Lieb car took the lead on lap 119 when the #20 919 suffered issues. Lieb handed back to Dumas on lap 144, and Jani took over on lap 183 with the car lying in second spot. After a final stop on lap 222, Jani stayed on board and the team did not change his tyres, a gamble, but one which saw the #14 919 Hybrid claim first position. Following Webber's horrendous crash, Jani dived with Anthony Davidson in the Toyota for 90 minutes, but brought the car across the line to claim the Porsche team's first win following its return to LMP1 endurance racing, the 919 Hybrid's first victory in its debut season.

The season finale was certainly 249 action-packed laps, but as the dust settled, Porsche's win was put to one side as thoughts turned to the well being of Mark Webber. Mark suffered bruising and concussion, and remained under observation in hospital in Sao Paulo following the accident, returning home the next week.

Speaking from his hospital bed, Webber said:

"I'm quite sore this morning. I am pretty bruised and have got a stinking headache. I've got no recollection of the accident or how it happened. The team is looking into the details to find out more. Thanks to the medical team at the track and here at the hospital, who did a great job and are looking after me very well.

"On a positive note, it's great that the boys in the #14 car managed to bring home the victory, which is a fantastic way to finish off the season. I'm already looking forward to getting out there again next year."

Fritz Enzinger, Vice President of LMP1, said: "We have been fastest in every session this weekend and had both cars on the front row. The race was a thriller until the very last lap. After three tough years we have achieved this win with a great team in our debut season."

Porsche's final tally in the manufacturer's championship was 193 points, 96 behind world champions Toyota and 51 behind second placed Audi. What will the 2015 season hold, we wonder? ○



Above left: Webber's huge stunt saw the race end under a safety car
 Above right: The #14 crew, safe in the knowledge that their team-mate Webber was okay, celebrate a great win



PORSCHE'S 919 HYBRID WEC SEASON IN NUMBERS:

2323 kilometres

clocked up as the race leader in Brazil

23,232 total kilometres

covered over eight rounds by both cars

3592 kWh

approximate electric energy produced and used over eight races

373 days

duration that electricity could power an average household

1

outright race win in LMP1



Porsche Design CP 4 Helmet

The Porsche name has appeared on many desirable consumer products over the years, many of which are not directly connected with the automotive world, and the Porsche Design studio has contributed to a great number of these. Founded in Stuttgart in 1972 by Ferdinand Porsche, the Porsche Design studio relocated two years later to Zell-am-See in Austria, and in contemporary times it is considered to be one of the most respected and

established design studios in Europe.

In 1976, the Porsche Design studio crafted a unique and rather futuristic motorcycle helmet named 'CP 4'. Originally created for Swiss bicycle and motorcycle helmet manufacturer, Kiwi, the CP 4 was eventually produced by German manufacturer Romer during the late 1970s and early 1980s. The helmet quite clearly took its inspiration from space-age astronaut designs of the time; today it stands out as a rare and collectable reminder of the period.

The design was described as a 'integral motorcycle helmet', which referred to the retractable visor that disappeared into the helmet which allowed for the aerodynamic flow of air through its unique (at the time) ventilation system.

Today Porsche Design helmets are rare and sought-after by those who know what they're looking at. As with any vintage item, prices vary dependant on condition, but expect to pay anywhere between £70-£300.





RiSKy Business



When Porsche entered a two-seater sports car into an open-wheel Formula Two race in 1958, it made history – the likes of which would never be repeated...

Story: Andrew Frankel Photography: Porsche Archive



If people remember Porsche's performance at the 1958 Le Mans race at all, it is because this was Porsche's first podium finish in the French classic. Despite its diminutive 1.6-litre engine, the RSK of Behra and Herrmann came third outright and as the principal opposition were monster 3.0-litre Astons and Ferraris, the performance did much to cement Porsche's burgeoning reputation as a giant-killer on the race track. So much so that few would have paid much attention to the other RSK that came fourth. Two weeks later, however, it was this Porsche and not its podium-sitting brother that really did set the racing world alight. For then it did something that had not been achieved before by any car. And so far as I am aware, it's never been done again.

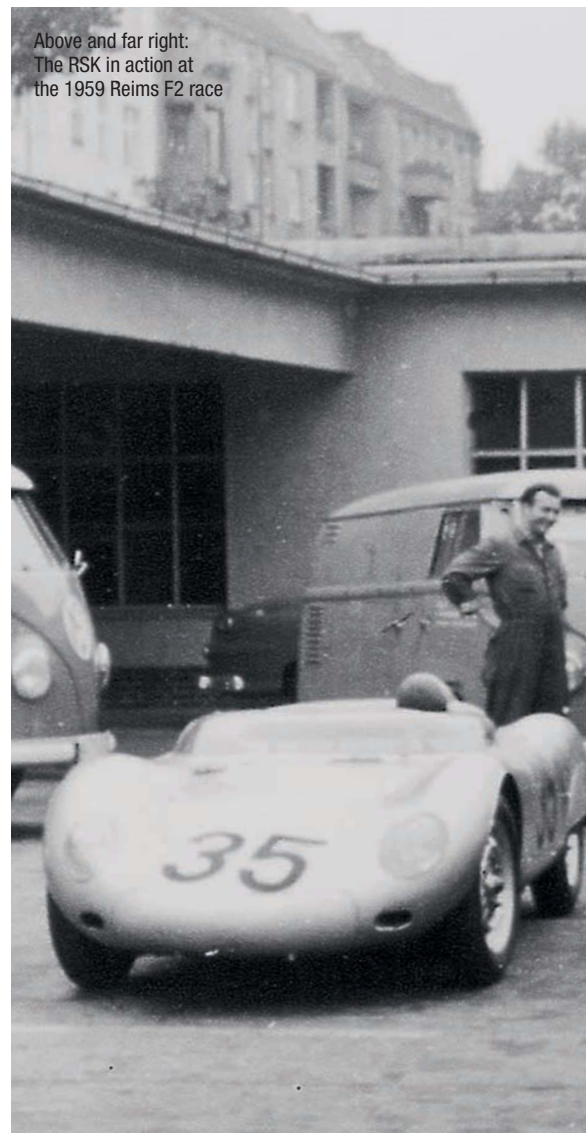
What do you think of when someone mentions Formula Two? I think of it as a junior formula, squabbled over by a precocious cadre of young guns, most of whom you've never heard of and even more you'll never hear of again. Some used to make it into F1, but they were in the minority. The F2 cars in my memory – steeped as it is in the 1970s and '80s, were not just a breed apart from the F1 machinery to which their drivers aspired but a world apart: with separate teams racing on different circuits in a championship that had nothing whatever to do with what the big boys were up to.

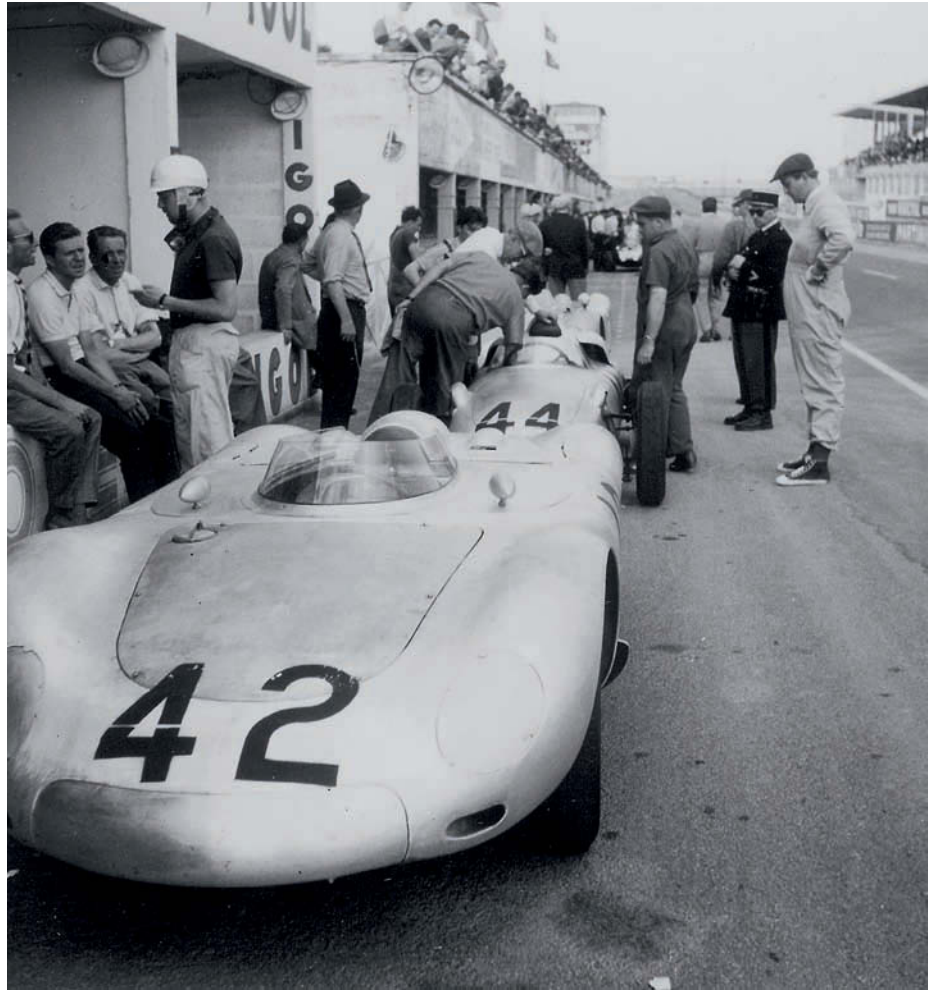
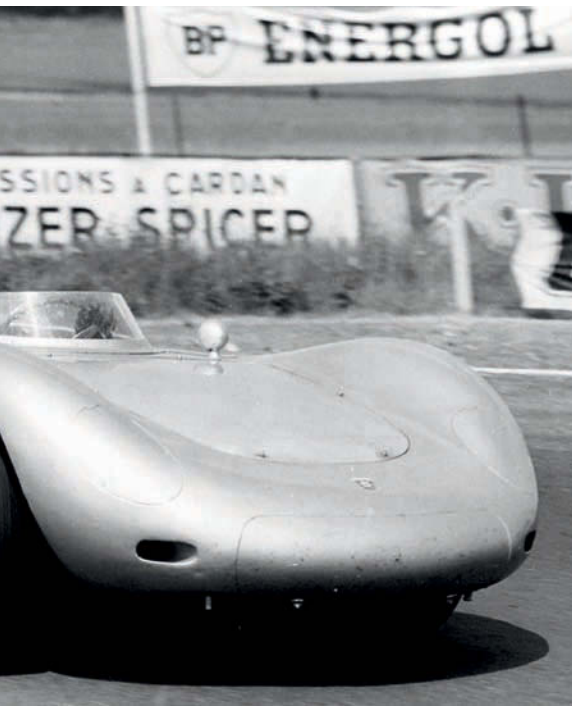
It wasn't always that way. Take the F2 race that took place on the Reims circuit on 6 July 1958. The drivers taking part included the likes of Stirling Moss, Peter Collins, Jack Brabham and Bruce McLaren – aka the cream of the current F1 field. And no wonder: the French Grand Prix was held at the same meeting. All the big works teams were there too: Scuderia Ferrari, Team Lotus, the Cooper Car Company and so on. Plus there was one more, one name associated with an entirely different form of racing, a team that didn't even turn up for first practice and when it did finally make its way on to the track, it was with a car that looked so utterly different to any other out there, there may have even been the odd titter in the paddock. That team was Dr Ing hcf Porsche KG, and the car, the very same RSK, that had come fourth at Le Mans just a fortnight earlier.

What was Porsche playing at? Even in 1958 racing cars were highly specialised devices, tuned to the regulations and requirements of their specific disciplines. A sports car had to have two seats, enclosed bodywork and be designed to be sufficiently robust to survive for 24 hours non-stop racing. A formula car was an open-wheeled, single seater that in F2 trim would never race for more than 90 minutes at a time. Put another way, at Le Mans in 1958, the winning car covered substantially more than 2500-miles; the Reims F2 race was a 30 lapper with a total distance to cover of under 150 miles. How could any car designed for one possibly even compete in the other, let alone do well?

It was an issue Porsche had wrestled with for a while. In the decade since it

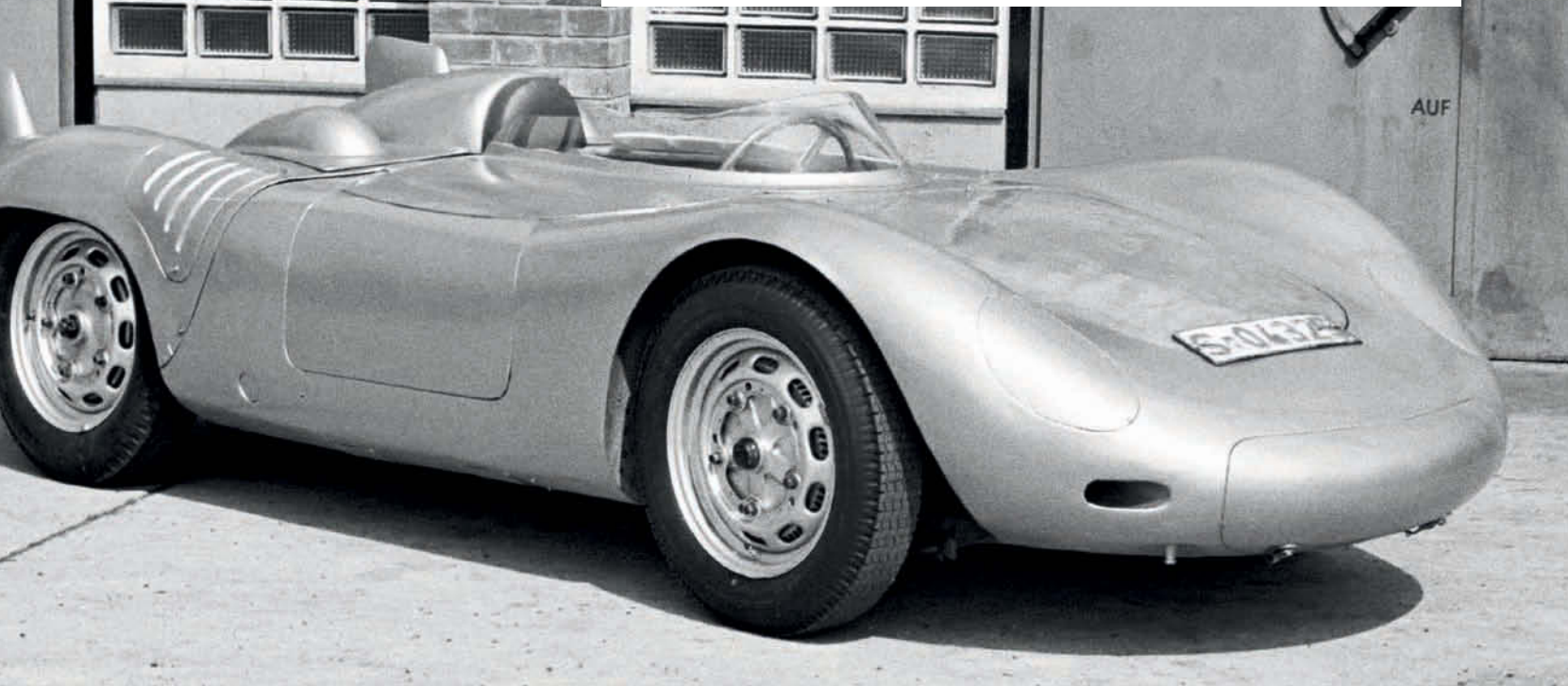
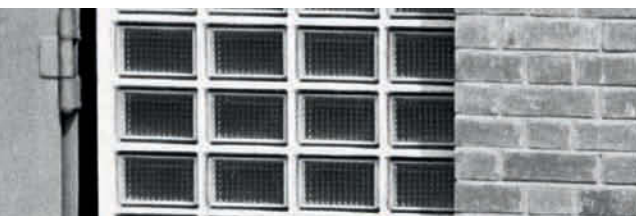
Above and far right:
The RSK in action at
the 1959 Reims F2 race





Hans Herrmann (then a
Burgward driver) tries the
Porsche at the Nürburgring –
it was raced by Edgar Barth





had first started producing cars, the factory Porsche team had focused entirely on sports car racing. But Porsche also knew that this was not the pinnacle of motorsport. By 1958 it was seriously considering a move into F1 but it was held back by rules stipulating that a 2.5-litre engine must be used, it did not have one, and the fact that by then it was an open secret that the current rules were not going to be around for long. Indeed it soon became clear that for the 1961 season, F1 as we knew it would effectively be abolished and replaced by the existing F2 regulations. This then would mandate a 1.5-litre normally aspirated engine, and that was something Porsche did have.

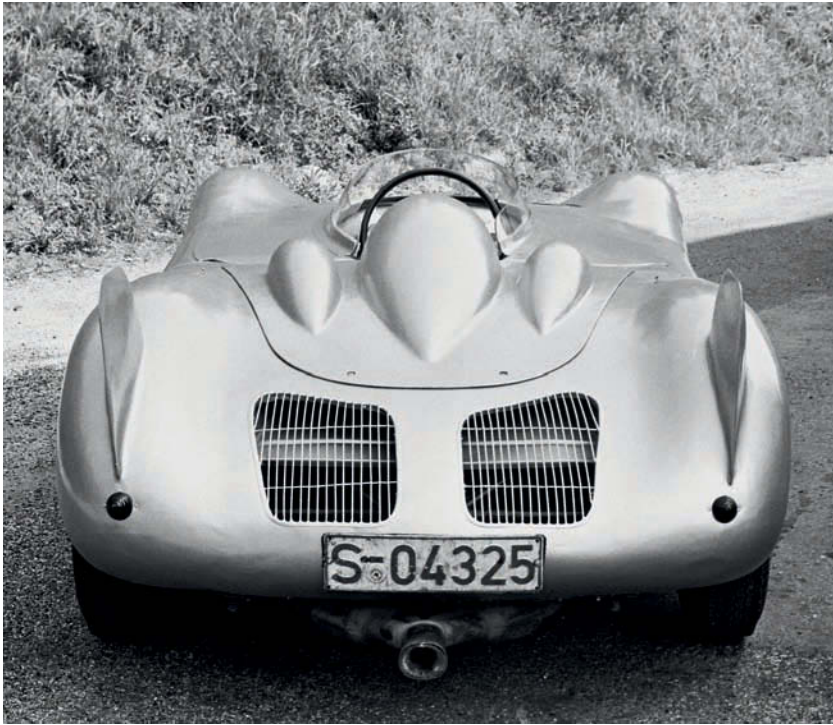
Now its interest in trying its hand in F2 is perhaps easier to understand: it could evaluate how difficult a full-on F1 assault would be in 1961 by entering F2 races in 1958. But all it had was the RSK, so instead of doing what any another manufacturer might, simply give up on the idea as tempting yet impractical, it decided instead to go single-seater racing with a two-seater sports car.

With the decision made, it was easy to choose which car to use. The RSK that had come home fourth at Le Mans with Edgar Barth and Paul Frere driving was not only a single lap behind its third placed sister, it had done so with a 1.5 and not a 1.6-litre motor under its engine cover, and 1.5-litres is what the F2 regulations required.

As soon as Le Mans was over, the RSK was whisked back to Stuttgart to prepare for this unlikely challenge. In that fortnight it was converted from left-hand drive to central steering, gained a new nose section that did away with headlights and added a new engine cover to create a headrest behind the driver. The identity of that driver was never in doubt: Jean Behra was not only the quickest driver Porsche had on its books, he was also French and the darling of his native country's race fans. They would turn up just to see him.

It all seemed like a mad plan, added to with the choice of venue for this untried escapade. The whole F2 circus would visit the Nürburgring in little more than a month, so why not take the time to really prepare properly and enjoy home advantage at the same time? It's not as if there was any hurry with the new F1 regulations being nearly three seasons away.

But there was method here. Porsche knew that whatever the RSK lacked as a result of never having been built with F2 in mind, it did have one apparent advantage: all the conventional F2 cars would have standard open wheel bodywork, while the RSK would wear its far more aerodynamic all-enveloping body, and Reims vied with Spa and Monza for being the fastest race track in the world, and the one where any aero advantage would count the most. How fast? In 1958, even little F2 cars powered by normally aspirated 1.5-litre engines were lapping at almost 120mph.



The RSK was converted from left-hand drive to centred steering, with a new nose section and engine cover in just two weeks...



First practice took place on the Wednesday, and this being just ten days after the Porsche had crossed the line at Le Mans, there was perhaps understandably no sign of it. But the following evening, and to the fascination of all present, there among the works Cooper team, Lotus transporters and Peter Collins' Ferrari 156, sat this strange looking Porsche.

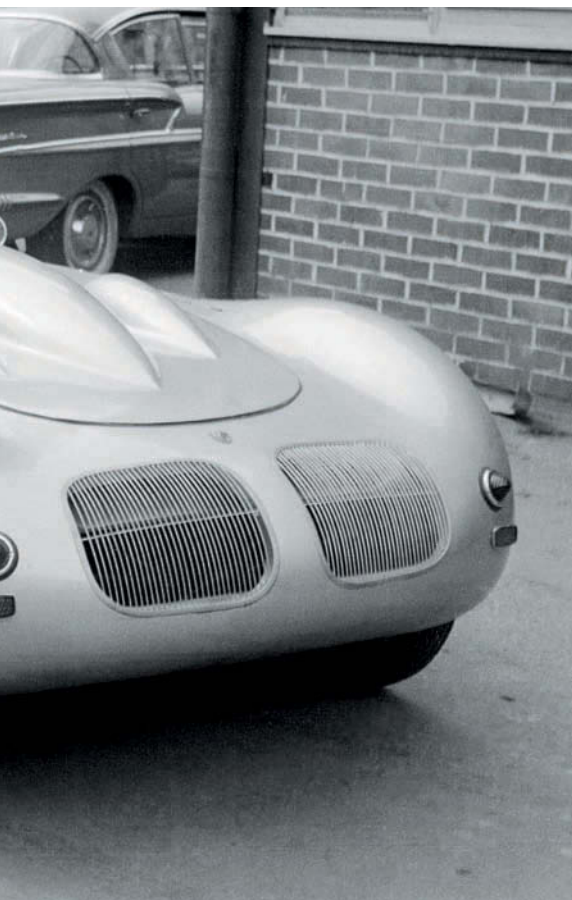
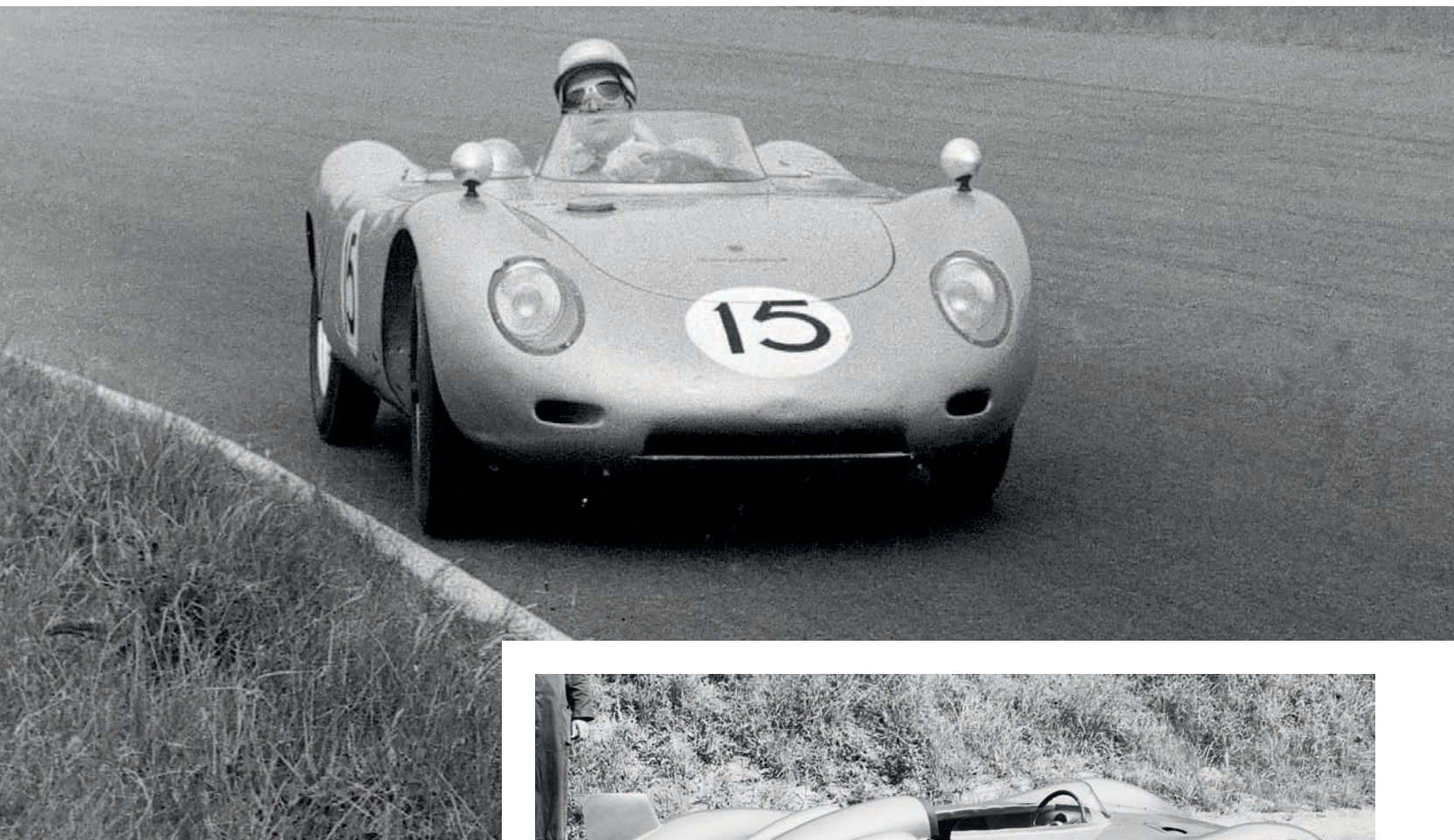
At first it seemed all the effort to get the Porsche there might only pay minor dividends. At the front the Cooper of Moss and Collins' Ferrari traded times, Moss eventually coming out on top with Behra two seconds slower. But it was not difficult to see where the time was being lost: the slippery RSK was the quickest car on the straights, but struggled to maintain its advantage as the cars accelerated away from the track's hairpin bends. Simply fitting lower ratios for the intermediate gears was all that was required to unlock its performance. On Friday evening Behra lapped the track in two-minutes 34-seconds dead, some 3.4-seconds faster than he'd managed the day before. Indeed it was quicker than any other F2 car would go all weekend. No other car got below 2-minutes 35-seconds. Had there been those titters in the paddock, they'd be silent by now.

For Porsche, the race itself was gratifyingly dull. Behra streaked away from the pack pursued by Moss and Collins, everyone else effectively out of contention and in a different race. Moss did briefly get the Cooper ahead but his lead lasted less than a lap and soon he was out altogether with a blown engine. By half distance the Porsche sports car led Collins' purpose-built works Ferrari F2 car by 20-seconds, making – as *MotorSport* magazine said more unkindly than unfairly – “the Formula 2 world look a bit silly”. In the end Behra ran to an unchallenged victory providing “an embarrassing shock to the Scuderia Ferrari and a real shaker to the British F2 boys, who thought they had got this type of racing well sewn-up”. They had not.

The RSK ran again in F2 that year, with Edgar Barth, the second F2 car home in a German GP where F1 and F2 machines competed in the same race. On the steep banking of the Avus where Behra would lose his life in an RSK the following year, Masten Gregory would win the F2 class by over two minutes.

And that was the end of the story of that particular RSK, surely the only car ever built to have won its class at Le Mans and in Formula 2 outright. But it was not the end of Porsche's involvement in F2 racing. The RSK had proven the concept and, with remarkably few changes, raced with ever-greater success as the 718/2 through '59 and '60 and into '61, now as an F1 car. In that final season Dan Gurney came second three times, actually leading out of the final corner of the French Grand Prix (back at good old Reims) only to be out-dragged to the line by Giancarlo Baghetti's more powerful Ferrari. Still, not a bad effort for a car designed five years earlier to race at Le Mans... ○





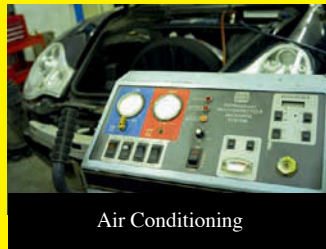
Wolfgang Graf Berghe von
Trips wearing the number
42 at Reims in '59



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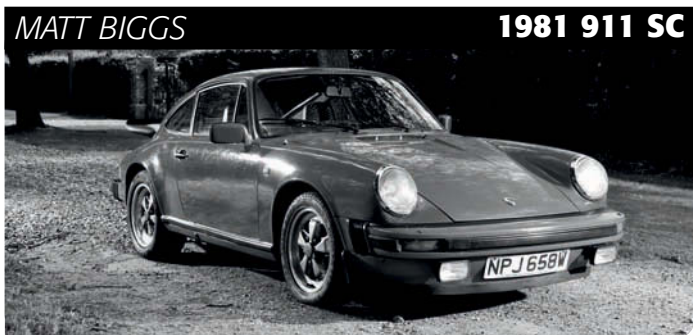
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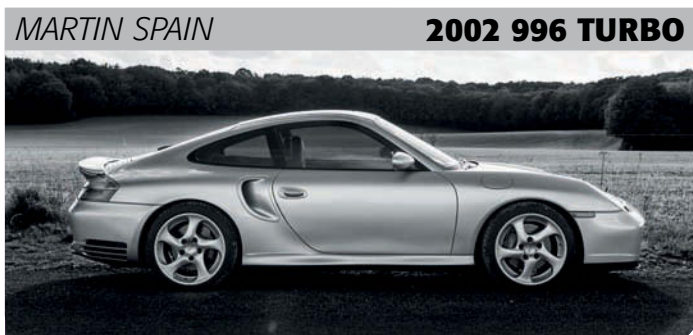
long-term fleet

There's talk of readying the fleet for winter, and a few small patience-testing jobs...



Formally owned by contributor Adam Towler, the SC is tatty but it was exceedingly cheap for an air-cooled 911. Matt's still not sure how to drive a 911 but the car looks and sounds fantastic and was great fun on its first track outing.

[twitter](#) @PawnSacrifice



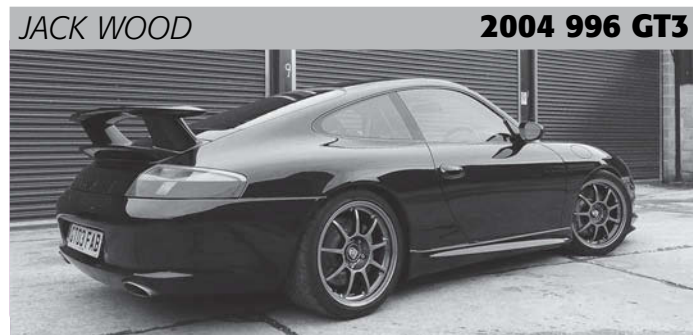
After an extensive search for the perfect 997 Carrera 2S, Martin was "seduced by the boost" and ended up with a 996 Turbo. Purchased in April 2014 as a weekend and occasional track day car. Other than the outrageous performance, it is the famous Turbo script on the rear that keeps him coming back for more.

[twitter](#) @MartinSpain



Purchased in November 2014 the GTS was something of an impulse buy. The Meteor grey Carrera 2 started life as a demonstrator at Swindon Porsche and is fully-loaded with extras. So far it is living up to the hype and has been a pleasure to use.

[twitter](#) @JackWood



Bought in April 2012 from a highly reputable Porsche specialist and pressed into immediate service as a combined daily driver and track car. Now a third car, the GT3 has been completely resprayed with the latest self-healing paint protection film by PaintShield and mechanically overhauled. It's in pristine condition.

[twitter](#) @JackWood



A project bought unseen for £400 as a non-runner. Replacement engine, SPAX coilovers and 968 ARBs, a home-made quicker steering conversion and race seats already fitted. Plenty of track days, a rally in France and trip to Le Mans to see Porsche's return all under its belt.

[twitter](#) @PawnSacrifice



Run in conjunction with a good friend, the 3.2 Carrera arrived in late 2014. Since then Adam has been trying to get to grips with classic Porsche 911 ownership, when time allows!

[twitter](#) @AdamTowler

long-term fleet



1981 911 SC



Damn confounded thing. Not the car but the blasted, so called, ventilation system. It was a joke as a method of cooling and downright calamitous as a heating mechanism. The whole thing is hit and miss as to the volumes of air produced and the temperature created.

The heating and ventilation system is divided into three elements, or four if you count the [non-operational] air conditioning. The main unit is the automatic heating control that resides between the front seats. There is a single dial which allegedly manages the heat and fan speed. The theory is this: turn the dial to the required level – there are numbers and colours to suggest that the further you turn it clockwise the warmer you will be. At some point, I would hope, this would have taken the cabin temperature using the heat sensor (small rubber sticky out thing next to the mirror) and, referencing the dialled-in temperature, regulated the fan speed and hot air intake. To regulate the hot air there is a motor inside the control box which moves a rotating arm up, pulling a cable which closes a flap in the heat exchanger controlling the mix of hot and cold air.

It is rather intricate, and at one stage I suspect would have seemed all very

modern and clever. At some point I also assume that it worked as it was meant to. At this point in time, with my car, there are a number of problems.

First the control motor: it appears to have stopped working. The bigger problem with that is that the arm also operates a small micro switch that triggers the blower to work – not that they appeared to do a lot when the switch was working. Next up, the flapper box is old, battered and a little rusty, therefore it doesn't work smoothly, and can just stick in place. I disconnected the lever that the flapper box cable connects to, allowing me to use the emergency override lever (even new, Porsche anticipated this going tits-up) allowing me to operate the flapper vents manually. I will focus on fixing the blowers and micro switch and stick with adjusting the flapper vents manually. Even if I was to let the auto heater do its thing, I am unconvinced the temperature gauge works.

Next up in this catastrophe are the controls on the dash comprising three rows of sliders. The top is meant to control the fresh air into the car, namely the amount and the fan speed. Again I am not convinced that the blowers work. The ones below control the flow direction of cold or hot air. Exactly where anything is going to come out is a mystery, still. The air-con doesn't work;

apparently with the York compressor fitted to my car, it never would have. I gave up on mine some time ago and disconnected the drive belt to release a few extra horses. Then there was the matter of the small electrical fire that took out the air-con fan switch. It was subsequently replaced, as it seemed to be the only reliable way of getting any air into the car.

It all sounds rather complicated, and if you are confused reading about it, try using it while on the move! The final element, a small switch, is located out of sight, under the speedometer and operates a blower. This one works like a champ. No matter what else is going on this is a high speed blast of air. On my SC the blower tends to make a god awful squealing racket when it's first turned on. This may be current related as the noise abates with a throttle blip. As nothing else appears to work as promised in the Porsche manual of lies, I use this switch to heat the car at times.

Adding to my frustration, the heater system in the 924 S, which essentially comes from a car a year older than the 911 SC, is less fancy but now works far better. I have seen on the internet a backdate option for the SC which should remove some of the nonsense.

This is not a random rant, and I appreciate there is some excruciating

detail, but there is a point to all of this. The past few weeks, since it has become colder and damper, my morning routine has lengthened. There is something not quite right with my car, specifically in relation to how watertight it is. If I am lucky and it's been a mild night, when I get into the car the inside of the windscreen has a layer of dew across it. On a cold morning, the dew is still there, only in the form of ice. Scraping it off with a credit card, I get a seasonal snow scene on the dashboard. In either circumstance it takes a lot of effort on my part, pulling levers, turning dials and pushing knobs, to create a small clear dry spot. I have a new-found respect for steam locomotive drivers.

I believe the excessive amounts of water are making their way into the car around the driver's door, which appears as if it is not sitting right, something else I need to investigate at some point – hopefully sooner rather than later. I will have a look at a few of these problems while the roads are going to be a mess and may even use the 924 S a little more as, much as I will miss driving it regularly, having the SC off the road over the winter may not be such a bad thing. I could drop the engine!

*Matt Biggs
@PawnSacrifice*



Matt has been struggling with the SC's heater controls this month



long-term fleet

Martin has been contemplating how best to prepare the Turbo for winter



2002 996 TURBO



The clocks have gone back, it's dark when I leave the house in the

morning and when I get home at night, the temperature has dropped into single figures and the roads seem permanently wet. That's just the sort of weather for a 450hp all-wheel drive supercar, right?

Driving the Turbo in the dark makes it seem even faster, particularly down unlit back roads, and while in the daylight I'm now confident enough to deploy the afterburners at almost any opportunity, in the dark I'm finding myself more circumspect. Add slippery roads and a frost or two into that mix and I'm very glad of the broad footprint and excellent traction of the Turbo.

Speaking of winter, I had wondered whether to fit a set of winter tyres to the Porsche, in anticipation of potential ice and snow in December and January. The Porsche handbook has a section on winter tyres, recommending a 225/40 front tyre, which is the same as for summer tyres, but a 265/35 rear on a 10J rim, which normally runs 295/30-section tyres on an 11J rim. So, in order to fit winter tyres I'd need to buy another set of rims and a set of spacers at the rear to accommodate the narrower wheel, in addition to the tyres themselves. I did briefly considered

trying to stretch a 265 tyre onto the standard 11J Turbo twist alloys, but that didn't seem like the safest thing to do! At this point I discovered that it's hard to find N-rated winter tyres in these sizes anyway, so for this winter I've decided to keep the car on its summer rubber, and leave it on the drive if and when the snow falls.

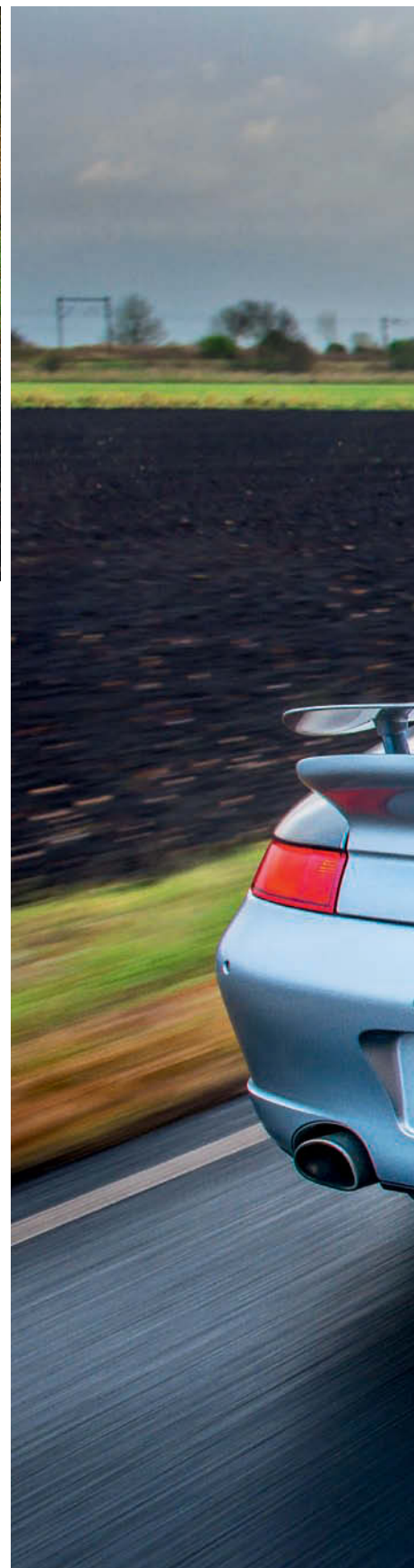
One weather-based upgrade I will be making in the next week or two is to fit a set of mesh grills behind the intakes in the front bumper. The oversize nature of the intakes on the Turbo make it very easy for leaves and other road debris to gather inside the bumper, so fitting black mesh behind the intake apertures in the bumper is a common fix to prevent autumnal leaf mulch from blocking the radiators. I had considered giving this a go myself since Design 911 sell a ready-to-fit kit for the 996 Turbo, but given that the car is going into my local Porsche specialist for an oil service and general health check in a couple of weeks, I'll ask them to fit the mesh and save myself the embarrassment of getting it wrong!

Following on from my musings on replacing the aging PCM1 system last month, this month I've been trialling a budget solution to getting modern navigation and music integration into the Turbo. I've bought a Belkin Aircast Bluetooth FM transmitter that I can pair

with my iPhone for music and phone calls, and I've discovered that I can use an old, SIM-less smartphone as a sat-nav and share the data connection from my new phone, which allows me to use either Google Maps or the TomTom app. It's a bit fiddly to get it all set up so I only bother for longer journeys but it does give me up-to-date navigation and digital radio without having to spend thousands on a new headunit.

The Turbo has seen quite a bit of daily use for the second month running, this time being pressed into service as my wife's daily driver while the family car was in the garage for repairs. This has meant Mrs S having to drive the car for the first time, something she initially wasn't very keen on. Being quite a bit taller than me, she found the legroom rather lacking in the driver's seat, mainly because the steering wheel doesn't have rake adjustment so her knees ended up being pressed against the bottom of the steering wheel. I've been told very firmly that the next Porsche has to fit her properly! Space issues aside, the Porsche acquitted itself well on her daily commute, but it's safe to say she's not going to be fighting me for the keys any time soon.

*Martin Spain
@MartinSpain*





long-term fleet

1986 924 S



The dashboard project I started last month is already on hold due to a mix of non-car commitments and a more immediate problem with the 924 meant it has had to be set aside.

I've been focusing on my overly heat-cycled summer tyres which are proving to be somewhat exciting in the damp winter conditions. While some of you may applaud such loose virtues and be shaking your head at my reluctance to drive everywhere sideways, it is time I fitted my winter tyres: Avon Ice Touring STs. Aside from picking up a remarkable amount of dirt and grime in storage it's pleasing how

much tread there is on the Avons; compared to the outgoing Hankooks they look practically new! I meant to refurb the wheels over the summer, and failed miserably. I wonder if I will be able to get my act together with the summer set while they're off the car. I don't rate my chances.

One evening I popped down to the garage for a swift wheel swap. My impact wrench means that once I have a side of the car in the air I can quickly take the wheels off and fit the replacements. It's up and down in next to no time. The passenger side went on no bother, as seemingly did the driver's side. There was a pinging noise from the rear but nothing too

alarming. Only when I began torquing the rear nuts did something appear amiss; the car was moving backwards as I tightened. Assuming I'd left the handbrake off I went to the cabin and the lever was already up. A push of the car revealed it certainly wasn't working. As I lowered the lever to reapply the brake it was obvious something had broken: there was no resistance from the lever.

It was late, dark and cold, so I only had a cursory look under the car. It didn't reveal much. Having recently seen the inside of the parking brake on the SC I assumed that one of the brackets between the shoes had come loose and would need replacing. The

following weekend I put the rear of the car on stands for a fuller inspection. Giving a more thorough pull on the brake cables where they enter the hub, the one on the driver's side pulled free. It was beyond a point in the weekend where I would be able to source a replacement.

The offside short cable had snapped, the rear cable is allegedly easier to replace than the long cable (which runs to the handbrake). The cable is the same for both sides so I would be unable to buy the wrong part. I ordered an OEM version.

Removing the wheel, brake calliper and disk I could see how it all fitted together. There was no way to replace



the cable without removing the brake shoes – a horrible job. Fitting the hub end of the cable was easy enough. I didn't refit the entire assembly as I figured the other end would be easier to fit if there were some slack in the cable. The short cable winds its way under and behind the torsion bar tube with the fixing point tucked into a tight space. A bolt holds the two together, 10mm each for the nut and bolt. I was able to make enough room to work. A ratchet spanner (worth every penny) on the nut meant it didn't take an age to get the thing removed. Liberating the old, broken cable from the retaining bracket was not too onerous but it was quite clear that

fitting the new one was going to be a swine. With the new cable connected at the hub end there was some restriction on the amount of free cable and it therefore required some force to pull it over the retaining bracket and then far enough forward to fix it to the main cable.

The really tricky part was an innocuous looking rubber boot that covers an exposed section of cable. It is designed, obviously, not to come off thus making it stupidly difficult to fit. I suspect it would be difficult to fit said boot under the best of circumstances, let alone in a tight space working upside down. I was losing patience so decided to refit the brake shoes, which

was as painful a job as I remember; I am not very good working with small springs and managed to pincer a good piece of finger in the process. I called it a night. The following morning, refreshed, I was able to fit the rubber boot in about ten minutes with only minor frustration. I tested the handbrake on the drive: it worked! There is always some surprise that I get anything to work. I inflated the tyres which had lost some pressure in storage, two of them quite a lot. I will need to keep an eye on those but the car is back in service!

Apologies to all of you wanting a dry winter; now my winter tyres are refitted I am praying for snow. It could be

interesting if I were to get my wish. With the car riding so low on the SPAX coilovers it could now be a snow plough. Until a proper winter arrives I am enjoying being able to throw the car around again, knowing that there is a better-than-average chance it won't try and leave the road. Even in the dry I don't think I have had this much grip for some time. The vast improvement that new rubber has always amazes me. To be fair to the outgoing Hankooks I have dialled down the firmness of the coilovers so the car is naturally less flighty and that suits me just fine... on the road.

*Matt Biggs
@PawnSacrifice*



Matt has been grappling (quite literally) with a broken handbrake on the 924, which has required some minor surgery on the brake system



long-term fleet

2010 997 GTS



1500 miles in a little under a month. Not a bad start to life with the GTS. However the car has developed a bit of a niggle that has meant I've just dropped it off at Wilmslow OPC for a quick inspection. On cold mornings, and very occasionally when the engine and gearbox is fully warmed up, I get a bit of a crunch when swapping from first to second gear whilst pulling away from a standstill. Letting the revs die right down before selecting second sometimes helps, but not all the time. Annoyingly it doesn't happen on every change, so it might not be an easy thing for the guys in the workshop to replicate. But given the car has a warranty I think it would be foolish not to get it looked at sooner rather than later. I'll let you know their findings next month but hopefully it's something as simple as a clutch gapping issue and not something deeper and oilier. But if any readers have had similar issues with their Gen2 997 manual gearbox I'd really like to hear about them, please.

Apart from that, the GTS has proven to be a very capable daily drive. Okay, so it doesn't return the same kind of mpg that something like a Golf diesel would on the commute (mid-20s mpg at best on a 25-mile route made up of a mixture of country lanes and motorway), but then the VW doesn't have that sonorous flat-six coupled to a switchable Porsche Sports Exhaust that can entertain at a crawl and

become a thing of pure joy between 6500 and 7500rpm. And it's over this last 1000rpm where this X51 derivation of the DFi 3.8 really does its most impressive work. The limiter actually feels about 500-600rpm too low, so strong is the pull to the redline. I have driven few cars that feel so potent right to the very top of their rev range. It feels like Porsche sold this unit a little short by nipping the fun in the bud so early. Maybe it felt like it had to keep something in reserve for the 'real' GT cars. Unfortunately those forays into the upper reaches tend to be few and far between on the daily slog to school and office, so it's in the mid-range where most of the work is done. Which is no bad thing. The engine pulls strongly from very low down the range in all the gears. Not the massive torque you get from your modern blown nutter-barge or turbodiesel but more than enough to make decent progress. The whole engine feels well suited to the car and contributes massively towards making every trip a pleasure.

As with the other Porsches I've owned it's the cohesion in the overall package that make these cars feel so special every time you get in them and drive. There rarely feels like a single stand out factor that grabs your attention significantly more than any other. It's more the way that everything works together, around you, to make the experience of propelling it down the road utterly thrilling and engrossing. The Cayman S opened my eyes to it the first



time I drove it. The 996 GT3 took it to completely new level. And the GTS has it instilled in it, too. It's unmistakable.

It starts with the weighting of the clutch, steering, and gear shift. And the accelerator and brake pedal. Every control surface feels like it has been adjusted and calibrated by a single person over the course of a few months until every movement, no matter how large or small, feels completely in tune and in balance with everything else going on around it. It sounds simple, and obvious, but it constantly amazes me how many cars, even very expensive so-called performance cars get it so wrong. Almost as if each control element has been designed and signed off by separate committees working autonomously to each other!

Then comes the sensations and feedback from the car and the road.

The whole car buzzes with information. The steering wheel shimmies and vibrates as the road undulates and the surface changes. The brakes feel like you're actually pressing the pads onto the discs with your feet rather than just using the pedal to toggling an over-servo'd on-off brake switch. And your bum in the seat tells you exactly what the rear end is doing. The clunk of the diff locking up as a wheel loses traction; slip that's generated by an exuberant blip of the throttle on a greasy roundabout, it's all clearly communicated, if you know what to listen and feel for.

And all of this comes with the most sublime damping which controls every wheel to get the very maximum out of the car on any given road. It doesn't steamroller the road flat, it just seems to work with it so there are never any surprises.

I'd been worried that the GTS would leave me feeling flat after having spent so much time with a car as special as a 996 GT3. But I needn't have worried one bit. Yes, the GTS feels more refined. The engine is smoother, the suspension more compliant, the seats heated and it has an iPod connection and sat nav. But it is far from dull. Far from anodyne. All the things that make a Porsche feel special to own and drive, for me at least, are all present and correct in the 997 GTS. I can tell that OEX and I are going to have a great time together over the coming months and years.

Jack Wood
@Jackwood





Jack has been busy bonding with the 997, despite a couple of small issues which has seen it return to Wilmslow OPC



long-term fleet



2004 996 GT3



As was expected, FAB hasn't turned a wheel this month. The arrival

of some truly horrid weather and a certain GTS has meant that I've not had the inclination or the need to get the old shed out of the, er, shed.

But that doesn't mean that the car has been completely abandoned. For the last few months the GT3 has been in a lock-up on a farm around the corner from my house. Whilst it's been in there it's been wrapped in a car cover to keep its paintwork free from airborne particulate contamination. That's dust to me and thee. It seems to be doing the job as every time I pull back the cover to gain access to the car I find myself marvelling at how good the paintwork looks. It's never been something that has concerned me in the past, but FAB's new finish has me obsessed with trying to keep it

looking immaculate. So far so good! In fact, this obsession even found me touching up parts of the external plastic last week. The scuttle just below the front windscreen had been bugging me since I picked the car up from the bodyshop earlier in the year. It looked out of place as the only exterior part that didn't look brand-new. Some polishing compound in certain areas along its length made it look even worse, to the point I had actually considered replacing the whole piece with a new one. Then reality kicked in and I realised what a waste that would be. Instead I picked up some Auto Finesse Revive from the guys at Polished Bliss and gave that a shot.

I tried a small area of the scuttle and was instantly blown away with how good it looked. I continued on with the rest of the long piece of trim and then started on all of the under-hood plastics. It was quite an

addictive process! Seeing all the faded old black plastics coming back to something closely resembling new was very rewarding. That it was no more difficult than a simple wipe on, wait, buff off, process made the whole thing a very palatable exercise. One that I must finish off once I get another spare hour or so back at the unit. Regardless, I have to recommend the Revive if you have any faded plastic that you want to get back to its former glory. Great stuff.

The only other addition to FAB this month has been to plug it into the mains. No, I haven't lost my senses and had one the greatest ever road-going engines removed in favour of a hybrid plug-in system. No, I've merely purchased a CTEK battery conditioner to keep the battery topped up. For some reason 996 GT3s are very susceptible to draining and killing their batteries if they are left unattended for

anything much longer than three weeks. Having only just replaced the battery at the beginning of the year I didn't fancy stumping up for another new one in the spring if the car is just going to sit in the garage over that next few months. Might as well get it on a charger now so that if I do want to take it out for a spin I won't be faced with having to try and jump-start it.

Apart from that I have just run the car where it sits a few times over the past month. You hear of all kind of horror stories of cars that are left sitting for periods suffering from cracked and weepy oil seals as they aren't getting worked. I'd rather not have to deal with a car that has sprouted leaks over the winter, so running it for 20 to 30 minutes at varied revs every few weeks seems a sensible precaution. At least I hope it is.

Jack Wood
@Jackwood



long-term fleet





1985 3.2 CARRERA



The cold, short days and salty roads mean I haven't driven the

Carrera anything like as much as I'd ideally want to this month, and consequently this will be a report looking ahead as much as it looks back over recent, sadly imaginary, drives.

If that sounds a little bit like last month's report then so be it: I'm finding the down side of owning a 'classic' is that I struggle to find the time and occasion between work and family commitments to actually use the thing. It's a situation exacerbated greatly by the specifics of the insurance situation and hence why, once again, my mind is diverting to newer, water-cooled iterations of the 911 that I could genuinely see myself using on a day-to-day basis. Sure, that might sand the gloss off the experience over time but I think there's a lot to be said for just driving and enjoying your Porsche, and right now, I simply don't feel I do enough of that. Let's face it, that's supposed to be the point, after all.

In fact, you might recall mention of a cheap 996 Carrera last month, and while that car didn't materialise in the end – as the majority of these 'opportunities' never do – it certainly got me thinking. There was also an 'opportunity' with a rather poorly 997 Carrera S (go on, guess what was wrong with it – yep, bore scoring), but that had the wrong gearbox (a Tiptronic, yuk, never) so that also fell by the wayside in pretty quick order. Perhaps this is all trying to tell me something?

It feels like the next couple of months will be a crossroads for my time with the Carrera. The water-cooled option does appeal, and I'm increasingly finding my long-term

desires crystallising around the buxom form of a 996 Turbo: driving fellow contributor Martin Spain's lovely silver example for this issue of the magazine (p72) certainly didn't help the closet Turbo fanatic waiting to burst out, although the potential running costs of one of those make my complexion go as white as ULY's GP white bodywork when I dwell on it for too long. Moreover, how long can they stay as cheap as they are, relatively speaking, before they too follow the 996 GT3 upwards into the classic car value storm twister? That may be another ship that sails from port I suppose: after all, remember when twenty grand bought you a 964 RS – like you, I do!

With that in mind, perhaps I'd be better off with an eight-valve 944 and be damned with the lot of it. I suppose that's the eternal, internal struggle with classic and enthusiast car ownership: there is no magic solution, no golden bullet. We all believe we know our dream garage but even with the fabled 'pots of cash' lying around the gaff I still reckon a decent proportion of one's time would be spent pondering the future of a certain car in the collection, or what else was missing, or whether car 'X' deserved a restoration. It's just that these cars might be 918 Spyder, 917K and 959, instead of 'well-used' 911s...

One piece of progress with ULY has been the repair to the driver's seat; the ugly rip in the fabric is gone and the interior looks all the better for it. More on that bit of restoration work, and hopefully some Carrera driving, next month, but for now I only need to spend 30 seconds looking at the beautiful form of ULY to render thoughts of replacing it utterly horrific.

*Adam Towler
@AdamTowler*

914 and 914/6 (1970-1976)

The quirky and cool 914 from the 1970s is often overlooked but, actually, it's a great classic Porsche with a bright future.

Think rare Porsche and some sort of 911 RS is likely to spring into mind. Think mid-engined roadster and the taut curves of a Boxster will perhaps appear inside your head. Combine rare and mid-engined and what do you think of? The car that's in the news at the moment that would fit the bill is the 918 Spyder 'hypercar'. However, what if I throw another criterion into the mix – a very rare, mid-engined Porsche

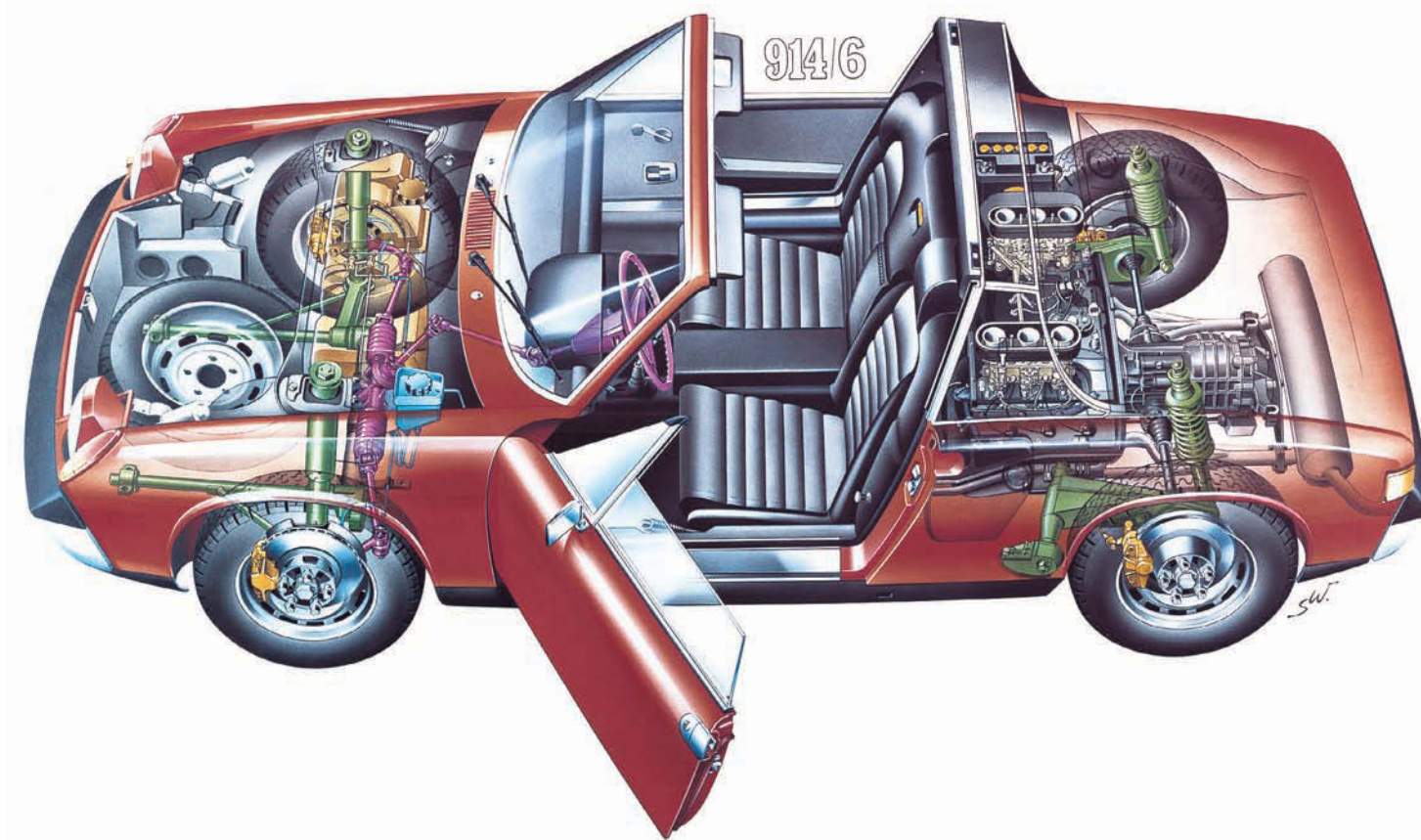
you can buy for comfortably less than £20,000? You might well struggle to think of anything that fits the bill.

How about the 914, of which there are just five for sale in the UK at the time of writing? Some readers won't know what a 914 is and you can be forgiven for that; I've only ever driven three during my lifetime and I can't remember the last time I saw one on the road. In a nutshell, the 914 was developed by Porsche in conjunction with Volkswagen (originally there was

to have been a VW-badged version) and was sold from 1969 to 1976 as an entry-level Porsche (it was replaced by the front-engined 924). The mid-mounted engine was either a flat-four or, in the case of the range-topping 914/6, a flat-six. The boxy two-seater body featured a lift-out Targa roof and pop-up headlamps. It was a cheeky little car with nippy performance and great handling.

Now, if you're reading this in the USA you're probably wondering just why I'm

having to explain to British readers what a 914 is. It's because Porsche built some 118,000 914s and a full 104,000 of those found their way to American soil; which didn't leave many for the rest of the world. Indeed, it's believed that fewer than 20 914/6s were sold in the UK, which is not surprising when you consider that they were left-hand drive only and for another £100 buyers could have a right-hand drive 911T. Even the less expensive four-cylinder 914 only sold in hundreds in the UK, so



Philip Raby

Philip Raby has been driving and writing about Porsches for over 20 years, with several books and countless magazine features to his name. He is also a specialist Porsche dealer and consultant



"They have a wide appeal and make a lot of sense as a useable classic car"





it's no wonder we don't see many. Of these, a handful (possibly 11) were converted to right-hand drive by Crayford. That's not a route to consider today, though, as it's not a straightforward job and requires, among other things, a reshaped fuel tank to accommodate the steering column.

Today, few UK Porsche specialists champion the 914, with the notable exception of Andrew Mearns of Gmünd Cars in Yorkshire

(www.gmundcars.com), who's owned a 914 for 25 years, has seven in his possession right now and sold no less than 12 during 2014. "People in Britain just don't get the 914," argues Andrew. "However, it's a great classic car. It's mid-engined, has an open-top, is quirky and fun, and it has a Porsche badge. What's more, it's a car that can appeal to not only Porsche fans, but also to Volkswagen enthusiasts and classic car collectors in general. It's a

far better car than, say, an MGA and less expensive, too."

Andrew sources most of his 914s from the US, which is not surprising as that's where most of the cars originally went. "The few that were sold in Europe tend to be very rusty now," he explains. "The bodyshells weren't well protected and many have rotted badly. Many American ones are rusty as well, of course, but at least there are more to choose from over there."

Rust is the big killer for 914s, and restorations aren't economically viable when you'll struggle to sell a restored one for more than £20,000. You can expect to spend as much on a 914 restoration as you would on a classic 911 but it's not as straightforward because, unlike with 911s, few specialists know about them and not all of the parts are readily available. "For instance," says Andrew, "the rear brake callipers were used on just two cars –





the 914 and the Ferrari 308, so they're hard to source and expensive, too."

The key, as with any classic, is to buy a good one in the first place. Either one that's been properly restored (look for photographs and invoices) or in original condition with a good history. An example is the striking Signal orange 1972 car that Gmünd Cars is currently selling. "It's had just two owners and covered 40,000 miles during its life in Canada, and is in amazing original unrestored condition," says Andrew. Priced at £15,995, this seems an absolute bargain to me – imagine what an equivalent 911 from that period and in that condition would fetch. Andrew agrees but he says not everyone does: "I get told that we are asking too much for these cars but then people are comparing them with rotten examples for £5000. Factor in the cost of a restoration and £16,000 seems too cheap."

What you can't call cheap, though, are the rarer and more powerful 914/6s which start at £50,000 for a decent example. Bear in mind that just 3360 six-cylinder examples were built and of those many have been lost over the years, then you can appreciate why they sell for so much.

The big question is, does a 914 make a good investment – will they go up in price? "Yes – 110 per cent yes, they will appreciate," insists Andrew. "They are really undervalued at the moment. As I said, they have a wide appeal and make a lot of sense as a useable classic car." I agree with him and the 914 is certainly a Porsche that I'll be paying much closer attention to in future.

Maybe in years to come, then, when someone asks you to name a rare and valuable Porsche, you'll immediately think of the 914... ○

@rabyorsche

914 AND 914/6

914: Wheelbase (mm): 2459, length/width (mm): 4050/1650. Significant developments: 1.7-litre VW four-cylinder and detuned 911T 2.0-litre six-cylinder engines offered, MacPherson front and rear trailing link suspension, disc brakes all-round, five-speed gearbox and low-spec interior. 1972 – 914-6 dropped due to poor sales. 1973 – 2.0-litre engine becomes an option. 1974 – Bore increase raises displacement to 1795cc.

Model:	Model year	Weight (kg)	Engine (cc)	Hp	Torque (lb ft)	0-62	Top speed (mph)
914 1.7	'70 - '73	970	1679	76	96	13	108
914 1.8	'74 - '76	970	1795	72	99	12	110
914 2.0	'73 - '76	970	1971	95	105	10.5	115
914/6	'70 - '72	940	1991	110	115	8.2	119

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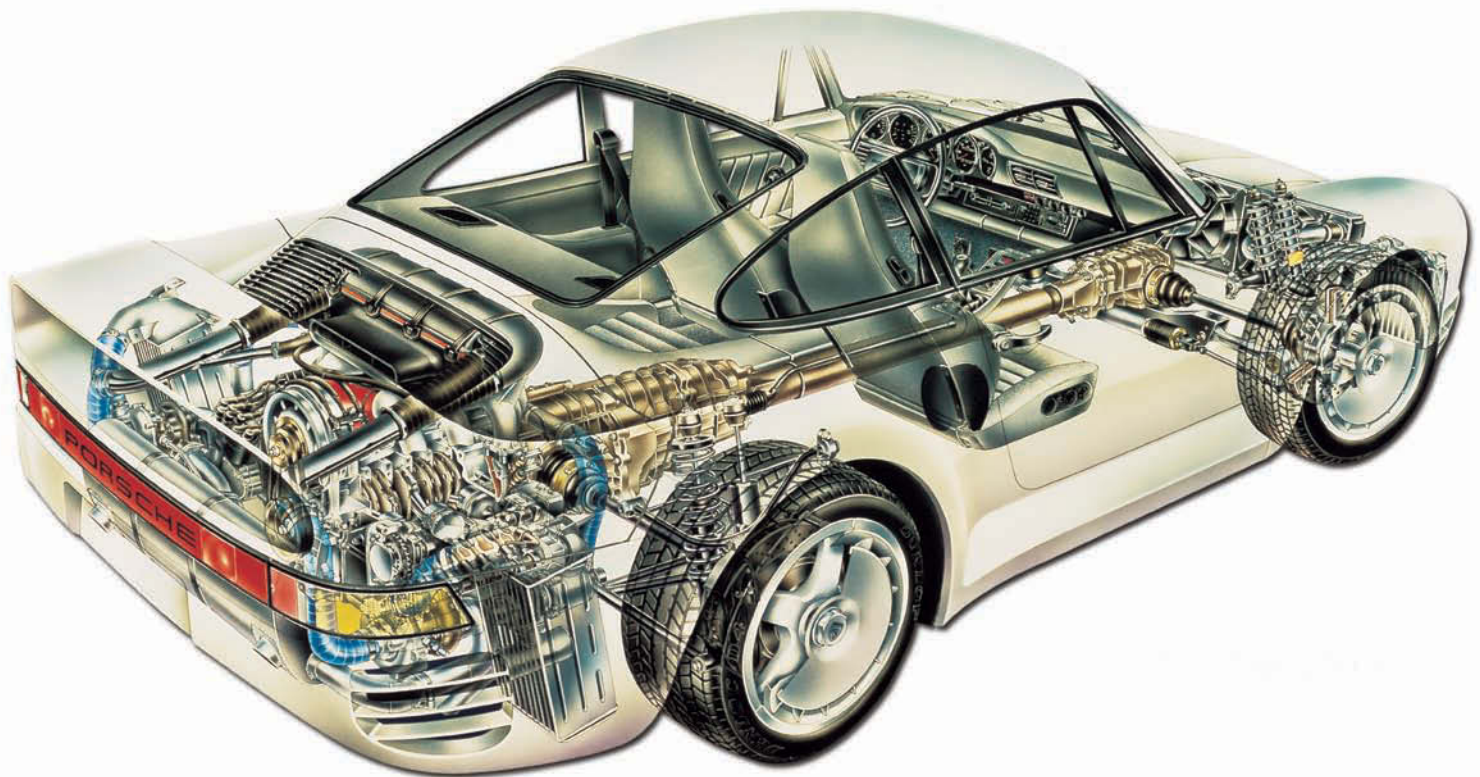
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Sequential Turbocharging

Sequential turbocharging ensures the smooth delivery of power and torque across the rev range, but exactly how does it work?



Turbocharging is something you either love or hate. Some purists love the immediacy of response delivered by naturally aspirated engines and others love the rush that turbocharged engines give as the compressors spool up. To be fair, that rush, or 'rubber band effect', is virtually undetectable on modern turbocharged engines with expensive variable geometry turbos like the 911, but it can be on lesser machinery and especially on diesels.

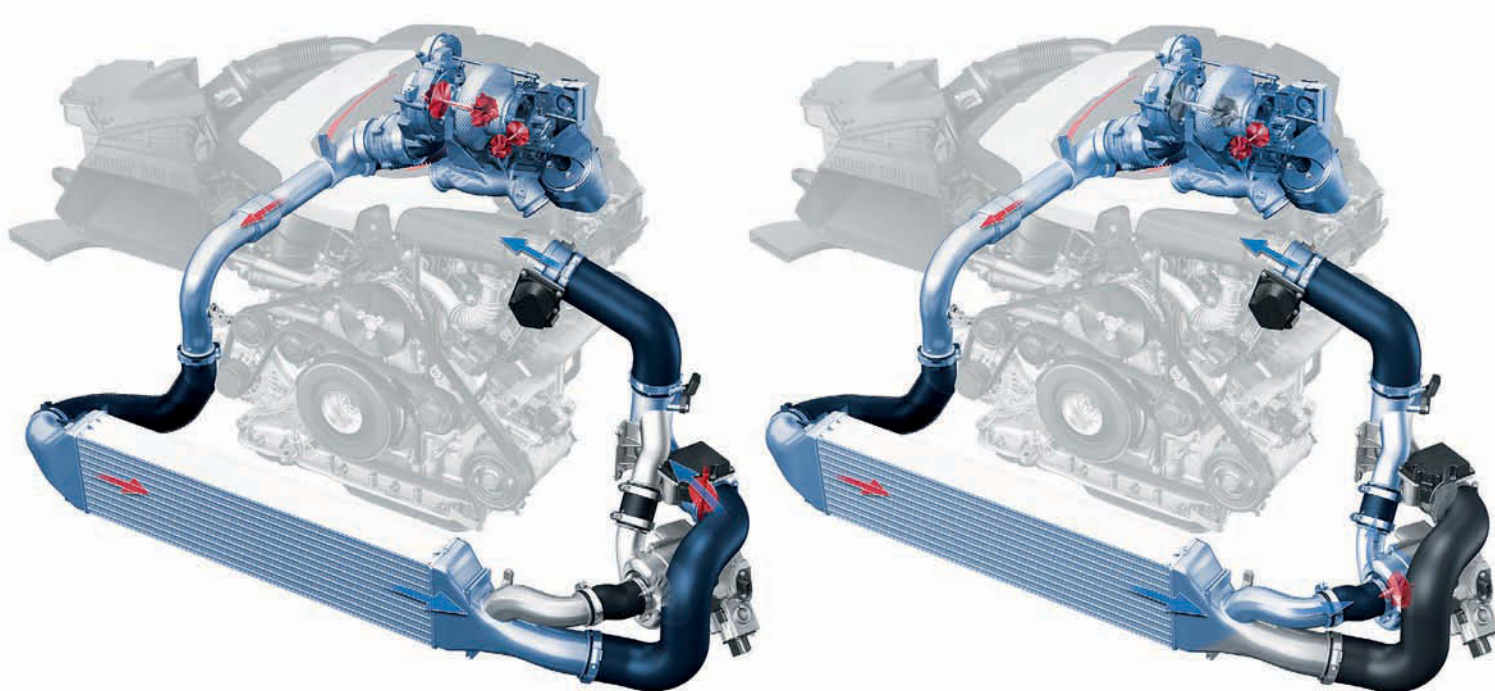
The use of variable geometry turbos on petrol engines is relatively uncommon because the high exhaust temperatures the intricate mechanisms have to withstand (compared to diesels) makes them pricey. One way of getting around that is to use two common or garden fixed geometry turbos, one small and one large, in sequence, a small responsive high-pressure unit leading before being followed by a larger, low-pressure turbo when the smaller unit runs out of puff.

On diesels, especially larger capacity

diesels, using two turbochargers sequentially and in parallel isn't uncommon today, but an early example of its use anywhere was on a petrol engine in the Porsche 959. Back in the early Eighties, turbo lag was dire so Porsche's answer was to plumb them together, working them in sequence to maximise exhaust energy. The turbos were far from fancy by today's standards; two KKK K26 units, one mounted on the exhaust manifold of each bank of cylinders. The two banks of exhausts were connected by a pipe upstream of the turbos.

At low engine speed the exhaust was diverted by a valve through this pipe, doubling the flow of energy to one of the turbochargers giving a more immediate response. On the compressor side of the turbos, the usual bypass valves were in place to avoid compressor stall when the turbo was spinning at speed and the throttle snapped shut. These were arranged so that at low speed, the dormant compressor was linked to the active one by further pipework, keeping it spinning and ready to 'wake up' when needed.

Porsche doesn't currently use sequential turbocharging, but elsewhere in the VAG group it does feature. Could this be a clue to future Porsche propulsion?



The valve system on the exhaust side was set up to bring the second turbo on line as engine speed and load increased. With the right foot hard in and the engine on song, all valves would be closed allowing the brace of turbochargers to do their thing to the max. This arrangement was more clever than it sounds. Modern engines are completely reliant on a computer, the ECU (engine control unit) to function and these days – ECUs are very fast with plenty of memory space. In the early 1980s it was a different story and getting that system to work in the 959 was impressive.

Premium sports car manufacturers like Porsche are adamant that they will retain large capacity engines for the foreseeable future but with European fleet average CO₂ emissions due to fall to 95g/km from 2020 onwards, large capacity engines don't make sense. Porsche's introduction of plug-in hybrids is a step in the right direction but overall, the trend is still towards downsizing.

The friction between moving parts in a large engine with more cylinders is greater than that of a small engine

with fewer cylinders. When engines are not being asked to produce much power by the driver, they are still consuming energy by pumping air around so in that sense, smaller engines are more efficient too. Where this is heading is an even greater reliance on turbocharging than we see today and in smaller engines with less available exhaust energy at low engine speed and load, more ingenuity is needed to deliver the response and driveability we demand.

Sequential turbocharging has often been used for bigger engines with great success. To get enough air into a powerful large capacity engine you need a big turbo. The difficulty with that is, big turbos suffer from high inertia and lag is likely to be worse (look no further than the old Porsche 930 Turbo for an extreme example) but use a smaller, more responsive turbo and it won't be able to supply enough air at high power settings.

The same thing applies with small capacity engines as specific power output rises. Forthcoming generations of 2.0-litre diesels producing high

power need a large volume of air pumped into them to do so. Sequential turbocharging can achieve that, a small low pressure turbo working up to a certain point in the engine's speed and load range, before a larger low pressure turbo takes over.

The trick comes in managing the energy in both, energising the low pressure turbo's turbine early enough so that when the transition is made, it's already up to speed. This involves plenty of switching using valves and the speed at which that can happen is made possible by the swift processing of modern ECUs and modern actuators.

Porsche doesn't currently use sequential turbocharging, but current trends being what they are, there's nothing to say that one day, the 911 couldn't go full circle with a latter day 912 powered by a four-cylinder, sequentially turbocharged engine producing high output when needed but being highly efficient when not. Add to that a flywheel-mounted hybrid drive motor and the result could be an extremely powerful, light, efficient and responsive powertrain with

exceptionally low CO₂ emissions.

Elsewhere in the VW group, Audi has recently shown an electric charger (sometimes confusingly referred to as an electric turbocharger) for use in diesel engines. It is mounted downstream of a conventional turbocharger to provide instant response when the engine is working less hard and exhaust energy is low. By 'instant', Audi means zero-to-maximum boost in 250 milliseconds.

As the engine responds and exhaust temperature (and energy) increases, the system uses valves in the exhaust to make the transition to the conventional turbocharger (or turbochargers), bypassing the electric compressor. The electric charger will improve fuel efficiency as well as response and makes its debut on an 'S' version of the new Audi Q7 in 2016 along with a new 48-volt electrical system to drive it. It's a technology that could prove interesting to Porsche too, initially for the Cayenne diesel but possibly, for further downsized petrol engines of the future ○



Alloy Wheels

What to look out for when fitting aftermarket wheels...

Any motoring hack will tell you that the one thing car designers these days always try and achieve is the biggest possible wheel size. Why? Because it looks great. Squeezing the biggest possible wheels under the arches makes a car look like a design concept rather than a production vehicle. Even if the profile of the tyres is so low they look painted on and give the ride of a wheelbarrow on a cobbled street, that's fine so long as it looks cool.

If you are fitting aftermarket alloy wheels, however, there are a few things you need to bear in mind when you go for a new style of wheel. The aspect ratio (usually referred to as the profile) is the depth of the tyre measured from the surface of the tread to the rim, expressed as a percentage of the tyre width. As wheel sizes go up, then the aspect ratio normally reduces otherwise the actual rolling diameter of the tyre would become massive and handling would suffer.

The wheel size relates to the rim diameter, not the tyre diameter, so choosing between two different tyres, maybe of different widths, with slightly

different aspect ratios (say, 55 versus 50) will make a difference. The trend has been towards larger diameter rims with lower profile tyres, so the tyre profiles have reduced. The early 911s in 1964 were fitted with 185/70 15s on the front and 215/60 15s on the rear. Those 70 profile front tyres in particular, look like doughnuts by modern standards.

On modern cars, the ratios generally work themselves out, but fitting a modern track day tyre to an old car can look silly if replacing a 70 profile with a 50 profile as the rolling radius is smaller. One obvious effect is on the speedometer which will read fast if the rolling radius is reduced or slow if it increases. The latter is what will happen if you fit bigger diameter wheels than standard and if the difference is drastic, you could risk accidentally speeding. Another effect of increasing the rolling radius is to raise the ride height (unless you lower the suspension by an equivalent amount) which in turn raises the centre of gravity and that will have a detrimental effect on handling if increased enough.

Then there's the wheels themselves and there are a few key things to

consider. One of the most important is offset – which is the distance from the flat face that mounts flat against the car's hub to the vertical centreline of the rim. Offset towards the outside of the car is negative and inwards it's positive. The larger the negative offset, the more the wheel sticks out. There's a little more to it than that though. If the offset is increased but the rim width isn't, something called the scrub radius will change and affect the steering feel and possibly the car's handling. So what exactly is 'scrub radius'?

On a car fitted with MacPherson struts, the centreline of the angled strut hits an imaginary point on the road. The centre of the contact patch normally sits slightly inside this point and that's known as 'negative scrub radius'. Increasing the offset will alter this relationship and if the centre of the contact patch moves outside the imaginary point, this becomes positive scrub radius. Doing so may make the car slightly twitchy under braking, especially on a bumpy road and although not a deal breaker (depending how mad you go) it's worth bearing in mind. Also remember that increasing wheel size is likely to

increase unsprung weight which can also affect steering and handling.

Other points to consider are more basic than this, such as whether the wheels will foul the wheel arches as the suspension compresses, or protrude outside the bodywork and draw attention from the law. If you buy fatter rims with the same or less (positive) offset, will the tyre foul the suspension? Wheels normally carry an 'ET' mark which stands for 'Einpresstiefe' and literally translates to 'offset'. The letters will be followed by a number which gives the offset in millimetres. Compare this to your original wheel and you know where you stand.

A more obvious point to watch is that the PCD (pitch circle diameter) of a new wheel matches your car. This is the imaginary circle on which the bolt or nut centres sit. A new wheel may have the same number of wheel nuts or bolts as your car's hub, but the PCD could possibly be different (especially if buying second-hand). Don't forget also, that alloy wheels require the correct wheel nuts or bolts and when buying new and these would normally be supplied with the wheels ○



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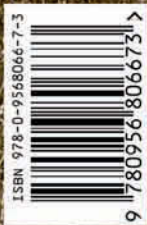
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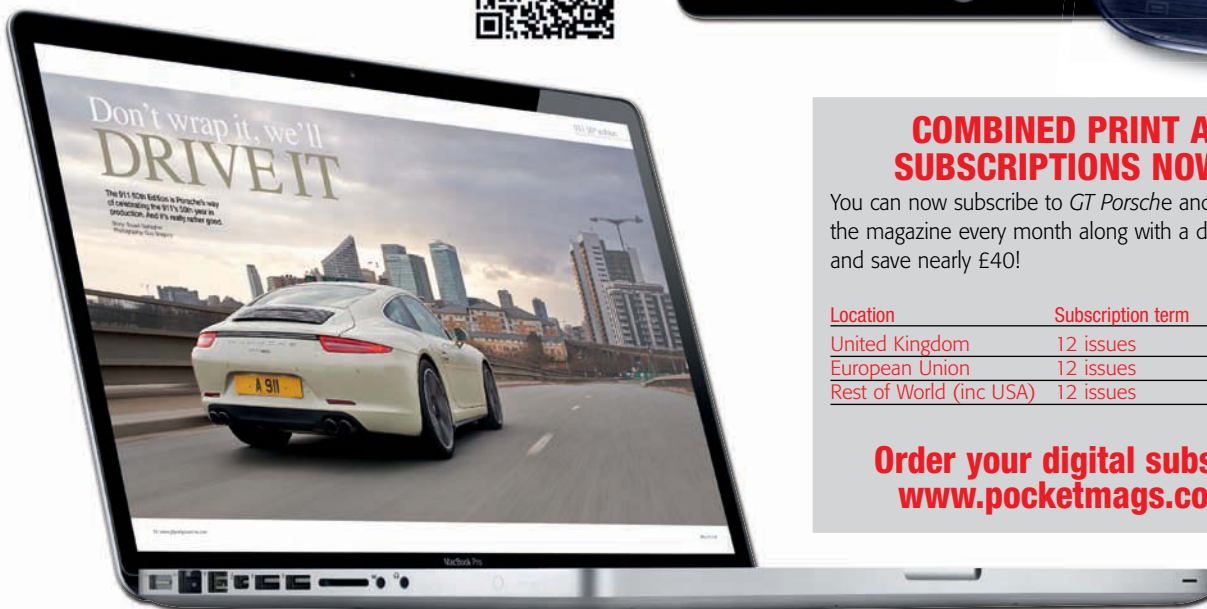
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GMÜND COUPÉ/356: 1948 – 1964

Two-door, two+two Coupé, Roadster, Speedster. Rear-mounted four-cylinder air-cooled 'boxer' engine.

This is where the Porsche story begins. After the aluminium prototypes and numerous projects for Volkswagen, Dr Porsche gave the go-ahead for his company to relocate from the converted shed in Gmünd to a rented workshop in Stuttgart (owned, incidentally, by Reutter, the coachbuilder responsible for building the 356 body for Porsche). At the 1949 Geneva Auto Salon Porsche displayed a 356 for the first time, with a coupé and drophead model taking the limelight. A makeshift production line was started in the same year.

The following year the 356 was shown to a meeting of Volkswagen main dealers as well as European and overseas importers who promptly placed orders for 37 cars. The first Stuttgart-built 356 rolled off the production line in Easter 1950.

The 500th Porsche was built on 21 March 1961, with the 1000th model arriving just six months later, and when the last 356 was built in 1964 – a 356C convertible – a total of 76,302 examples had been built.

The arrival of the 356 also signalled Porsche's first forays into motorsport. Dr Porsche's cousin, Herbert Kaes, is thought to be the first to compete in a Porsche car when he took an early 356 and entered it in a race around the streets of Innsbruck, Austria on 11 July, 1948. Kaes and the Porsche won their class, obviously. The first recognised 'factory' victory came in 1951 in the 24 Heures du Mans (where else!) when Porsche's French importer, Auguste Veuillet, convinced Dr Porsche that by entering a car into the twice-round the clock race it would result in a big boost in sales and Porsche's global awareness. Veuillet, along with his co-driver Edmund Mouche, won their class in the 1100cc 356. The rest, as they say, is history.

Today the 356 enjoys the status of a genuine classic car. Collectors and enthusiasts alike have seen that the majority of examples have been meticulously restored and maintained and this is reflected in the values they are reaching on the classic car market. Demand for all models and variants is high with the Carrera models some of the most sought after.



356

Dimensions: Wheelbase (mm): 2100 – Length (mm): between 3850 (1950) and 4010 (1959). Width (mm): 1660

1948 to 1949: Gmünd Coupés: – the 356's predecessor was first produced in July 1948. The aluminium-bodied Gmünd Coupés used virtually all VW mechanicals from a four-speed gearbox to torsion bar suspension, and, of course, the Beetle-derived 40hp flat-four engine complete with twin Solex down-draught carburetors and 7.0:1 compression ratio. Drum brakes were fitted all-round.

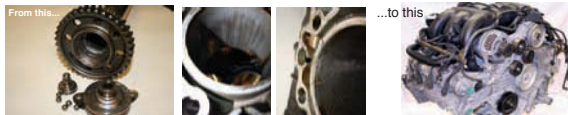
1950: 'Pre-A' 356: – Following the move to Stuttgart, the 356's integral body was made of steel and the design given a higher waistline than Gmünd Coupés, with the distinctive V-shaped roof to accommodate its split-screen. The 1.1-litre engine now produced 40hp and, along with the other engines offered after 1952, was mated with Porsche's own four-speed gearbox. **1951:** 1300cc and 1500cc (60hp) engines introduced. **1952:** Split-screen front windscreen replaced with single piece window; bumpers mounted higher and further forward from body; rectangular rear taillights replaced with circular items. 1500cc engine loses 5hp but is more refined and was the first engine to feature the 'Alfinger' crankshaft. 1500 S (70hp) engine introduced. Fully synchronised gearbox fitted across the range. **1955:** 356A: – New engines and suspension altered. New curved 'V-screen' does away with the need to split the screen, vinyl replaces cloth inside. New dash, combined ignition/starter.

New gearbox in 1957. Four Cam Carreras launched at the 1955 Frankfurt Motor Show, these engines were directly derived from racing technology, with GT-denoted models aimed specifically at motorsport. They were dry sumped, had reduced compression ratios and revved much higher. The bodies around them were lightweight, making them very potent on the road for their day. **1959:** 356B: – 90hp 1600 introduced for Super 90 which gets 'compensating rear springs' to improve handling. Changes to bumper position, headlamps and numerous interior details. **1961:** Larger rear window and engine cover with twin air intakes introduced, electric sliding roof optional; 1600 S engine gets four-ring pistons, S-90 gets modified flywheel. 130hp Carrera 2 announced (introduced in 1962), featuring Porsche-designed disc brakes. **1963:** 356C: – Reworked engines, clutch from Super fitted to 75 and 95hp models, disc brakes introduced all-round, rear compensating spring special order only, no external changes but there was a rethink of the interior details. **1964:** Porsche takes control of Reutter and 356 C introduced, Roadster dropped from the line-up.

MODEL	MODEL YEAR	WEIGHT	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Gmünd Coupés	1948 to '50	605	1086	35-40	50	23.0	80
'Pre-A' 356							
1100	1950 to '54	745	1086	40	51	23.5	87
1300	1951 to '54	810	1286	44	59	22.0	90
1300A	1954	830	1286	44	51	22.0	90
1300S	1953 to '54	830	1290	60	64	17.0	99
1500	1951 to '52	830	1488	60	75	15.5	105
1500	1953 to '55	830	1488	55	77	16.5	96
1500S	1952 to '55	830	1488	70	80	13.5	108
356A							
1300	1955 to '57	860	1290	44	60	22.0	90
1300S	1955 to '57	900	1290	60	65	17.0	99
1500GS Carrera	1955 to '58	835	1498	100	88	12.0	124
1600	1955 to '59	835	1582	60	81	16.5	99
1600S	1955 to '59	835	1582	75	86	14.5	108
1600GS Carrera	1958 to '59	835	1587	105	89	11.0	124
356B							
1600	1959 to '63	905	1582	60	81	16.5	96
1600S	1959 to '62	925	1582	75	86	15.0	108
1600S	1960 to '63	925	1582	90	89	13.5	112
1600S	1961 to '63	935	1582	75	86	15.0	108
1600GS Carrera GT	1959 to '61	890	1588	115	99	10.5	124
Carrera 2	1962 to '64	890	1966	155	144	9.0	124
356C							
1600C	1963 to '65	935	1582	75	89	14	109
1600SC	1963 to '65	935	1582	95	90	13	116
2000GS	1962 to '64	935	1966	130	119	9.0	124

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911 (1964 – 1989)

(Zero) 0-Series – 1963 to 1966: '64 to '66 Model Year – Wheelbase (mm): 2211 Length/Width (mm): 4163/1610 – **Significant developments:** 911 (very briefly 901) first shown at 1963 Frankfurt Motorshow, went on sale in 1964 with six-cylinder 2.0-litre engine. Targa announced in 1965 and goes on sale 12 months later. Weighs 50 kilos more than coupé

MODEL	MODEL YEAR	WEIGHT(kg)	ENGINE (cc)	Hp	TORQUE (lb ft)	0-60*	MPH
901	1963	1080	1991	130	119	8.5*	131
911	1964	1040	1991	130	120	8.3*	130
911	1965 to '67	1080	1991	130	128	8.3*	130

A-Series – 1966 to 1968: 1967 Model Year – **Significant developments:** 160hp 911S introduced, as are 5.5-in tyres. 911L had vented discs taken from 911S. Four-speed Sportmatic introduced in 1967. All models available as Targa, glass window replaces plastic item from 1968.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911L	1353/1321	1075	1991	130	130	10.6*	131
911T	1353/1321	1080	1991	110	116	8.3	124
911	1353/1321	1080	1991	130	128	9.1	130
911S	1353/1321	1080	1991	160	132	8.0*	137

A-Series – 1967 to 1969: 1968/69 Model Year – **Significant developments:** Wheelbase extended by 57mm to enhance handling, single battery replaced with twin 35amp alternatives in front luggage compartment to keep front end more securely planted and enhance handling. S and E both have mechanical Bosch fuel injection, 911T introduced, 'E' model replaces 'L'.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911T	1353/1321	1075	1991	110	115	8.3	124
911E	1353/1321	1020	1991	140	129	8.4	134
911S	1353/1321	995	1991	170	135	8.0*	137

C-Series – 1969 to 1970: 1970 Model Year – **Significant developments:** Increase in bore from 80 to 84mm raises engine capacity to 2.2-litres. Aluminium crankcase replaces magnesium alloy item. 225mm clutch introduced. Sportmatic no longer an option on 911S. Front upper strut attachment points moved forward 14mm.

D-Series – 1970 to 1971: 1971 Model Year – **Significant developments:** PVC-coated, galvanised underfloor areas introduced. Tweaks to injection and ignition required to meet new European emission laws.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911T	1362/1343	1020	2195	125	131	9.5	127
911E	1372/1354	1020	2195	155	141	7.6*	137
911S	1372/1354	1020	2195	180	147	7.0	138

E-Series – 1971 to 1972: 1972 Model Year – **Significant developments:** Engine stroke increased to 70.4mm giving 2.4-litre capacity. Compression ratio dropped to allow use of regular petrol. Gearbox uprated to cope with increased torque. External oil filler cap located between door and rear wheel. All models supplied with Fuchs wheels.

F-Series – 1972 to 1973: 1973 Model Year – Wheelbase (mm): 2271 Length/Width (mm): 4127 (RS 4147)/1610 – **Significant developments:** External oil filler removed due to customer confusion at the petrol pumps. Chin spoiler introduced on S to reduce front end lift (option on T and E) and greater variance in standard wheels. 2.7 Carrera RS is first to be fitted with duck-tail rear wing.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911T	1360/1342	1050	2341	130	144	8.1	127
911E	1372/1354	1050	2341	165	151	7.9	138
911S	1372/1354	1050	2341	190	158	6.6	144
Carrera RS	1372/1394	975	2687	210	188	5.8	152

G-Series – 1973 to 1974: 1974 Model Year – Wheelbase (mm): 2271 Length/Width (mm): 4291/1610 (Carrera 1652) – **Significant developments:** Shock absorbing bumpers introduced as a result of US legislation. Range-topping Carrera model came with 'black look' trim and 210hp.

H-Series – 1974 to 1975: 1975 Model Year – **Significant developments:** Turbo introduced early '75 with four-speed gearbox and higher spec. Duck-tail replaced by whale-tail on Carrera models. Silver Anniversary model launched, 1063 sold.

MODEL:	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911	1360/1342	1075	2687	150	173	7.9*	131
911 S	1360/1342	1075	2687	175	188	6.1*	142
911 Carrera	1372/1354	1120	2687	210	188	6.3	150
930 Turbo	1432/1500	1140	2993	260	253	6.0*	155



911: 1963 – 1989

Two-door, two+two Coupé, Convertible and Targa. Rear-mounted six-cylinder air-cooled 'boxer' engine, four- and five-speed manual and four-speed Sportmatic gearbox.

For some a real 911 is an air-cooled 911, and some of the greatest examples are from this period. Two of the most iconic 911s ever produced – the 2.7 Carrera RS and 3.0 Turbo – arrived on the scene during this time and Porsche also gave us the sublime 1970 2.2 S. Bosch K-Jetronic fuel injection was introduced (1976) and the first 911 Cabriolets (1983) arrived in showrooms. The 3.2 Carrera fed the Yuppie boom (1983) and the Carrera Club Sport (1988) was the first lightweight 911 special since the original Carrera RS some 15 years earlier.

On its arrival the original 911, or 901 as Porsche had first intended calling it until the French manufacturer Peugeot pointed out that they owned the trademark to model designations with an '0' in the middle, was a huge leap forward from the company's original four-cylinder 356. With its 2.0-litre flat-six, five-speed gearbox, independent suspension and disc brakes the new 2+2 sports car was quickly snapped up when it first appeared at the 1963 Frankfurt Motor Show.

A seemingly continuous development programme saw the 911 evolve at a pace. The Targa model was launched in 1965 in anticipation of US legislation that would ban fully convertible cars (it never happened, but the Targa proved a popular choice with its distinctive brushed stainless steel rollover hoop and zip-out plastic rear window). More power (160hp) and larger wheels (5.5-inches) arrived 12 months later, as did ventilated discs and a four-speed Sportmatic gearbox. The Targa's plastic rear window was replaced with a more conventional glass item in 1968.

The start of the next decade saw the flat-six's capacity grow to 2.2-litres and gave us the sublime 2.2 S and a chunky 180hp (190hp in 1973). Measures were also taken to prolong the life of the 911 with PVC and galvanised floors both introduced, and the legendary Fuchs wheels became available across the range.

1973 was the year every 911 aficionado has indelibly inked on their mind: the 2.7 Carrera RS arrived. 975 kilos, 210hp, aluminium bodywork, lightweight glass and the infamous duck-tail spoiler signified the most focused, driver-orientated production 911 to date. Rarer R and S/T racing models had come and gone, but this was the first performance-orientated 911 road car to be sold through the dealer network. A legend was born.

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Not content with blowing the minds of its faithful customers with its first RS road car, Porsche unveiled its concept for a new, more powerful, luxury-orientated version of the 911 at the 1974 Paris Motor Show – the 911 Turbo.

With a 3.0-litre flat-six motor and a single KKK turbocharger the new model produced 260hp delivered to the rear wheels via a four-speed manual gearbox. With a 0-62mph time of just 5.5 seconds and a 155mph maximum speed it was the fastest, most powerful Porsche road car to date, and its arrival coincided with the oil crisis.

With its flared rear-wheel arches, deeper front and whale-tail rear spoiler it was far from subtle, but Porsche's customers loved it and nearly 3000 were built. In 1978 it gained a bigger, 3.3-litre engine and more power (now 300hp), could crack 160mph and would continue in production until 1989.

Porsche also offered as a 911 Turbo Cabriolet and Targa model from 1987-88, as well as the 330hp 'slant-nose' coupé from 1983 through to 1989. And if you wanted the show without the go you could order Turbo-look Coupés, Cabriolets, Targas and Speedsters. Has there ever been a more blatant example of the excesses of the '80s?



During the 1980s Porsche hit upon a winning formula for its rear-engined sports cars, despite the best attempts by various management boards to try and kill it off.

As engine capacity rose from 2.2-, through 2.4-, 2.7-, 3.0- and finally 3.2-litres, so did the power and performance of the numerous models and variants introduced. The first 911 Cabriolet arrived on the scene in 1983, and before this a whole of host models had come and gone: the 2.4S became the Carrera in 1974 with 2.7-litres and 210hp, and the 3.0 Carrera in '76 with 200hp (US emissions laws had strangled the flat-six a bit). The 3.0 SC arrived in 1978 with a feeble 180hp but redeemed itself in 1981 with the new 3.0 SC arriving with 204hp.

In 1984 Porsche delivered its latest 911: the 3.2 Carrera. With 231hp, a 6.1 second 0-62mph and a 151mph maximum speed the 911 was back on track. In 1987 the somewhat wayward 915 transmission was replaced with a slick Getrag G50 'box and this generation 911 saw out its final years able to hold its head high and compete with the more youthful opposition.

I-Series – 1975 to 1976: 1976MY – **Significant developments:** Bodies now zinc-coated, galvanised steel. Bosch K-Jetronic fitted to all models. Sportmatic now only three-speed, not four.
J-Series – 1976 to 1977: 1977MY – Wheelbase (mm): 2271, Length/Width (mm): 4291 (Turbo 4318)/1610 (Carrera 3.0 1652, Turbo 1829) – **Significant developments:** Sportmatic cars get brake servo assistance. 'Black-look' trim standard on Targas.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911	1360/1342	1120	2687	165	176	7.8	135
Carrera 3.0	1372/1354	1075	2994	200	188	6.3	150
930 Turbo	1432/1500	1195	2993	260	253	6.0*	155

K and L-Series (the SC) – 1977 to 1979: '78 to '79MY – **Significant developments:** Super Carrera combined old 911 and Carrera with 3.0-litre engine, all had servo-assisted brakes. Turbo 3.3-litre engine equipped with intercooler and tea-tray spoiler replaces whale-tail. **SC (New A-Series) – 1979 to 1980:** 1980MY – **Significant developments:** Revised ignition and camshaft timing results in 188hp SC model. Turbo gets twin-exit exhaust.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911 SC	1369/1379	1210	2994	188	188	7.0	141
930 Turbo	1432/1500	1300	3299	300	304	5.1*	162

SC (New B-Series) – 1980 to 1981: 1981MY – **Significant developments:** First year of 17-digit international chassis number. SC now runs on 98RON fuel. **SC (New C-Series) – 1981 to 1982:** 1982MY – **Significant developments:** Limited edition 'Ferry Porsche' model goes on sale. Tea-tray spoiler option available for SC. **SC (New D-Series) – 1982 to 1983:** 1983MY – **Significant developments:** Cabrio rushed into production and launched following successful design study.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911 SC	1369/1379	1210	2994	204	189	5.7*	146
930 Turbo	1432/1500	1300	3299	300	304	5.1*	162

Carrera (New E-Series) – 1983 to 1984: 1984MY – Wheelbase (mm): 2271 Length/Width (mm): 4291 (Turbo 4318)/1610 (Turbo) **Significant developments:** Carrera replaces SC. Engine capacity climbs to 3164cc, Digital Motor Electronic engine management introduced as was the engine oil-fed chain tensioner. Turbo-look option adds 50 kilos and increases drag.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911 Carrera	1398/1405	1210	3164	231	209	5.6*	152
911 SC RS	1398/1405	960	2994	255	184	5.0	159
930 Turbo	1432/1500	1300	3299	300	319	5.1*	162

Carrera New F-Series – 1984 to 1985: 1985MY – **Significant developments:** Carrera available with catalytic converter. Four-spoke steering wheel standard. **Carrera New G-Series – 1985 to 1986:** 1986MY – **Significant developments:** Sport seats now a no-cost option. Turbo-look track 1434mm front/1526mm rear.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911 Carrera	1398/1405	1210	3164	231	209	5.6*	152
930 Turbo	1432/1500	1300	3299	300	319	5.1*	162

Carrera New H-Series – 1986 to 1987: 1987MY – **Significant developments:** Targa and Cabrio models available with Turbo engine. Slant-nose becomes an option. 915 transmission replaced by Getrag-built G50. Power hood standard on Cabrio. **Carrera New J-Series – 1987 to 1988:** 1988MY – **Significant developments:** Celebration anniversary model available. Club Sport model weighed 50 kilos less, blueprinted engine pushed power to around 241hp. **Carrera New K-Series – 1988 to 1989:** 1989MY – **Significant developments:** 16-inch wheels now standard. Speedster introduced and available with either Turbo-look or flat-nose bodies.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
911 Carrera	1398/1405	1210	3164	231	209	5.6*	152
Club Sport	1398/1405	1160	3164	231	209	5.6*	156
930 Turbo	1434/1526	1300	3299	300	319	5.1*	162

964 (1989 – 1993)

1988 to 1989: 1989MY – Wheelbase (mm): 2271 Length/Width (mm): 4250/1651 – **Significant developments:** Launched in January 1989 with a new flat-six engine, suspension, brakes and numerous body parts, Porsche claim only 13 per cent carry over parts from predecessor. Carrera 4 split torque 31/69 front to rear. All wheel ABS and power steering standard, catalyst introduced. **1989 to 1990:** 1990MY – **Significant developments:** All pre-964 models now deleted. Carrera 2 introduced, Targa

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911 (964): 1989 – 1993

Two-door, two+two Coupé, Convertible and Targa. Rear-mounted six-cylinder air-cooled 'boxer' engine, rear and four-wheel drive. For a company that had very little left in the piggy bank and suffering from an economic and sales downturn, Porsche's engineers pulled off a remarkable achievement when developing the 964-series 911.

This latest 911 was '87 per cent new' over the model it replaced, and the big news surrounding the 964 was the increased capacity flat-six and the introduction of a four-wheel drive transmission. This resulted in the gearbox and rear final drive having two electronically-controlled wet clutches, limiting slip in both the centre and rear differentials. A torque tube connected the centre and front diffs. The torque split was 31:60 front-to-rear.

Joining the new C4 was a Carrera 2 Coupé, Cabriolet and Targa models, three Turbo variants: 320hp 3.3-litre, 360hp 3.6-litre, and a limited run 381hp Turbo S. The stripped-out 964 RS and limited run 3.8 RS were available from 1992.

Overlooked by many, the 964 offers an affordable entry into classic 911 ownership, although they require regular maintenance and some TLC.



911 (993): 1993 – 1996

Two-door, two+two Coupé, Convertible and Targa. Rear-mounted six-cylinder air-cooled 'boxer' engine, rear and four-wheel drive. Argued by many to be the most beautiful 911 design of all, the 993-series cars are also the best engineered, and for many purists the pinnacle of the model's achievement.

The last of the air-cooled 911s had it all – pace, grace and, for once, a bit of space. The entry-level Carrera 2 was all you ever really needed, but who could resist the appeal of the Carrera RS or, for the first time, the all-wheel drive, twin-turbocharged Turbo? For the seriously brave there was the GT2 and those after the Turbo look without the go could always opt for the Carrera 2S and 4S.

The 993 also saw the introduction of VarioRam (in 1996). This controlled the length of the engine's induction tracts, and at low and medium engine speeds longer tracts would provide a fuller torque curve, while at higher engine speeds the shorter induction length delivered higher peak power outputs.

and Cabrio available for both Carrera 2 and Carrera 4 models. Tiptronic available on C2. Both Cabrio and Targa 50 kilos heavier than coupé equivalents. **1990 to 1991:** 1991MY – **Significant developments:** Rear drive, 3.3-litre 320hp 964 Turbo introduced complete with 'Cup' design mirrors. **1991 to 1992:** 1992MY – **Significant developments:** Stripped-out Carrera 2 RS launched – the first RS since 2.7 Carrera RS in 1973 – and proves a hit for those who like their 911s raw. 381hp Turbo S model available to order (80 built). **1992 to 1993:** 1993MY – **Significant developments:** Speedster introduced, rear-wheel drive only and based on Cabriolet for US market. 3.6 Turbo production begins in Jan 1993.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Carrera 2/4	1379/1374	1350/1450	3600	250	228	5.7	162
Carrera 2 RS	1379/1380	1250	3600	260	240	5.3	162
Turbo	1442/1448	1470	3299	320	332	5.0	168
3.8 RS	1440/1481	1210	3746	300	266	4.9	168
Turbo 3.6	1442/1448	1470	3600	360	383	4.8	175

993 (1993 – 1998)

1993 to 1994: 1994 Model Year – Wheelbase (mm): 2272 Length/Width (mm): 4245/1735 (Carrera 4S and Turbo 1795mm) – **Significant developments:** 993 production begins in Jan 1994. Internal engine upgrades increase power and torque. Multi-link rear suspension is one of the biggest developments in the 911's history and transforms 993 into a more driver friendly sports cars. Four-piston brake callipers standard front and rear. Two- and four-wheel drive offered across the range in either Coupé or Cabriolet guise. **1994 to 1995:** 1995MY – **Significant developments:** Carrera RS introduced as is redesigned, all-wheel drive system for Carrera and Tiptronic S with steering wheel-mounted shift controls for automatic gearbox. New 408hp four-wheel drive, twin-turbocharged 911 Turbo is launched and includes a six-speed gearbox and hollow spoked alloy wheels.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Carrera 2/4	1405/1444	1370/1420	3600	272	243	5.6/5.3	168/162
Carrera RS	1413/1452	1270	3746	300	262	5.0	172
Turbo	1411/1504	1500	3600	408	398	4.5	180

1995 to 1996: 1996MY – **Significant developments:** VarioCam engines announced and up both power and torque; revolutionary sliding glass-roofed Targa introduced. Lightweight, 430hp, rear-wheel drive, homologation special GT2 launched. It's the most powerful and fastest 911 production road car ever built. **1996 to 1997:** 1997MY – **Significant developments:** 430hp Turbo S offered as run-out model with 450hp factory engine upgrade also available. Turbo-bodied Carrera 2S built alongside Carrera 4S, but two-wheel drive obviously. It's the last rear-wheel drive, air-cooled 911.

1997 to 1998: 1998MY – **Significant developments:** An end of an era. Production of the all-wheel drive Carrera 4 and Turbo continues until July 1998 but when the last car finally rolls off the production line (a Carrera 4S) it marks the end of air-cooled 911 production after 35 years. The purists aren't happy, but it signifies a new dawn for Porsche.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Carrera 2/4	1405/1444	1370/1420	3600	285	251	5.2	172
Carrera 2S/4S	1411/1504	1450	3600	285	251	5.2	172
Turbo	1411/1504	1500	3600	408	398	4.5	180
GT2	1475/1550	1290	3600	430	398	4.0	184
Turbo S	1411/1504	1500	3600	430	398	4.3	185

996 (1997 – 2004)

1997 to 1998: 1998 Model Year – Wheelbase (mm): 2350 Length/Width (mm): 4430 (Turbo & GT2 4435)/1765 (Turbo & GT2 1830) – **Significant developments:** All-new water-cooled, 3.4-litre VarioCam six-cylinder 'boxer' engines. Rear-wheel drive, six-speed manual transmission or five-speed Tiptronic S at extra cost. Traction control also available. Four-wheel drive Carrera 4 introduced at the end of the year along with Porsche Stability Management (PSM). **1998 to 1999:** 1999MY – stripped-out, 360hp GT3 introduced. GT1-based engine helps create most focused 996 to date. Additional cooling for radiator, gearbox and engine account for extra weight over standard Carrera 2.

Available in 'Comfort' or 'Club Sport' trim, breaks Nürburgring Nordschleife lap record for a production car (8mins 03sec). **1999 to 2000:** 2000MY – the new 911 Turbo arrives. Twin-turbocharged, water-cooled flat-six with VarioCam Plus develops 416hp through four-wheel drive chassis. First 911 Turbo available with Tiptronic S. **996 – 2000 to 2001:** 2001MY – GT2 returns with 462hp, rear-wheel drive, Porsche Ceramic Composite Brakes and no PSM! Breaks production car lap record at the Nordschleife (7min 46sec).

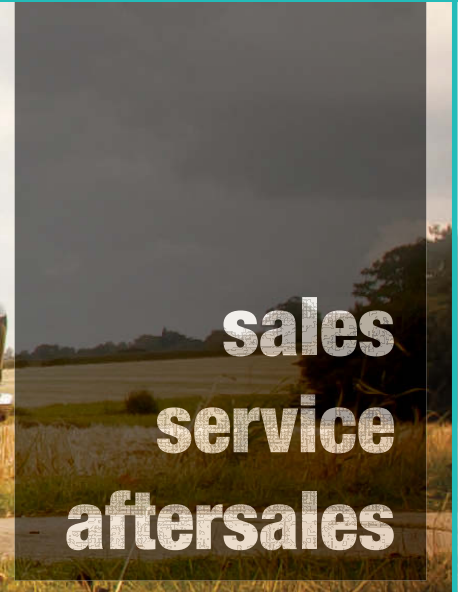
MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Carrera 2/4	1455/1500	1320/1430	3387	300	258	5.2	174



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996: 1997 – 2005

Two-door, two+two Coupé, Cabriolet and Targa. Rear-mounted six-cylinder water-cooled 'boxer' engine. A water-cooled engine in a 911! Whatever next? Once the purists had calmed down, beneath the 996's slightly frumpy looks is one of the greatest cars of our time.

Carrera 2 is all you ever actually need, but the four-wheel drive Carrera 4 and Carrera 4S are unstoppable. The latter, with its Turbo sourced brakes, suspension and bodywork is possibly the best value 911 Porsche has ever built. The 416hp, four-wheel drive Turbo is a contender for the greatest supercar ever built, and swept aside all in its way during its time on the price list. The 462hp GT2 was deemed a tad excessive for most on the road, and didn't enjoy the kudos of its predecessor, nor that of the 911 GT3. This stripped-out 911 was as close to a 911 RS you could get without actually calling it such. One of the most rewarding 911s when it was new, it's still a favourite amongst the purists but subsequent evolutions are better still. GT3 RS was further honed for the track, compromised for the road. The Targa featured the now traditional opening rear glass hatch, while the Cabriolet was perfectly at home in Miami.



997: 2004 – 2008

Two-door, two+two Coupé, Cabriolet and Targa. Rear-mounted 3.6- and 3.8-litre six-cylinder, water-cooled 'boxer' engine. More evolution than revolution, the second-generation water-cooled 911 has a hint of 993 look about it and was available with two engine options. 997 ownership began with the 321hp 3.6-litre Carrera, with the majority of customers opting for the more powerful 355hp Carrera S.

Porsche Active Suspension Management (PASM) was standard on the Carrera S and allowed the car to play at continental GT cruiser one minute and Nordschleife slayer the next. Interior quality improved over 996. Turbo and GT3 models were even better than their predecessors, with the Turbo introducing Variable Turbine Geometry and Porsche Traction Management, while the GT3 got traction control! When Porsche combined these two models' philosophies the GT2 was built. At 530hp and 204mph it is the most powerful and fastest Porsche 911 to date. The Targa offered hatchback practicality – and four-wheel drive – and a big glass roof at the expense of ultimate driver involvement.



911: 2008 – 2012

Two-door, two+two Coupé, Cabriolet and Targa. Rear-mounted 3.6- and 3.8-litre six-cylinder, water-cooled engine with Direct Fuel Injection and VarioCam Plus; normally

GT3	1475/1495	1350	3600	360	273	4.8	188
Turbo	1465/1522	1549	3600	416	413	4.2	190
GT2	1485/1520	1440	3600	462	457	4.1	197

New 996 – 2001 to date: 2002MY – **Significant developments:** Second-generation 996 introduced. Engine capacity grows to 3.6-litres, power increase to 316hp. Turbo's trip computer standard across range, as are Turbo headlights. Cup holders fitted for first time. New Carrera 4S introduced with Turbo brakes, suspension and wide-body. 996 Targa model launched with retractable sliding glass roof. **996 2003 to 2004:** 2003MY – **Significant developments:** GT3 returns with 381hp while the GT3 RS has the same power but weighs 20 kilos less thanks to carbon fibre body panels and a plastic rear window. Turbo and Carrera 4S launched as a Cabriolet models, GT2 gets power hike to 483hp. 0-62mph time drops to 4.0 seconds, top speed climbs to 198mph. **996 – 2005:** 2005MY – **Significant developments:** The 911 Turbo S makes a return and signals the beginning of the end for the 996. 450hp and PCCB come as standard.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Carrera 2/4	1465/1500	1345/1405	3596	316	273	5.0	178
Targa	1465/1500	1415	3596	316	273	5.2	177
Carrera 4S	1472/1528	1470	3596	316	273	5.1	173
Turbo	1472/1528	1540	3600	414	413	4.2	190
Turbo S	1472/1528	1549	3600	450	457	4.1	190
GT3	1485/1495	1380	3600	381	284	4.5	191
GT3 RS	1485/1495	1360	3600	381	284	4.4	190
GT2	1495/1520	1420	3600	483	457	4.0	198

997 (2004 – 2008)

2004: 2005 Model Year – Wheelbase (mm): 2350; Length/Width (mm): 4427/1808; Height (mm) 1310/1300 (Carrera/Carrera S) – **Significant developments:** 3.6-litre 321hp, and 3.8-litre 355hp, water-cooled flat-six engines for Carrera and Carrera S respectively. New six-speed manual gearbox standard on both models, Porsche Active Suspension Management (PASM) standard on Carrera S – lowers car by 10mm, cost-option on Carrera. 19-inch alloy wheels standard for Carrera S. **2005:** 2005MY – Carrera 4 and Carrera 4S launched. Engines as Carrera and Carrera S respectively, rear body widened by 44mm, PSM now equipped with 'pre-filling' brake system to quicken responses. **2006:** 911 Turbo and GT3 launched. The former features Variable Turbine Geometry, Porsche Traction Management and 480hp. The third-generation GT3 is the best all-rounder yet. PASM fitted as standard, as is a 415hp 3.6-litre flat-six engine and traction control. 911 Targa 4 and 4S launched based on the wider Carrera 4/4S shell and feature the full length glass sliding roof. GT3 RS launched. Same power as a GT3 but 20 kilos lighter and unique aero pack. **2007:** 997 Turbo Cabriolet launched, followed by the new 911 GT2 with 530hp, rear-wheel drive, traction and stability control, and launch control. 204mph claimed maximum.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-60	TOP SPEED (mph)
Carrera	1486/1529	1395	3596	321	273	5.0	177
Carrera S (Pkit)	1486/1511	1420	3824	355	295	4.4 (4.4)	182
Carrera 4	1488/1548	1450	3596	321	273	5.1	174
Carrera 4S (Pkit)	1488/1548	1475	3824	355	295	4.8 (4.7)	179
Targa 4	1488/1548	1510	3596	321	273	5.3	174
Targa 4S	1488/1548	1535	3824	355	295	4.9	179
GT3	1486/1511	1395	3600	415	298	4.3	192
Turbo	1490/1548	1585	3600	480	457-501	3.6	192
GT3 RS	1497/1558	1375	3600	415	298	4.2	192
GT2	1515/1550	1440	3600	530	501	3.7	204

997 gen-2 (2008 – 2012)

2008: 2008MY – Wheelbase (mm): 2350; Length/Width (mm): 4435/1808; Height (mm) 1310/1300 (Carrera/Carrera S) – **Significant developments:** All new 3.6-litre 345hp and 3.8-litre 385hp, water-cooled flat-six engines for Carrera and Carrera S now fitted with Direct Fuel Injection. Six-speed manual gearbox standard on both models and new seven-speed PDK available as option. Porsche Active Suspension Management (PASM) standard on Carrera S, cost-option on Carrera. 19-inch alloy wheels standard fitment for Carrera S. Minor styling changes to lights and bumpers. New PCM3, Bluetooth and steering wheels. Carrera 4 and 4S model get reflective light strip across tail and identical updates to two-wheel drive models. Cabriolet models of all variants go on sale with coupés. PDK-equipped cars two-tenths quicker to 60mph, but 1mph slower on the top speed. **2009:** 2010 MY – Eagerly awaited Generation-two 997 GT3 is launched with larger capacity 3.8-litre, normally aspirated flat-six. New 911 Turbo quickly follows with all-new 3.8-litre, Direct Fuel Injection, twin VTC turbocharged engine, it's the first all-new engine for the 911 Turbo in 35 years. PDK replaces Tiptronic and Porsche offer optional steering wheel mounted paddle-shift controls for the first time. Limited run of 250 Sport Classic models mix Carrera 4 wide body looks with rear-wheel drive and a 408hp 3.8-litre Powerkit engine. Built by Porsche Exclusive it also features a double-domed roof, ducktail rear spoiler and the return of Porsche's famous Fuchs wheels and PCCB as standard. A bespoke leather interior also fitted. 911 GT3 RS is announced alongside Sport Classic at Frankfurt Motor Show. New RS comes with a wider front track, a new aero-pack that doubles downforce, a more powerful version of the Mezger 3.8 litre flat-six and a 25kg drop in kerb weight over a regular GT3. Air-con, PCM and leather all options. **2010:** 2010MY – 530hp Turbo S available as coupé or cabriolet. PDK with paddle-shift, PCCB, dynamic engine mounts, Sport Chrono Package Turbo and Torque Vectoring are all standard. Interior features a dual tone leather trim and adaptive sport seats. The 620hp 911 GT2 RS is the most powerful production Porsche the company has ever built. Based on the GT3 RS it features further aero dynamic tweaks and recalibrated PASM, Traction and Stability control systems. 3.6-litre engine is the final swan song for the Hans Mezger flat-six, and is fitted with a single-mass flywheel and a revised charge air intercooler. It's the first Porsche to feature different N-rated tyres on the front

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aspirated and turbocharged. Six-speed manual gearbox fitted as standard, seven-speed PDK, double-clutch gearbox optional. Porsche shows its green credentials by introducing its cleanest car to-date, claiming a 3.6 Carrera fitted with a PDK gearbox will return over 29mpg.

This heavily revised flat-six engine should prove more reliable now the intermediate shaft is no longer needed, but some of the soul has gone AWOL when it comes to the flat-six's voice. PDK is a revelation, despite some complaining about the up/down buttons being the wrong way round. Although this is easily rectified with the optional paddle-shift controls.

The 911 line-up expanded like no other series under the 997. Along with the regular Carrera, Targa, Turbo and GT models Porsche introduced four-limited production models – GT2 RS, GT3 RS4.0, Sport Classic and Speedster.

The second-generation 997 Series was Porsche's most expansive line-up of the 911 in the car's history with 22 'basic' models having been introduced. Of the 22 models only four aren't available with PDK (Sport Classic, GT3, GT3 RS, GT2 RS and GT3 RS4.0) and two models are only available with the seven-speed double-clutch unit (Turbo S and Speedster). Only five models are offered with a narrow body (Carrera and Carrera S – coupé and cabriolets – and the GT3) with the rest of the range all use the wider body first introduced with the four-wheel drive models. 12 coupés, seven cabriolets, two Targas and a Speedster body are available. Three different size of brakes are fitted, one of which is made from ceramic composite material, two suspension systems are available (passive and active – PASM), with five different front and rear track widths also used. Four different engines are offered.



991: 2012 – TO DATE

Two-door Coupé and Cabriolet, water-cooled and direct fuel injected flat-six, rear-engined, rear- and four-wheel drive. Seven-speed manual and PDK gearbox. New, longer wheelbase, new body and design and new interior. The seventh generation of the iconic 911 was as big a step-change from the 997 as the 993 was to the water-cooled 996. The carry over parts were very few, the changes made were like nothing seen in the last 17 years.

The 911 has always innovated and the 991 was no different. There is the new seven-speed manual gearbox, a world first, dynamic chassis control (a first for the 911) and new, electronic power-steering. The latter causing some to declare the 911 as we know it to have passed away. We wouldn't go that far, although the effect it has on the car's character makes the 991 a very different 911 to all that have been before.

There is much to praise about the 991, however. Both engines are a delight to experience, full of zing and guttural grunt. The more powerful, 400hp 3.8-litre has an epic performance reach, but it's the 355hp 3.4-litre that is the sweeter engine. For the first time we'd also consider PDK over the manual gearbox, the latter not as slick nor as precise as its predecessor. Although PDK only makes sense with the optional paddleshift controls.

If you opt for either the GT3 or Turbo models PDK is your only option. Many still haven't picked themselves up off the floor upon hearing that news. Porsche claims the double-clutch is not only quicker and more efficient, but it's what the customer wants. The problem many have is that the 911 was the last bastion of the truly wonderful manual gearbox, and now it's gone from the likes of the GT3 and the Turbo it feels like a chapter has closed when we were still left wanting for more.

and rear axles. Carbon-fibre bonnet – and front wings if you wish – help shed the kilos as do the plastic rear and rear quarter windows. Only 500 built, and all sold out within three-months. To mark its 25th Anniversary Porsche exclusively builds 356 911 Speedsters. As with the Sport Classic it features the Carrera 4 body with rear-wheel drive running gear and the 408hp Powerkit 3.8-litre motor. PDK only transmission available, PCCB standard and Pure blue paint or white the only colours. Windscreen is 72mm lower than standard and roof is a manual-electric mix that hides under a traditional Speedster double bubble engine cover. First Porsche Speedster for 16 years. The final 997 series 911 could possibly be the best. Carrera GTS is available as either coupé or cabriolet and again mixes the Carrera 4 body with rear-drive running gear; again the 408hp 3.8-litre Powerkit engine does all the work. Six-speed manual or seven-speed PDK are both available, and PCCB is optional. 19-inch RS Spyder design wheels are standard and the GT3 also features a SportDesign front bumper and deeper side sills. Inside is a mix of leather and Alcantara with a new SportDesign steering wheel also standard. Rear-seats are optional. **2011:** Just when we thought Porsche was done with the 997 along came one more derivative. A 500hp, normally aspirated 4.0-litre flat-six engine with a crank lifted straight from a GT3 R. The car weighed 1360kg and had aero dynamic add-ons designed specifically for the Nürburgring. Everything about the 4.0RS was extreme. It cherry picked the very best bits from every 997 that had gone before it to produce the ultimate in rear-engined driving thrills. It's unlikely we'll see anything of its kind again. **2012:** Porsche had time for one last 997 swansong: the Carrera 4GTS. As its name suggests it was a four-wheel drive version of the Carrera GTS. This really was the last 997.

MODEL	TRACK (f/r mm)	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62* 6sp/7sp	TOP SPEED (mph)
Carrera	1486/1530	1415	3614	345	285	5.1*/4.2	179
Carrera S	1486/1516	1425	3800	385	310	4.3*/4.1	187
Carrera 4	1488/1548	1470	3614	345	285	5.0*	177
Carrera 4S	1488/1548	1480	3800	385	310	4.7*	184
Carrera GTS	1488/1548	1420	3800	408	310	4.6/4.2	190/189
Carrera 4GTS	1488/1548	1480	3800	408	310	4.6	188
Targa 4	1488/1548	1530	3614	345	285	5.2*	176
Targa 4S	1488/1548	1540	3800	385	310	4.9*	184
GT3	1497/1524	1395	3797	435	317	4.0*	194
GT3 RS	1509/1554	1370	3797	450	317	3.8*	193
GT3 RS4.0	1509/1554	1360	3996	500	339	3.9	193
Turbo	1490/1548	1570	3800	500	479	3.6* (3.2**)	194
Turbo S	1490/1548	1585	3800	530	516	2.9**	195
GT2 RS	1509/1558	1370	3600	620	516	3.5	205
Sport Classic	1492/1550	1425	3800	408	310	4.6	187
Speedster	1492/1550	1540	3800	408	310	4.4	190

* 0-60mph: cars fitted with six-speed manual gearbox; ** cars fitted with Sports Chrono Plus and PDK

991 (2012 –)

2012: 2012 Model Year – Wheelbase (mm): 2450; Length/Width (mm): 4491/1808; Height (mm)

1303/1295 (Carrera/Carrera S) – **Significant developments:** All new 911s featuring a longer wheelbase, a lighter body and more technology than a 911 has ever seen. The direct fuel injection engines are carried over from the 997 generation of cars, so to is the seven-speed PDK gearbox.

However, a new seven-speed manual gearbox – based on the PDK – was introduced to replace the slick-shifting six-speed manual. Other mechanical highlights include the option of Porsche Dynamic Chassis Control (PDCC) on a 911 for the first time, dynamic engine mounts and torque vectoring.

Electric power steering replaced the previous car's hydraulic setup; not one of Porsche's most popular decisions. There was also a new look both inside and out, the new interior regaining the air of quality that some felt had been lacking in more recent 911 generations. The Carrera coupé and cabriolet models were fitted with a 355hp, 3.4-litre engine, the Carrera S models with a 400hp 3.8-litre motor. **2013:** The Carrera 4 and 4S coupé and cabriolet (width: 1852mm) joined the line-up at the end of 2012 as 2013 model year cars. Available with the same engine and gearboxes as the Carrera models, the four-wheel drive variants were equipped with a multi-plate, electronically controlled version of Porsche Traction Management. As with previous Carrera 4 models, the rear of the car was 44mm wider than the two-wheel drive derivatives. At the Geneva Motor Show in March Porsche revealed the new 911 GT3. Those who thought the 991 was a controversial 911 could barely speak when the specification of the new GT3 was announced. Out went the Hans Mezger 3.6-litre engine and in came a 475hp, 3.8-litre direct injection engine based loosely on the Carrera S's motor. This was just the beginning. No manual gearbox would be offered, instead only a heavily revised PDK unit would be fitted. There was also active rear-wheel steering, electric power steering and, for the first time the GT3 was no longer a narrow bodied car, its shell now taken from the wider Carrera 4. Soon after the GT3's announcement came the details for the new 911 Turbo. Well, two actually. The 991 will be available as either a 520hp Turbo or 560hp Turbo S, both fitted with a PDK gearbox only. Active rear-wheel steering, torque vectoring, PDCC, dynamic engine mounts are all available and, for the first time, the 911 Turbo features active aerodynamics for both the front and rear spoilers. The 911 Turbo's body is also 28mm wider than the Carrera 4 at 1880mm.

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Carrera	2012	1380	3436	350	287	4.8	179
Carrera 4	2012	1430	3436	350	287	4.9	175
Carrera S	2012	1395	3800	400	325	4.5	188
Carrera 4S	2012	1445	3800	400	325	4.5	185
GT3	2014	1430	3799	475	325	3.5	196
Turbo	2014	1595	3800	520	486	3.4	195
Turbo S	2014	1605	3800	550	516	3.1	197

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912: 1965 – 1969; 1975

Two-door Coupé and Targa, rear-engined four-cylinder air-cooled 'boxer' engine. 'The poor man's Porsche' was actually quite expensive, not that this stopped it from building a strong following, especially in the States.

Sharing the 911's body, the 912 was fitted with a 2.0-litre, four-cylinder engine and came with a spartan interior that saw many of the 911's luxuries ditched. Developed on a yearly basis, the 912 closely followed the 911 in terms of new technology and very soon outsold its more expensive brother, with over 30,000 delivered during its first production run. Re-introduced in 1975, a further 2000 examples were built including a Targa Variant.



914: 1970 – 1976

Two-door Coupé with mid-mounted four- and six-cylinder air-cooled 'boxer' engines. Built by Karmann, Porsche's original mid-engined roadster was praised for its unrivalled dynamics, although its boxy looks and awkward gearbox were often criticised. The four-cylinder engines were sourced from VW, and the later six-cylinder Porsche units offered significant performance advantages – and even more of a challenge for the 'entertaining' dynamics. Sales were poor throughout the model's six-year lifespan.



924: 1977 – 1988

Two-door, two+two Coupé, front-engined, four-cylinder water-cooled engine, rear-wheel drive, five-speed gearbox. The 924 was Porsche's first front-engined sports car and production car fitted with a water-cooled engine. Originally conceived, designed and developed for Volkswagen, it was eventually launched as a Porsche, albeit still powered by a VW/Audi sourced engine. Performance wasn't earth-shattering, but its transaxle configuration provided the balance and handling worthy of the badge.

Continual development saw the 924 improve in the performance stakes, especially so when it received the 2.5-litre engine from the 944. Peak performance, however, came with the Turbo models, which delivered the much needed performance gain, ultimately reaching its peak with the Carrera GT, a homologation requirement in order for Porsche to race the car at Le Mans. A handful of more extreme, lighter Carrera GTS models were also built.

Sadly for the 924, with every evolution came a price increase and the coupé quickly went from the affordable entry level Porsche it set out to be, to becoming an expensive, out-dated car.

912 (1965 – 1969; 1975)

912 – Wheelbase (mm): 2211 (1969 – 2268, 1976 – 2272) Length/Width (mm): 4163 (1976 – 4293)/1610. **Significant developments:** 356C four-cylinder engine, four- or five-speed gearbox, disc brakes, MacPherson front and semi-trailing rear suspension, low-spec interior. **1969:** Larger wheelbase and 911 body introduced before production ends for six years. **1975:** Re-introduced using the 914's VW 2.0-litre. Heavier than its predecessor, five-speed gearbox fitted as standard.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62	TOP SPEED (mph)
912	1965 to '69	950	1582	90	86	11.6	115
912E	1975	1132	1971	90	98	13.0	110

914 (1970 – 1976)

914 – Wheelbase (mm): 2459 – Length/Width (mm): 4050/1650 **Significant developments:** 1.7-litre VW four-cylinder and de-tuned 911T 2.0-litre six-cylinder engines offered, MacPherson front and rear trailing link suspension, disc brakes all-round, five-speed gearbox and low-spec interior. **1972** – 914-6 dropped due to poor sales. **1973** – 2.0-litre engine becomes an option. **1974** – Bore increase raises displacement to 1795cc

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62	TOP SPEED (mph)
914 1.7	1970 to '73	970	1679	76	96	13	108
914 1.8	1974 to '76	970	1795	72	99	12	110
914 2.0	1973 to '76	970	1971	95	105	10.5	115
914/6	1970 to '72	940	1991	110	115	8.2	119

924 (1977 – 1988)

924 Wheelbase (mm): 2400; Length/Width (mm): 4213/1676; Track front/rear (mm) 1418/1372; **Significant developments:** Four-cylinder engine, four-speed transaxle gearbox, front MacPherson struts and rear semi-trailing arm suspension, four-stud 5.5x14-inch steel wheels and floating callipers. VW/Audi three-speed auto assembly but with ratios specific to the 924; **1977:** Getrag five-speed dog-leg gearbox optional. Rubbing strips added. **Martini 924 SE** launched; **1978:** Bodysell now hot-dipped zinc-coated. Oval tailpipe introduced; **1979:** Separate air blowers improve ventilation; **1980:** Five-speed Audi-derived gearbox introduced. Fuel tank capacity raised to 66-litres, second fuel pump fitted. **Le Mans SE** model offered; **1981:** Carrera GT introduced. Kurzhals fuel pump introduced. 50th Jubilee SE model offered; **1982:** Carrera GTS introduced. Limited-slip diff an option. Torque converter uprated on auto 'box. Ventilation system upgraded. 911 three-spoke steering wheel now standard; **1983:** Turbo's spoiler becomes standard. Front anti-roll bar uprated to 21mm; **1984:** 924 gets 944 tilt-slide roof mechanism; **1985:** 924 replaced by 924S; **1986:** 924S arrives in UK. 2.5-litre engine shared with 944 (as are gearbox, brakes and suspension) but de-tuned; **1987:** Rear axle strengthened; **1988:** 924 gets 944 engines. Power steering standard. **Le Mans SE** launched.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62	TOP SPEED (mph)
924	1976 to '78	1080	1984	125	122	9.9	125
924	1979 to '85	1130	1984	125	122	9.9	125
924 Turbo	1979 to '81	1180	1984	170	181	7.8	140
924 Turbo	1982 to '84	1180	1984	177	185	7.7	140
Carrera GT	1981	1180	1984	210	203	6.9	150
Carrera GTS	1982	1121	1984	245	247	6.2	155
924S	1986 to '87	1190	2479	150	144	8.5	134
924S	1988	1195	2479	160	158	8.2	137

928 (1978 – 1995)

928 Wheelbase (mm): 2500; Length/Width (mm): 4524/1835; Track front/rear (mm): 1551mm – 1552/1530 – 1529mm. **Significant developments:** **1978:** 90° V8, five-speed, rear-wheel drive, independent A arms at front, trailing arms at rear, discs all-round, automatic available, luxury interior **1983:** Regular 928 and 'S' models replaced with by 928 S2 model; **1987:** S4 introduced with 5.0-litre V8 and 316hp; **1989:** 928GT loses 44 kilos and gains 14hp. 0-60mph drops below 6.0 seconds; **1993:** Final 928 GTS sees V8's capacity grow to 5.4-litres and 350hp.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62	TOP SPEED (mph)
928	1978 to '82	1490	4474	240	268	7.5*	142
928 S	1980 to '82	1530	4664	300	284	6.8	146
928 S2	1983 to '86	1589	4664	310	295	6.5*	155
928 S4	1987 to '92	1600	4957	316	317	6.0	165
928 GT	1989 to '91	1566	4957	330	317	5.6	165
928 GTS	1992 to '95	1600	5397	350	362	5.2	169

944 (1983 – 1991)

944 Wheelbase (mm): 2400, Length/Width (mm): 4213/1735. Track front/rear (mm): 1472/1451; **Significant developments:** Body based on the 924 Turbo, as was suspension, but used 2497cc engine. Brakes from the 924 Carrera GT; **1985:** New dash, power steering becomes standard. RHD models have left parking wipers. Transmission casing revised. Cast alloy lower wishbones and semi-trailing rear arms standard; **1986:** Turbo launched with 2.5-litre engine, gas-filled shocks, anti-roll bars and four-pot brakes. Power steering standard, redesigned interior; **1987:** LSD revised, ABS, driver and passenger airbags optional. 944 S 16-valve used gearbox and driveshafts from Turbo; **1988:** Turbo SE offered with uprated engine, 7- and 9x16-inch alloys. 944's engine capacity increased to 2.7-litres with larger bore, new block. Celebration SE offered; **1989:** 944 gets ABS as standard, discontinued at end of model year. Turbo gets Turbo S engine and new rear spoiler. S2

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928: 1978 – 1995

Two-door, two+two Coupé, front-engined, water-cooled V8. Built to succeed the 911, 928 went head-to-head with Jaguar's XJS and Mercedes' SL. V8 engine offered stonking performance and grew to a mighty 5.4-litres and a heady 360hp before stepping aside to allow the 911 to continue its success story. Auto 'box most popular choice, although a manual is the one to go for, and both choices offer intergalactic cruising ability. Dynamically as sharp as any Porsche, the 928's popularity is not without foundation.



944: 1983 – 1991

Two-door, two+two Coupé and Convertible, front-engined, water-cooled. NA and turbocharged. The 944 was an unprecedented success, breaking all sales records and keeping Porsche afloat during the 1980s. The 924's body and turbo suspension formed the basis, but the 944 felt better. Turbo models offer good combination of performance and ability, although the last of the line 16-valve S2 models are probably the better option. If your budget doesn't stretch that far a good 2.7 will do. Cabriolet had sleek looks with Coupé's performance, though loss of rigidity takes shine off the driving experience. Considered to be the perfect introduction to Porsche ownership.



959: 1988

Two-door, two+two Coupé, flat-six, twin-turbocharged water/air-cooled flat-six. 197mph, 4WD, supercar. Based (lightly) around the 911, the 959 was Porsche's homologation special for Group B rallying. A technical *tour de force* for its time, the 959 boasted all-wheel drive with active torque split-drive, selectable traction settings (dry, wet and snow conditions), electronically-adjustable ride height and damper control, water-cooled cylinder heads and multi-stage turbocharging, and a 911 evolved composite body providing 'zero-lift'. All 283 959s built cost Porsche more than double the price the customer was as asked to pay.



968: 1992 – 1995

Two-door, two+two Coupé and Cabriolet, front-engined, water-cooled. Porsche's last attempt at a front-engined Coupé resulted in its best effort to date. What the 944 derived 3.0-litre four-cylinder engine lacked in character, its chassis – especially in Club Sport spec – soon made up for. Regular car not as sharp as bare-to-the-bone Club Sport or semi-stripped Sport, but all offer one of the best front-engined/rear-drive experiences. Convertible lacks dynamics and looks a little frumpy, while limited edition Turbo S offer 911 levels of performance. Comparatively cheap to buy and run, 968 is one the safest Porsche ownership experiences.

production begins in Jan 1989, Cab in July; **1990:** S2 Cabrio launched (70kg heavier than Coupé); **1991:** Turbo Cab launched, airbags standard on European Turbo models.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
944	1982 to '87	1180	2497	163	151	8.4	131
944	1988 to '89	1260	2681	165	166	8.4	136
944 S	1987 to '88	1280	2497	190	170	7.9	142
944 S2	1989 to '91	1310	2990	211	207	6.9	149
944 Turbo	1985 to '88	1350	2497	220	243	6.3	152
944 Turbo	1989 to '91	1350	2497	250	258	5.9	162
944 Turbo S	1988	1350	2497	250	258	5.7	162

959 (1988)

959 – Wheelbase (mm): 2272 – Length/Width (mm): 4260/1840 – **Significant developments:** Air-cooled six-cylinder engine, liquid-cooled heads, four-valves per cylinder, twin turbocharged. All-wheel drive, six-speed gearbox, active split-driver, double wishbone suspension front and rear with adjustable ride height. Aluminium and composite body panels, four shocks per 17-inch wheel, 322 and 308mm discs front/rear. Adjustable ride height and dampers.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
959	1988	1451	2847	450	370	3.7	197

968 (1992 – 1995)

968 – Wheelbase (mm): 2400, Length/Width (mm): 4320/1735, Track front/rear (mm): 1477/1451 (1457/1445 with 17" wheels) – **Significant developments:** 3.0-litre four-cylinder S2-derived engine, S2 suspension, four-pot fixed callipers, ABS and 7- and 8x16-inch alloys; **1993:** Lower spec and stripped down Club Sport launched with 7.5x17-inch alloys (front) and 9x17-inch (rear), no driver's airbag and all 'unnecessary' equipment (electric windows, sunroof etc) removed. Turbo S launched with 8-valve Turbo head and 305hp. Similar spec to CS; **1994:** 968 Sport introduced with same chassis tweaks as Club Sport but with a number of creature comforts (and weight) reinstated. Standard 968 dropped from line-up, Sport and Club Sport continue for further 12 months.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
968	1992 – 1994	1370	2990	240	225	6.5	156
968 Sport	1994 – 1995	1400	2990	240	225	6.5	156
968 Club Sport	1993 – 1995	1320	2990	240	225	6.3	160
968 Turbo S	1993 – 1994	1300	2990	305	369	5.0	175

Boxster 986 (1997 – 2004); 987 (2005 – 2009);

2009 – 2013); 981 (2013 –)

BOXSTER – Wheelbase (mm): 2400, Length/Width (mm): 4133/1740 Track front/rear (mm): 1465/1528 ('96-'03), 1455/1514 (03-04) – **Significant developments:** Introduced in 1997 with 2.5 'boxer' engine, five-speed manual transmission, four-pot callipers front and rear, ABS, dual and side airbags; **1999:** Boxster S launched with 3.2-litre version of boxer engine and six-speed gearbox. White dials, titanium-trimmed windows and twin-centre exit exhaust pipes and larger 17-inch alloy wheels only exterior change to distinguish 'S' from standard model. Entry-level Boxster's engine capacity raised from 2.5- to 2.7-litres. resulting in healthy power hike to 220hp. Both models available with five-speed Tiptronic gearbox; **2003:** Boxster's first face-lift. Both 2.7 and 3.2S models gain extra 8hp, raising power to 228hp and 252 respectively. S's torque also up by 3lb ft. Front and rear bumpers are new, and the air intakes are improved for both aerodynamics and cooling. New retractable rear spoiler also fitted. Clear indicators, upgraded interiors (cup holders), sportier exhaust note and lighter alloy wheels help differentiate the new from the old.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	Hp	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Boxster 2.5	1997 to '99	1260	2480	205	180	7.0	155
Boxster 2.7	1999 to '02	1260	2687	220	192	6.6	156
Boxster S	1999 to '02	1295	3197	252	225	5.9	161
Boxster 2.7	2003 to '04	1275	2687	228	192	6.4	157
Boxster S	2003 to '04	1295	3179	260	228	5.7	164

BOXSTER 987 (2005MY –) Wheelbase (mm): 2415, Length/Width (mm): 4315/1780. Track front/rear (mm): 1490/1534 (2.7), 1486/1528 (3.2S) – **Significant developments:** **2005:** 2.7 and S launched with subtly revamped exterior and new interior. 2.7 gains 12hp over old model, while 3.2-litre ups power by 20hp. Torque is also increased in both cars. PCCB, PASM and Sport Chrono pack are optional extras, variable ratio steering rack standard; **2006:** 2007 Model Year – VarioCam Plus engines from the Cayman and Cayman S replace existing engines; power up to 245hp and 295hp respectively, revised Tiptronic S software; **2009:** 2009 Model Year – All-new flat-six engines: 255hp 2.9-litre is new entry model, 310hp 3.4-litre motor with direct-fuel injection for the S. Six-speed manual gearbox standard, seven-speed PDK optional. Limited-slip differential, touchscreen sat-nav and Bluetooth phone are all optional extras. Both models get new front and rear bumpers. **2010:** The lightest production Porsche money can buy goes on-sale in the form of the Boxster Spyder. Electric folding roof is replaced with a Lotus Elise style canvas rag, there's a new engine cover, aluminium doors and front luggage compartment lid and the radio, sat-nav and air-con have all been ditched. The standard seats are hip hugging sport bucket items and the doorcards and door pulls are inspired by the 911 GT3 RS. There is even a set of lighter alloy wheels and the ECU map from the Cayman S to extract a further 10hp from the 3.4-litre motor. Six-speed manual is standard, PDK optional with Sport Chrono Plus and Launch Control Porsche claim a 4.8-second 0-62mph time.

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BOXSTER (986): 1997 – 2004; BOXSTER (987): 2005 – 2012

Two-door, mid-engined, six-cylinder convertible. The saviour of Porsche after the recession-hit '90s, the Boxster offered true entry-level Porsche ownership. 911-esque looks drew criticism from press (and 911 owners!), but sublime chassis and instant responses more than made up for this. Early straight-line performance worries of original cars now totally forgotten thanks to 2.7 and 3.2 S engines. Boxster S is now serious contender for the only Porsche you'll ever need. Superb chassis dynamics provides Boxster with serious point-to-point ability and rewards are purer for some than current 911s. Image not the strongest, but crucially Boxster stimulates all the right senses and is a real mini-911 with down-to-earth running costs.

Eight years after the first car's launch a heavily revised Boxster arrived. Both the 2.7 and 3.2 S feature slightly improved straight-line performance and a new exterior, but the real step forward is in cabin quality, which now mimics the 997's for layout and quality.

With the old Boxster still at the top of the roadster pack, Porsche needed to do little to the driving dynamics to keep the new model fresh. However, like it did with the 997, Porsche has achieved the impossible and made an almost perfect car even greater. S receives Cayman S's 3.4 engine, 2.7 gets 5hp boost.

2010 saw the introduction of the lightest Porsche road car: the Boxster Spyder. Weighing 80kg less than the Boxster S on which it is based it's been on a extreme diet. The electronic hood is replaced by a canvas rain cover saving 21kg. The doors and front luggage lid are aluminium and the interior has been comprehensively stripped with no radio, air-con, cup holders, door pulls and door bins. Even the wheels are lighter. The Boxster was already a dynamic masterpiece, but the Spyder takes things to the next level. Replacing the original Boxster was never going to be an easy task, but in the 981 it appears Porsche managed to do just that.



BOXSTER 981: 2012 –

Two-door, two-seat, mid-engined roadster. 2.7 or 3.4-litre water-cooled flat-six, rear-wheel drive, six-speed manual gearbox fitted as standard, seven-speed PDK double-clutch gearbox available as an option. How do you improve on perfection? In the Boxster's case we're not sure how but we're sure glad they had a go. What, on paper at least, looks like a collection of individual improvements and upgrades amount to a finished product that is one of Porsche's very best road cars.

The Boxster has always been inherently right and in the 981 Porsche improved on its mid-engined dynamics further still allowing you to maximise the performance on offer from either of its flat-six engines. That it also looks more honed and aggressive, has a far greater quality interior and now comes equipped as standard with those little bits of kit that should have always been so, makes for one of the best sports car packages you can buy.

The 2.7 needs enthusiasm to extract the most from it and if it was our money we'd go for a 3.4S straight-out-the-box with only a slippery diff the essential extra to take full advantage of the car's sublime chassis.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62 0-60*	TOP SPEED (mph)
Boxster 2.7	2005 to '07	1295	2687	240	200	6.2	160
Boxster 3.2S	2005 to '07	1345	3179	280	237	5.5	168
Boxster 2.7	2007 to '09	1295	2687	245	201	6.1	160
Boxster 3.4S	2007 to '09	1345	3386	295	251	5.4	169
Boxster 2.9	2009 to '12	1335	2893	255	214	5.9	163
Boxster 3.4S	2009 to '12	1355	3436	310	265	5.3	170
Boxster Spyder	2010 to '12	1275	3436	320	273	5.1	166

BOXSTER 981 (2012MY –) Wheelbase (mm): 2475, Length/Width (mm): 4374/1801. Track front/rear (mm): 1526/1536 (2.7), 1526/1540 (3.4S) – **Significant developments: 2012:** Just like the 911 the Boxster came in for a major overhaul in 2012, its first since the original was launched in 1996. A longer wheelbase, lighter, wider track and cleaner, more efficient engines the Boxster had grown into a true thoroughbred. The range now started with a 265hp 2.7-litre engine Boxster, fitted with a six-speed manual as standard or available with the optional seven-speed PDK (which adds 30kg to the kerbweight). The Boxster came with the same transmission options but was powered by a 315hp 3.4-litre engine. PASM is optional on both models, so too are dynamic engine mounts and Porsche Torque Vectoring which also includes a mechanical locking differential. Electromechanical power steering is standard. Wheels sizes range from 18 through to 20s, and the brakes are more powerful, the S borrowing its discs and callipers from the 991 Carrera. An electric parking brake is now standard, PCB still optional. The 981 wears a completely new body and new roof and the interior takes its styling cues from the 991.

MODEL	MODEL YEAR	WEIGHT kg	ENGINE cc	HP	TORQUE (lb ft)	0-62	TOP SPEED (mph)
Boxster 2.7	2012 –	1310	2706	265	206	5.8	164
Boxster 3.4S	2012 –	1320	3436	315	265	5.1	173

Cayman 987 (2005 – 2009; 2009 – 2013), 981 (2013 –)

Cayman S – Wheelbase (mm): 2415, Length/Width (mm): 4315/1801, Track front/rear (mm): 1490/1534 (Cayman), 1486/1528 (Cayman S); **2006 –** 3.4-litre water-cooled flat-six is enlarged Boxster S engine with 997 Carrera 2 internals producing 15hp and 14lb ft of torque over the mid-engined roadster. Six-speed manual gearbox is standard with first and second ratios shorter than those found in the Boxster S. Tiptronic S optional, variable rate steering also carried over from Boxster and Carrera models. Boxster S brakes standard fitment, but PCCB optional as is Porsche Active Suspension Management (PASM) and Sports Chrono pack. Body is 100 per cent stiffer than Boxster S, and is as stiff as a 997 Carrera 2 Coupé, Porsche Stability Management (PSM) comes as standard; **2006:** 2007 Model Year – Entry-level Porsche coupé receives 2.7-litre flat-six engine fitted with VarioCam Plus technology. Five-speed manual gearbox standard, six-speed manual and five-speed Tiptronic S available as option. Steel springs and gas dampers standard, PASM optional; **2009:** 2009 Model Year – All-new flat-six engines with 265hp 2.9 replacing 2.7 engine, with a new 320hp 3.4-litre motor for the S, which also comes with direct-fuel injection as standard. Six-speed manual gearbox standard with seven-speed double clutch PDK an option. Optional limited-slip differential turns it into a genuine 911 alternative. Mild redesign includes new bumpers and head and tail-lamps. PCM3 is available with touchscreen sat-nav and Bluetooth phone capability. **2011:** 2011 Model Year – Cayman R introduced; lighter more powerful version of Cayman S with 330hp and 1295kg kerb weight. Aluminium doors and front bonnet, 19-inch wheels and an Alcantara sport interior. First R model in 43 years. Series production car.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
Cayman S	2005 – '09	1340	3386	295	251	5.4	171
Cayman 2.7	2007 – '09	1300	2687	245	201	6.1	162
Cayman 2.9	2009 – '12	1330	2893	265	221	5.8	164
Cayman S	2009 – '12	1350	3436	320	273	4.9	171
Cayman R	2011 – '12	1295	3436	330	273	5.0*	175

*manufacturer's claim

Cayman 981 – Wheelbase (mm): 2475, Length/Width (mm): 4380/1801, Track front/rear (mm): 1526/1536 (Cayman), 1526/1540 (Cayman S); **2013 –** 275hp, 2.7-litre and 325hp 3.4-litre DFI flat-six engines. Six-speed manual gearbox standard, seven-speed PDK optional (adds 30kg). New, lighter body and longer wheelbase; electromechanical power steering standard. PASM, Porsche Torque Vectoring and mechanical locking diff all optional as is the Sport Chrono pack and launch control and a sports exhaust. 18-20-inch wheels available, brakes carried over from the Boxster, including 991 Carrera stoppers for the Cayman S, PCCB optional. New interior as per 981 Boxster making the Cayman a serious alternative to a 911. As with all modern Porsches it is very spec sensitive and in our experience less always amounts to more.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62*	MAX MPH
Cayman 2.7	2013 –	1310	2706	275	213	5.7	165
Cayman 3.4S	2013 –	1320	3436	325	272	5.0	175

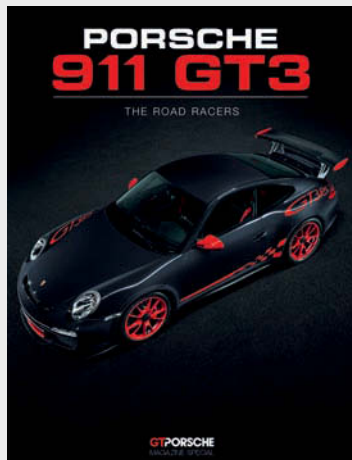
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Cayenne (2003 – 2007; 2007 – 2010; 2010-)

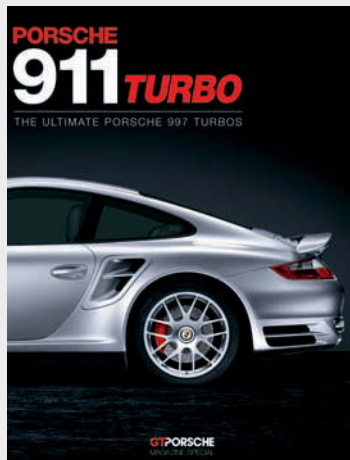
Cayenne – Wheelbase (mm): 2855, length/width (mm): 4782 (4786 Turbo)/1928, track front/rear (mm): 1655 – 1641/1670 – 1656 (17-20-inch wheels); Introduced in 2003 with choice of normally-aspirated or twin-turbocharged 4.5-litre V8. Six-speed manual gearbox for five- and six-speed Tiptronic S for Turbo (optional on S). Porsche Active Suspension Management (PASM), adjustable ride height, electronic damper control, differential locks, six-pot callipers, 18-inch alloys standard, 19- and 20-inch optional. Porsche Traction Management, PSM, ABS, ABD and ASR all standard; **2004:** Entry-level Cayenne is the first Porsche to sport V6 power. 24-valve engine produces 250hp and 228lb ft, transmitted through a six-speed manual transmission. Steel springs standard, PASM and air

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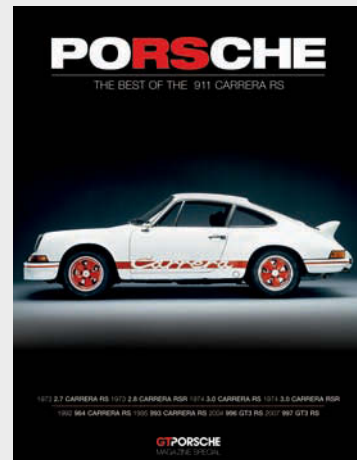
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CAYMAN 987: 2005 – 2013

Two-door, mid-engined, six-cylinder coupé. Its near perfect weight distribution and mid-engined dynamic stability make the Cayman one of the finest drivers' cars ever made. This is something Porsche is acutely aware of, hence the model is not available with a limited-slip differential and, until further notice, we will only see smaller-engined variants of the Cayman to avoid any deflection for the company's headline sports car.

At the end of 2010 Porsche announced the Cayman R at the LA Auto Show. Following a similar development programme as the Boxster Spyder, the Cayman R is a lighter, more powerful version of the Cayman S. Power is up 10hp to 330hp, and the kerb weight drops 55kg to 1295kg. Aluminium for the bonnet and doors and a stripped interior and a smaller fuel tank are all contributing factors to the weight loss.



CAYMAN 981: 2013

Two-door, mid-engined, six-cylinder coupé. Like its Boxster sibling the Cayman underwent a thorough overhaul in 2012, which must have been a thankless task for the engineers as the outgoing 987 was deemed one of the best sports cars money could buy.

Once again, though, Porsche's engineers came up trumps and produced a truly sensational car. Still sharing much with the Boxster – wheelbase, engines, gearbox, suspension and steering – the Cayman was finally let of its leash and allowed to show us just what it is capable of. Alert, precise, involving and dynamically astute, the 981 Cayman is one of the purest drivers cars and greatest sports cars to have come out of Stuttgart. It really is that good.

The 2.7-litre car needs working hard to maximise its performance, but the 3.4S is honey sweet providing the perfect blend of performance with precision to make it one of the quickest cross-country cars you can buy. The manual is still the slick six-speed car carried over from the 987 and is still the default option. Even the electric power steering doesn't seem to effect the Cayman like it does the Boxster and Carrera models. Porsche perfection? Possibly.



CAYENNE: 2003 – 2010; 2010 – TO DATE

Five-door, front-engined SUV. A Porsche SUV? Yes, Stuttgart's finest leaps off-road with the V8-engined Cayenne. Mid-level S model is the best all-rounder, the twin-turbocharged Turbo models are plain silly. Six-speed manual and six-speed Tiptronic S gearboxes available. Sophisticated air suspension is standard fitment on Turbo models, optional on S and V6, and allows driver to control ride height and damper settings. Off-road ability is impressive, but not as impressive as how the Cayenne manages to hide its near

suspension optional. V6 is also fitted with smaller brakes; **2006:** 2006 Model Year – Cayenne Turbo S gains an extra 72hp, 0-62mph in 5.2 seconds, 167mph and 2355 kilos; **2007:** 2007 Model Year – Second generation Cayenne: V6, V8 S and Turbo all get direct fuel injection engines to improve performance, economy and emissions, while face-lift improves the look. Porsche Dynamic Chassis Control active anti-roll bars available on cars with PASM; **2007:** 2008 Model Year – GTS model introduced. Combines Turbo looks with V8 S running gear. Shorter ratios in both manual and Tiptronic gearbox fitted. Turbo brakes standard. New Turbo S model announced. Power up to 550hp, torque to 553lb ft, 174mph and a 0-60mph in 4.3 seconds; **2009:** 2009 Model Year – Porsche does the dirty and introduces a Cayenne diesel. Three-litre Audi sourced V6 is available in entry-level trim only but comes with six-speed Tiptronic S as standard. 100-litre fuel tank capacity provides over 600 mile range and 30mpg. **2010 Cayenne –** Wheelbase (mm): 2895, length/width (mm): 4846/1939, track front/rear: 1655 (1643 Turbo)/1669 (1657 Turbo); Introduced in 2010 this is the first all-new Cayenne since the original. Bigger in every dimension the new Cayenne's design does an amazing job of disguising the car's larger dimensions and its natural bulk. Engine range is carried over from the previous model but now includes Porsche's very first Hybrid powered vehicle with the Hybrid Drive model which sees a 3.0 supercharged V6 working in parallel with a 47hp electric motor. All but the entry level Cayenne V6 petrol are equipped with a new eight-speed Tiptronic automatic gearbox (the V6 gets a six-speed manual as standard). Porsche has also done away with the original Cayenne's heavy duty four-wheel drive system, replacing the low ratio gearbox with the latest development of Porsche Traction Management with the enhanced electronics of the new Tiptronic S transmission. Diesel and Hybrid models get permanent all-wheel drive, while the others get an active system. PASM, PDCC and PCCB are all optional extra. All Cayenne's also get a new interior based on the design first seen in the Panamera and provides a higher level of quality and refinement that was missing in the outgoing model. **2012:** The line-up grows with the introduction of the GTS. Fitted with the same 4.8-litre V8 as the Cayenne S, the GTS engine receives a host of modifications and upgrade that push power to 420hp and torque to 380lb (up 20hp and 11lb ft respectively). Eight-speed Tiptronic S is the only gearbox fitted and the chassis combines steel springs with PASM. Air suspension is an option. The GTS rides 24mm lower than an S, has a wider front and rear track and 20-inch wheels are standard. Front bumper and lights are from the Cayenne Turbo, there is a new lower lip spoiler, side skirts and a bi-plane rear wing. The windows are framed with a black gloss trim. Leather and Alcantara trims the interior. **2013:** Two new Cayenne's for the 2013 model year: the S Diesel and the Turbo S. The latter is a bell-and whistles Turbo with the boost wound up and the power increased 50hp to 550hp. Two-tone leather options are standard as is a host of standard equipment that is optional on the Turbo. The S Diesel takes a twin-turbo charged 4.8-litre Audi V8 diesel and creates the best Cayenne we've sampled. The spec is the same as the petrol engined S, but with enough torque to tear-up the book of torque clichés.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62/60*	MAX MPH
Cayenne S	2003 to '06	2245	4511	340	310	7.2	150
Cayenne Turbo	2003 to '06	2355	4511	450	457	5.6	165
Cayenne	2004 to '06	2160	3189	250	228	9.1	133
Cayenne Turbo S	2006 to '07	2355	4511	521	531	5.2	167
Cayenne	2007 to '10	2160	3598	290	283	8.1	141
Cayenne S	2007 to '10	2225	4806	385	369	6.5*	156
Cayenne Turbo	2007 to '10	2355	4806	500	516	5.0*	171
Cayenne GTS	2007 to '10	2225	4806	405	369	6.1	157
Cayenne Turbo S	2008 to '10	2355	4806	550	553	4.0	174
Cayenne Diesel	2009 to '10	2240	2967	240	405	8.3	133
Cayenne	2010 –	1995	3598	300	295	7.5	143
Cayenne Diesel	2010 –	2100	2967	240	405	7.8	135
Cayenne S	2010 –	2065	4806	400	369	5.9	160
Cayenne S Hybrid	2010 –	2240	2995	380 ¹	427 ¹	6.5	150
Cayenne Turbo	2010 –	2170	4806	500	516	4.7	172
Cayenne GTS	2012 –	2085	4806	420	379	5.7	162
Cayenne Turbo S	2013 –	2215	4806	550	553	4.5	175
Cayenne S Diesel	2013 –	2195	4134	382	627	5.7	156

¹ when combined with electric motor, 333bhp and 324lb ft without. * 0-60 mph time

Porsche Carrera GT (2003 – 2006)

Carrera GT – Wheelbase (mm): 2730, Length/Width (mm): 4613/1921, Track front/rear (mm): 1612/1587 **Significant developments:** All alloy, 40-valve V10 with titanium conrods, nickel/silicon liners, dry sump lubrication and VarioCam, rewinding to 8400rpm. Rear-wheel drive with six-speed manual gearbox. Carbon fibre monocoque with steel crash structures and carbon fibre bodywork. Double wishbone pushrod axles front and rear, 19-inch magnesium alloy wheels, 380mm ceramic composite discs front and rear with six-pot callipers. Built at Leipzig plant in Berlin, in left-hand drive only, over 1260 examples were built between November 2003 and May 2006.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
Carrera GT	2003 to '06	1380	5733	612	435	3.9	205

Panamera: 2009 – 2013; 2014 – To Date

Panamera S, 4S, Turbo – Wheelbase (mm): 2920, Length/Width/Height (mm): 4970/1931/1418, Track front/rear (mm): 1658/1662 (1656/1646 Turbo); **2009 – 2010MY** 400hp 4.8-litre water-cooled eight-cylinder engine or 500hp 4.8-litre water-cooled twin-turbocharged eight-cylinder engine, both engines feature Direct Fuel Injection (DFI) and VarioCam Plus one-sided variable camshaft management with adjustable valve lift, both engines meet EuroV emissions; six-speed manual gearbox and rear-wheel drive for S model, seven-speed PDK optional; 4S and Turbo models feature electronically controlled four-wheel drive transmission with Porsche Traction Management and PDK fitted as standard along with Auto Stop-Start. Engines are adapted from Cayenne SUV, but PDK transmission is unique to Panamera and differs from the unit in the company's sports cars. Double-wishbone front suspension, multi-link at the rear with Porsche Active Suspension Management (PASM) standard on all models, self-levelling adaptive air-suspension standard on Turbo. Porsche

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2.5-ton bulk and drive like a well-sorted saloon car.

The face-lifted Cayenne arrived in 2007 with DFI engines and improved looks. 2008 marked the arrival of the GTS which combined the Turbo's looks with the normally aspirated V8 engine of the S model hooked up to a gearbox packed with shorter ratios. It went on to be the most popular model in the range, along with the first Porsche diesel production car which arrived in 2009; quickly followed (in more ways than one) by the 550hp Turbo S.

The all-new Cayenne arrived in 2010 with a new look and an improved interior design and is the first Porsche production car to offer Hybrid Drive. New eight-speed Tiptronic S gearbox and improved Porsche Traction Management replace heavy low-ratio transfer box. The new Cayenne is lighter, more efficient, better looking, equipped and built than its predecessor.

2013 saw the Cayenne range expand with a new petrol-engined V8 GTS model and an even more powerful Turbo S variant. The best of the bunch, however, was the new S Diesel. Using a twin-turbo-charged, 4.8-litre turbo diesel engine in some eyes it renders ever other Cayenne model redundant with its mix of fuel sipping economy and mighty power and torque – on paper it's as quick as the GTS, on the road it's a similar story too.



CARRERA GT: 2003 – 2006

Two-door, mid-engined, V10 Roadster. Still born Le Mans racer evolves into the greatest supercar ever built. Carbon-fibre tub, 612hp V10, 205mph maximum and a birch wood gear knob. Perfection!



PANAMERA: 2009 – 2013

Five-door, front-engined, rear-and four-wheel drive saloon-coupe; normally aspirate, turbocharged and supercharged V6 and V8 petrol, diesel and hybrid engines, six-speed manual and seven-speed PDK transmission. The last new Porsche to be launched while Dr. Wendelin Weideking was running the company, the Panamera is Porsche's fourth model line and, according to the company, a car that creates a new class. Powered by either a normally aspirated 4.8-litre V8 or a twin-turbo charged version of the same engine, Panamera is available in rear-wheel drive 'S' guise with a six-speed manual gearbox, or an all-wheel drive 4S or Turbo (both only available with the 7-speed PDK gearbox, which is also an option for the S).

3.6-litre V6 engine added to the line-up in 2010 with rear and four-wheel drive options. Rear-drive model gets six-speed manual as standard, Panamera 4 the seven-speed PDK and PASM suspension. V6 offer all the luxury and comfort of the V8 models. Only a four-seater, the Panamera's interior is the most striking Porsche has designed for decades, and as you'd expect of such a car there is very little in terms of luxury or convenience that has been omitted from the specification or options list.

Panamera range is extended further with the cracking diesel model in 2011, along with the S Hybrid and slightly bonkers Turbo S. The former two are rear-wheel drive only and come with the conventional eight-speed Tiptronic S gearbox. In early 2012 the range is topped off with the GTS – a breathed on Panamera 4S with more power, a Turbo look and sport inspired interior. It's no GT3 but it's a great way to hustle nearly two-tons.

Stability Management comes as standard featuring: ABS brakes; ASR anti-slip control; MSR engine drag force control; ABD automatic brake differential; Brake Assistant; and a pre-filling of the brake system. Porsche Dynamic Chassis Control (PDCC) and Porsche Ceramic Composite Brakes (PCCB) optional on all models. 18-inch wheels standard on S and 4S, 19-inch on Turbo; Variable rate steering standard, speed sensitive Servotronic steering optional. All models feature adaptive aerodynamics, with the S and 4S models utilising a two-way spoiler and the Turbo a four-way item. 4S and Turbo get 100-litre fuel tanks, the S has a 80-litre tank. Four individual seats for interior. Eight airbags fitted as standard; bi-xenon headlights standard across the range, adaptive light function for Turbo. Radar-based distance cruise control, four-zone air-conditioning, Porsche Entry & Drive (standard on Turbo) and Burmester High-End Sound system all feature on the options list. Sports Chrono Package Plus also optional and when combined with PDK offers Launch Control function.

2010 – 2010MY The first non-V8 engined Panamera arrives in the form of the 3.6-litre V6 petrol model. Panamera V6, is available a rear or four-wheel drive, the former available with either a six-speed manual or optional seven-speed PDK, the later is PDK only. Engine produced 300hp and 295 lb ft of torque. Standard specification is the same as a V8 engined S model, except for a tyre pressure monitoring system and a PASM suspension, which are optional. **2011 – 2012MY** The Panamera many were waiting for (well, in Europe at least) arrived in time for the 2012 model year in the shape of the Panamera Diesel. The 3.0-litre V6 turbocharged engine is donated by Audi and produces 250hp and 405lb ft of torque through an eight-speed Tiptronic S gearbox and with drive only to the rear wheels. The specification is on par with a V6 petrol engined Panamera with steel springs and gas dampers standard, PASM and air both optional. An 80 litre fuel tank is standard, providing a 745-mile range, the optional 100-litre tank providing 894-miles before refills. Along with the Diesel Porsche also added another fuel miser to the Panamera range in the guise of the S Hybrid. Following the path of the Cayenne S Hybrid, it's fitted with a 3.0-litre supercharged petrol V6 engine that produces 333hp and 324lb ft of torque, this is then connected to a 47hp, 221lb ft electric motor. Energy for the electric motor is stored in batteries fitted under the boot floor and these are charged via the engine and regenerative sources such as braking. Drive is to the rear-wheels only and via the eight-speed Tiptronic S gearbox. Standard spec is somewhere between an S and a Turbo model with both PASM and air-suspension both standard equipment; 19-inch wheels are standard. Full electric range is 1.2-miles and the electric motors have a 46mph maximum speed. The anecdote to Porsche two fuel sipping, CO2 friendly Panameras came in the form of the Turbo S – a Panamera Turbo would up to 11. The pair of turbo-chargers get lighter vanes made from a mix of titanium and aluminium allowing for a 30 percent reduction in spool-up time and the ECU has been remapped. Peak power climbs 50hp to 550hp and torque to 553lb ft in standard trim, or 590lb ft in Sport Plus mode via the standard Sport Chrono Package. 20 inch wheels are standard and the front and rear wheels are half and one inch wider. PDCC (Porsche Dynamic Chassis Control) and PTV+ (Porsche Torque Vectoring plus) are standard as is an electronic locking differential. Side skirts and a painted rear spoiler are standard and Agate grey exterior paint is exclusive to the model. Inside 14-way adjustable seats are standard. **2012 – 2012MY** Take a Panamera 4S, fit a Porsche Exclusive bodykit and allow the engineers time with its 4.8-litre V8 on a dyno and you get the GTS. Active air intakes, reprofiled camshafts and a revised ECU extract a further 30hp from the bent-eight and an additional 15lb ft of torque. Turbo brakes are standard, as is air suspension and PASM – which is reprogrammed to be tauter. Porsche Sport Chrono Plus is also standard as is the Turbo's four-piece rear spoiler and the 19-inch alloy wheels. The chassis is 10mm lower and there 5mm spacers fitted to the rear axle. 18-way adjustable front seats and a sports steering with paddles are also standard. Four-wheel drive is the only configuration along with the seven-speed PDK.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
Panamera	2010 – 2013	1730	3605	300	295	6.8	162
Panamera 4	2010 – 2013	1820	3605	300	295	6.1	159
Panamera S	2009 – 2013	1770	4806	400	369	5.0	175
Panamera 4S	2009 – 2013	1860	4806	400	369	4.4	175
Panamera Turbo	2009 – 2013	1970	4806	500	516*	3.5**	188
Panamera Diesel	2011 – 2013	1880	2967	250	405	6.8	150
Panamera GTS	2012 – 2013	1920	4806	430	383	4.5	178
Panamera S Hybrid	2012 – 2013	1980	2995	380	427	6.0	167
Panamera Turbo S	2012 – 2013	1995	4806	550	553	3.8	190

* 567lb ft when in Sport Plus Mode when Sport Chrono Package Plus fitted. ** 0-60mph time

2013– 2014MY The gen-2 Panamera gets a new front and rear bumper, new lights and side sills and a range of new engines. The interior is untouched. Out goes the 4.8-litre normally aspirated V8 for the S and 4S models and in comes a 3.0-litre biturbo V6 that's more powerful than the V8 it replaces. The big V8 stays for the GTS and the Turbo, and the 3.6-litre petrol V6 stil lprops up the range along with the 3.0-litre turbo diesel. The big change is to the hybrid model. Now called the S E-Hybrid, it mates the 3.0-litre supercharged V6 with an electric motor that's twice as powerful and battery pack that can store five times the energy. And if that's not enough, the E-Hybrid is also a plug-in hybrid which means you can charge the car while you're at work, asleep or being dragged around the shops. Other mechanical changes include the dropping of the six-speed manual - it's PDK for all the models bar the Diesel and S E-hybrid, which get the Cayenne's eight-speed Tiptronic.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
Panamera Diesel	2013 –	1880	2967	250	405	6.8	151
Panamera	2013 –	1770	3605	310	295	6.3	160
Panamera 4	2013 –	1820	3605	300	295	6.1	159
Panamera S	2013 –	1810	2997	420	383	5.1	178
Panamera 4S	2013 –	1870	2997	420	383	4.8	177
Panamera S E-Hybrid	2013 –	2095	2995	416	435	5.5	167
Panamera GTS	2013 –	1925	4806	440	383	4.4	178
Panamera Turbo	2013 –	1970	4806	520	516	4.1	189
Panamera Turbo S	2013 –	1995	4806	570	553	3.8	192



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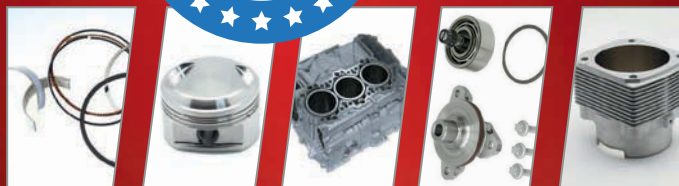
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918 SPYDER: 2014 –

Two-door, mid-engined, petrol-electric plug-in hybrid. The supercar has evolved into the hypercar, one that combines the thoroughbred engine from an LMP2 race car with the pioneering engineering of electric motors and lightweight(ish) batteries. The 918 signals the beginning of a new dawn for Porsche, one that provides the company with a halo product on which to hang its Cayenne, Panamera, Macan and, potentially 911 hybrids from. To help the 918 along the way its launch coincides with Porsche's return to top flight sports car racing, including Le Mans, with an all-new LMP1 race car. A petrol-electric hybrid race car. The 918 has a lot to deliver, but on the eve of its launch it made an impressive debut with a sensational 6 minute 57 second lap of the Nürburgring Nordschleife.



MACAN 2014 –

Five-door, front engine, permanent four-wheel drive compact SUV, six-cylinder turbocharged petrol and diesel engines; seven-speed PDK transmission. Built to fulfill Porsche's ambitions to build 200,000 cars by 2018 the Macan is the company's answer to Land Rover's Evoque, BMW's X3 and Mercedes GLA in the premium compact SUV sector. Porsche forecasts to build 50,000 Macans a year and will add to the range with another diesel engine – a four-cylinder this time – a petrol-hybrid and a four-cylinder petrol engine.

The Macan launches with two trim levels, the S and the Turbo. The former is available with either a twin-turbocharged V6 petrol engine or single-turbo diesel V6. The Turbo is fitted with a 3.6-litre twin-turbocharged engine. A Turbo S and GTS trim-line is expected to join the line-up, along with a more basic trim level to sit below the S models; expect this to be offered with a four-cylinder engines, both petrol and diesel.

Sitting below the Cayenne in Porsche's SUV line-up, the Macan is lighter by over 100kgs, 16cm shorter in overall length, eight centimetres lower in height and sits on a wheelbase eight centimetres shorter than the Cayennes. The Macan is usefully quicker than its big brother, too, with the petrol S model faster to 62mph than the quickest normally aspirated Cayenne, the GTS. The Macan Turbo's sprinting prowess sits neatly between the Cayenne Turbo and Turbo S. The smaller SUV is also usefully more fuel efficient and cleaner than its big brother, too.

Porsche's decision to build the Macan is not just to piggy back into an established growing market, it is serious about its latest addition to the model range. How so? Rather than share production resources with other VW Group brands also building similar cars for the same market, the Macan will be built exclusively at Porsche's Leipzig factory, which has undergone a €500 million investment and now includes a body press and paint shop, which has also led to the recruitment of 1000 new staff at the home of the Cayenne and Panamera. The Macan is here for the long term and features in Porsche's ambitious future plans.

918 Spyder (2014 –)

918 Spyder – Wheelbase (mm): 2730, Length/Width (mm): 4643/1940, Track front/rear (mm): 1664/1612 **Significant developments: 2013 – 2014**MY Where to start with the most technologically advanced car Porsche has ever made? The engine is a 4.6-litre V8 that traces its routes back to the 2007 LMP2 RS Spyder race car, this alone develops 608hp and runs through a seven-speed PDK gearbox with drive to the rear axle. Then there is a 286hp electric motor fitted to the front axle complete with its own transmission. The 918 can be driven by the petrol engine, the electric motor or a combination of the two, which results in a maximum power output of 887hp and 944lb ft of torque (the V8 produces 676lb ft on its own). The V8 screams to 9150rpm and produces 132hp/litre. There are five driving modes: E-Power, Hybrid, Sport-Hybrid, Race-Hybrid and Hot Lap, each mode determines which power source is required. The chassis is a carbon-fibre monocoque with the body made from the same material and includes a two-piece Targa roof. PCCB brakes are standard, there are 20-inch wheels at the front, 21s at the rear with Michelin Pilot Sport Cup 2 tyres. Available in two trim levels, Spyder and Weissach Package, the latter reduces the car's weight by 41kgs – the magnesium wheels account for a 14 kilo saving. Other weight saving measures include ceramic wheels bearings, titanium chassis bolts and brake pad supporting plates. Other upgrades include additional aero parts including aeroblades positioned behind the rear wheels, thinner paint and exposed carbon-fibre body parts. All this tech, lightweight construction and 887hp results in a very quick Porsche indeed: 0-62mph on 2.6 seconds, 0-124mph in 7.3 (7.2 if you order the Weissach pack), 0-186mph in 20.9 (19.9 with the full Weissach) and a maximum speed of 214mph. Then there is that lap time of the Nürburgring - 6 minutes 57 seconds.

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
918 Spyder	2014	1674	4593	608/286	676/944	2.6	214
918 Spyder Weissach	2014	1634	4593	608/286	676/944	2.6	214

Macan (2014 –)

Macan – Wheelbase (mm): 2807; Length/Width (mm): 4681 (Turbo 4699mm)/1923; Track front/rear (mm): 1655/1651; Weight: 1865kg (S), 1880kg (S Diesel), 1925kg (Turbo) **Significant developments: 2013 – 2014**MY Built at Leipzig, the Macan is Porsche's first attempt at a Compact SUV and shares much of its running gear with Audi's Q5 on which it is loosely based and slots in below the Cayenne in Porsche's SUV line-up. The two petrol V6 engines are donated by the VW Group, as is the 4-cylinder, turbocharged petrol engine, so to is the V6 diesel although we've seen this before as it's the same unit that is used in the Cayenne. Macan S gets 340hp three-litre biturbo V6, 157mph top speed and 5.4-seconds 0-62mph time; Turbo is equipped with 400hp, 3.6-litre biturbo V6, reaches 165mph and cracks 0-62mph in 4.8 seconds. S Diesel fitted with 3.0-litre single turbo V6 diesel engine reaches a 142mph maximum and 0-62mph in 6.3 seconds. All Macans feature the latest Porsche Traction Management (PTM) four wheel drive running gear, and the drivetrain is essentially rear-wheel drive, sending the required torque load to the front axle when it's required, which is similar to how the 991 Carrera 4's PTM system works. Porsche's seven-speed PDK transmission is standard across the range – there is no manual option – and an 'Off-road mode' can be selected from the cockpit at speeds of up to 80kmh, this shortens the gear ratios to aid traction. Auto Start/Stop is standard on all models. The S model is fitted with a 65-litre fuel tank, S Diesel a 60-litre tank and the Turbo a 75-litre one. Both S models are available to order with an optional 75-litre tank. Depending on tyres fitted, the S returns between 31 – 32mpg on the combined cycle, the Turbo 30.7 – 31.7mpg and the S Diesel 44.8 – 46.3mpg. Emissions for the three range from 150 – 157g/km for the S Diesel, 171 – 179g/km for the S and 176 – 184g/km for the Turbo. Steel springs and fixed rate dampers are standard on the S models, the Turbo comes with PASM as standard. All variants are available with air-suspension with PASM at extra cost, providing an additional 40mm of ground clearance when driving off-road. A Sport button is fitted as standard – sharper throttle response, higher rev-limit, quicker PDK shift times – PTV Plus (Porsche Torque Vectoring Plus) is optional, as is Sport Chrono. S models fitted with 350mm front brake discs, the Turbo 360mm, rears are 330mm and 356mm respectively. Porsche Ceramic Composite Brakes were not offered at the time of the Macan's launch. All Macan models are fitted with different size tyres front-to-rear. The S models are fitted with 8x18s on the front axle with a 235/60R tyre and 9x18s on the rear with a 255/55R tyre; the Turbo has the same width wheel and tyre but a larger 19-inch diameter and runs a 55R and 50R profile front-to-rear. The narrower front tyres are to provide greater steering feel, the wider rear tyres for optimum grip. Six wheel designs measuring up to 21 inches are available. All Macans are fitted with electromechanical power steering. Porsche Communication Management is fitted as standard (sat-nav is standard on UK models) and the three-dial instrument layout includes a TFT display. Bose and Birmester sounds systems are optional and your Macan can be monitored using Aha Radio App. Porsche Car Connect (PCC) is also available and allows you to access vehicle information and control certain functions via a smartphone. Other features available include a lane departure warning and Automatic Cruise Control (ACC). Turbo is fitted with bi-xenon headlights as standard, S models fitted with halogens. Porsche Dynamic Light System (PDLS) optional on all models, PDLS Plus offers high beam assist and a wider light spread at junctions. Interior is a further evolution of the design first seen in the Panamera with a transmission tunnel rising up to meet the centre console. The three-spoke multi-function steering wheel, which comes as standard with paddle shift controls for the gearbox, is a variation on the design used in the 918 Spyder. Full length panoramic glass sunroof available at extra cost and S models are trimmed in partial leather and alcantara, with a full leather interior a cost option. Macan offers 500 litres of luggage capacity (with the rear seats in their upright position and up to 1500 litres depending on the configuration in use).

MODEL	MODEL YEAR	WEIGHT (kg)	ENGINE (cc)	BHP	TORQUE (lb ft)	0-62	MAX MPH
Macan	2014	1770	1984	237	258	6.9	138
Macan S	2014	1865	2997	340	339	5.4	157
Macan S Diesel	2014	1880	2967	258	427	6.3	142
Macan Turbo	2014	1925	3604	400	405	4.8	165

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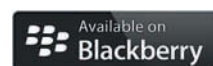
New Cayenne driven
Panamera GTS First Drive
London Classic Car Show

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FEBRUARY 2014

Cover Story: 997.2 GT3 v 997.2 GT3 RS.
Inside: 918 Spyder first drive. 959, GT1 and Carrera GT. *Ultimate Guide:* 996 GT3, Turbo and GT2. 964 Anniversary. 912 revisited. *The Market Place:* 968. Tony Hatter interview. Magnus Walker 911. *How Does That Work?* Turbocharging.



MARCH 2014

Cover Story: PS Bespoke Speedster.
Inside: 981 Boxster v Cayman S. 911 3.0 RSR rep'. 964 Carrera 'RS'. 997.2 GT3 v 997.2 GT3 RS track test. 964 Carrera 3.8. 911 SC Lightweight. 991 Targa first details. *Market Place:* 997 Turbo Coupé. Buying a Porsche for £30,000.



APRIL 2014

Cover Story: 968 Club Sport
Inside: Macan first drive. Panamera 4S UK. 991 Turbo S. SVP Cayman SV. Porsche and Le Mans, The Return: Part 1. *Ultimate Guide:* 911 E, T & S. 3.0 Carrera RS replica. 917/30 at Talladega. *The Market Place:* 911 Targa (1995 - 2013).



MAY 2014

Cover Story: 919 Hybrid
Inside: 550 Spyder. First drive: 911 50th Anniversary Edition. Me & My Porsche: Phil Hindley's 911 SC R. Driven: Panamera S E-Hybrid. Road Test: Parr Motorsport 997 Turbo. René Metge interview. First look: 981 Boxster & Cayman GTS. Porsche and Le Mans, The Return: Part 2.



JUNE 2014

Cover Story: 911 2.4S Barn Find
Inside: StudioTorino Moncenisio. First drive: 991 Targa. 911 Carrera 2.7 Targa. 981 Cayman 2.7. 997 Carrera. *Ultimate Guide:* The four-cylinder coupés: 924, 944 and 968. Porsche and Le Mans, The Return: Part 3. 997 Carrera revisited. Buying a Porsche for £60,000.



JULY 2014

Cover Story: *Ultimate Guide:* 987 Boxster
Inside: 997 Speedster v 991 Turbo Cabriolet. First drive: Boxster & Cayman GTS. UK first drive: Macan Turbo. 996 Carrera 4S. Front-engined Porsches: the V8s 928 - Cayenne - Panamera. 956 1982 WEC debut. *Market Place* 911 3.2 Carrera (1983-'89)



AUGUST 2014

Cover Story: 964 25th Anniversary
Inside: Porsche at Le Mans, its return. 987 Cayman *Ultimate Guide*. 911 2.4 S Targa. 991 Carrera4 25th Anniversary. Derek Bell and the 962. *The Market Place:* 996 GT3 RS. *Tech Guide:* Strut braces. Buying a Porsche for £80-90,000. *All You Need To Know:* Transaxles



SEPTEMBER 2014

Cover Story: 911 Turbo 40th Anniversary:
930 & 991 Turbo S. **Inside:** Road Test: 991 Targa 4. UK first drive: 991 Turbo S. 914 2.0-litre versus 981 Boxster 2.7. 968 Turbo 'RS'. Pedro Rodriguez. *Market Place:* 997.2 GT3 RS. *Tech Guide:* Roll-cages. Buying a Porsche: £90-100,000



OCTOBER 2014

Cover Story: 993 *Ultimate Guide*
Inside: 997 GT3 R-GT. LMP2 RS Spyder. First drive: Techart 991 Turbo S. Macan S Diesel 2000-mile test. George Follmer. How To Sell Your Porsche. *Market Place:* 986 Boxster. *All You Need To Know:* Brakes. *Tech Guide:* Steering wheels



NOVEMBER 2014

Cover Story: 944 Turbo vs 3.2 Carrera
Inside: 911 GT1. Backdated 964 Targa. 997 GT3 3.9. New Cayenne, first details. Porsche's only F1 win. Classic restoration guide. How To Buy a Porsche. *Market Place:* 987 Cayman R. *All You Need To Know:* Weight. *Tech Guide:* Bodywork.



DECEMBER 2014

Cover Story: 1974 2.7 Coupé
Inside: RPM Technik 996 CSR. Redtek 911 SC. 964 Speedster. 991 Carrera GTS. 909 Bergspyder. Macan Turbo vs Cayman S. *Market Place:* 1974 911 2.4 S. *All You Need To Know:* Carbon fibre. *Tech Guide:* Bodywork pt.2.



JANUARY 2015

Cover Story: Carrera 3.0 vs 991 Carrera 3.4
Inside: 928 GTS. 935 Kremer K3 replica. 991 Targa 4S. 991 Cabriolet. 996 Carrera 4S Cabriolet vs 996 Turbo Cabriolet. First Drives: 991 GTS, 981 Boxster GTS, Macan S. *Market Place:* 997 Carrera GTS.

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MODEL	PRICE	ENGINE	POWER	TORQUE	0-62MPH	TOP SPEED	WEIGHT
BOXSTER							
Boxster 2.7	£38,810	6cyl/2706cc	265hp	206lb ft	5.8secs	164mph	1330kg
Boxster S	£47,035	6cyl/3436cc	315hp	269lb ft	5.1secs	173mph	1340kg
Boxster GTS	£52,879	6cyl/3436cc	330hp	276lb ft	5.0secs	174mph	1345kg
CAYMAN							
Cayman 2.7	£39,694	6cyl/2706cc	275hp	213lb ft	5.7secs	165mph	1330kg
Cayman S	£48,783	6cyl/3436cc	325hp	272lb ft	5.0secs	175mph	1340kg
Cayman GTS	£55,397	6cyl/3436cc	340hp	279lb ft	4.9secs	177mph	1345kg
911 COUPÉ (991)							
911 Carrera	£71,449	6cyl/3436cc	350hp	287lb ft	4.8secs	179mph	1380kg
911 Carrera S	£81,242	6cyl/3800cc	400hp	325lb ft	4.5secs	188mph	1395kg
911 Carrera GTS	£91,098	6cyl/3800cc	430hp	325lb ft	4.4secs	190mph	1425kg
911 Carrera 4	£77,924	6cyl/3436cc	350hp	287lb ft	4.9secs	175mph	1430kg
911 Targa 4	£86,377	6cyl/3436cc	350hp	287lb ft	5.2secs	173mph	1540kg
911 Carrera 4S	£87,959	6cyl/3800cc	400hp	325lb ft	4.5secs	185mph	1445kg
911 Carrera 4GTS	£95,862	6cyl/3800cc	430hp	325lb ft	4.4secs	188mph	1470kg
911 Targa 4S	£96,413	6cyl/3800cc	400hp	325lb ft	4.8secs	182mph	1555kg
911 GT3	£100,540	6cyl/3799cc	475hp	325lb ft	3.5secs	196mph	1430kg
911 Turbo	£118,349	6cyl/3800cc	520hp	486lb ft	3.4secs	195mph	1595kg
911 Turbo S	£140,852	6cyl/3800cc	560hp	516lb ft	3.1secs	197mph	1605kg
911 CABRIOLET (991)							
911 Carrera	£79,947	6cyl/3436cc	350hp	287lb ft	5.0secs	177mph	1470kg
911 Carrera S	£89,740	6cyl/3800cc	400hp	325lb ft	4.7secs	187mph	1465kg
911 Carrera GTS	£99,602	6cyl/3800cc	430hp	325lb ft	4.6secs	188mph	1495kg
911 Carrera 4	£86,583	6cyl/3436cc	350hp	287lb ft	5.1secs	175mph	1500kg
911 Carrera 4S	£96,619	6cyl/3800cc	400hp	325lb ft	4.7secs	183mph	1515kg
911 Carrera 4GTS	£104,385	6cyl/3800cc	430hp	325lb ft	4.7secs	183mph	1515kg
911 Turbo	£126,689	6cyl/3800cc	520hp	486lb ft	3.5secs	195mph	1665kg
911 Turbo S	£149,511	6cyl/3800cc	560hp	516lb ft	3.2secs	197mph	1675kg
CAYENNE							
Cayenne Diesel	£49,902	6cyl/2967cc	262hp	427lb ft	7.3secs	137mph	2110kg
Cayenne S	£60,218	6cyl/3604cc	420hp	405lb ft	5.5secs	160mph	2085kg
Cayenne S Diesel	£61,474	8cyl/4134cc	385hp	627lb ft	5.4secs	156mph	2125kg
Cayenne E-Hybrid	£61,474	6cyl/2995cc	416hp	435lb ft	5.9secs	150mph	2350kg
Cayenne Turbo	£72,523	6cyl/3804cc	440hp	442lb ft	5.2secs	163mph	2110kg
Cayenne Turbo	£92,628	8cyl/4806cc	520hp	553lb ft	4.5secs	173mph	2185kg
PANAMERA							
Panamera Diesel	£65,289	6cyl/2967cc	300hp	479lb ft	6.0secs	160mph	1880kg
Panamera	£63,913	6cyl/3605cc	310hp	295lb ft	6.3secs	160mph	1770kg
Panamera 4	£67,454	6cyl/3605cc	310hp	295lb ft	6.1secs	159mph	1820kg
Panamera S V6	£82,439	6cyl/2997cc	420hp	383lb ft	5.1secs	178mph	1810kg
Panamera 4S V6	£86,080	6cyl/2997cc	420hp	383lb ft	4.8secs	177mph	1870kg
Panamera S E-Hybrid	£89,377	6cyl/2995cc	416hp	435lb ft	5.5secs	167mph	2095kg
Panamera GTS	£93,391	8cyl/4806cc	440hp	383lb ft	4.4secs	178mph	1925kg
Panamera Turbo	£108,006	8cyl/4806cc	520hp	516lb ft	4.1secs	189mph	1970kg
Panamera Turbo S	£131,152	8cyl/4806cc	570hp	553lb ft	3.8secs	192mph	1995kg
Macan							
Macan	£40,276	4cyl/1984cc	237hp	258lb ft	6.9secs	138mph	1770kg
Macan S	£43,300	6cyl/2997cc	340hp	339lb ft	5.4secs	157mph	1865kg
Macan S Diesel	£43,300	6cyl/2967cc	258hp	427lb ft	6.3secs	142mph	1880kg
Macan Turbo	£59,300	6cyl/3604cc	400hp	405lb ft	4.8secs	165mph	1925kg
918 Spyder							
918 Spyder	€781,155	8cyl/4593cc	894hp	944lb ft	2.6secs	214mph	1674kg
918 Spyder Weissach	€853,155	8cyl/4593cc	894hp	944lb ft	2.6secs	214mph	1634kg



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4Star Classics

4Star Classics in Hampshire regularly brings some stunning Porsches to market and as such it has developed a respectable reputation.

Hampshire-based 4Star Classics was born out of a passion for great driving machines and modern classic cars. The team at 4Star wanted to take a different approach to selling classic Porsches – it's a crowded marketplace and they knew that in order to stand out from the crowd they needed to do something out of the ordinary. Thus they took the decision to aim for the highest end of the market with low mileage, perfect condition vehicles being offered that had been prepared to a high standard. Before any of its stock hits the website it goes through a rigorous preparation procedure.

The company primarily deals with Porsches that were produced from the 1970s to the 1990s, taking meticulous care when choosing the cars that will

make it to its showroom. Once a car has passed the strict criteria, it is worked upon to ensure it is fully functioning and as close to 'as new' condition as is possible. The car is fully serviced using genuine parts and then road tested. Professional detailing to the exterior and interior follows, leaving the car in exceptional condition. It is then released into the showroom and on to the market. Once it's back in tip-top condition the car is photographed by 4Star's super-snapper Oli Tennent in the company's purpose-built photo studio.

It's this sort of attention to detail, with pictures of the car from every angle and a host of close-ups of items like the interior and each wheel, which separates 4Star Classics out from many other classic car dealers. It has certainly paid dividends as many customers are happy to purchase a car without even

seeing it beforehand, and as the company can arrange for transportation overseas they've found that many of its customers have been from abroad. That's not to say that there's been a lack of buyers from the UK – far from it – as 4Star is finding that there's a high proportion of repeat business among its customer base.

The team admit that finding the really good cars can be quite a challenge but now that the company is becoming more well-established it's finding that it's often approached by owners either offering to sell their cars to 4Star or who will entrust 4Star to sell their vehicle on a sale-or-return basis. Of course there's no getting away from the fact that 4Star's stock is priced towards the top end of the market, but a car is only worth what someone is willing to pay for it and the

fact that 4Star has a pretty rapid turn over of stock says everything you need to know.

The Porsches 4Star Classics is selling do genuinely seem to be the real deal – honest, well-prepared and pampered examples of Stuttgart finest – including some iconic cars. We'd recommend a visit to the website and, if you don't see the car you're looking for get in contact to discuss your individual requirements. In the meantime, enjoy the photos and the selection of videos on its website of some wonderful machines produced in an era that is fast becoming the most popular sector in the classic car market.

Contact information
4Star Classics
01420 479909
www.4starclassics.com

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"You get well provided for in Porsche showrooms: there's a coffee machine more complicated than a 959 drivetrain and a tray full of chocolate biccies including the iconic Jacob's Club – the GT2 RS of savoury snacks"



Yesterday I spent several hours in Dick Lovett Porsche in Swindon while my mate Vic had winter tyres fitted to his 997 C4S. Vic is a serial 911 owner and has been a customer at Lovett's for over 40 years. He's had the lot, from a new '73 2.7 RS through to his current car. In the early days he could buy a new 911, keep it for a year, and then sell it for a small profit or at least break even. That little trick doesn't work anymore so Vic's previous 996 racked up over 110,000 miles before being passed onto his son-in-law and his current 997 will no doubt be around until its 65,000 miles are doubled.

It's a pity that Lovett's owner, Peter Lovett, doesn't have a few of his own cars on display in the dealership because I know that he has a pretty astounding collection including, I think, a 3.0 RSR that he used to race.

I remember the owners of Bell and Colvill, the Lotus dealer in Surrey, used to often have their own toys on display which included a GT40 and BRM P160 F1 car. Perhaps Porsche high command might deem it 'off-brand' if Peter were to do so.

Even so, there were some quite interesting recent Porsches in the showroom. A very clean GT3 RS under a sheet and a mint Boxster Spyder that I think will one day be quite a valuable car. In the workshop there was another sheeted-up car that from various protuberances and shapes I deduced to have been a 993 RS or GT2.

You get well provided for in Porsche showrooms: there's a coffee machine more complicated than a 959 drivetrain and a tray full of chocolate biccies including the iconic Jacob's Club – the GT2 RS of savoury snacks. It took quite a long time to fit the tyres so we ate a lot of biscuits

and chocolate eclairs. Presumably the cost of four winter tyres and rims would pay for quite a lot of coffee powder and treats.

To pass the time Vic pretended to be interested in upgrading to a new 991 C2S which brought a young and enthusiastic salesman onto the shiny sales floor. Of course, being an official Porsche Centre, there's the inevitable selection of branded gifts. Where do you stand on this stuff? I could cause offence here but I think that 99 per cent of it is absolute junk. Porsche golf balls? Probably too expensive to be used in my game because my ratio of balls lost to holes is pretty dramatic. Do you have a 911-shaped fluffy pillow (I really can't think of any other way of describing it)? A 917 pink pig money box is almost acceptable but then the low to the ground shape of Porsche's iconic sports racer is not the ideal shape for a piggy bank.

Apart from a bit of tat that I've been given at new car launches (a BMW Motorsport mug is a bit of an embarrassment), I don't have any branded goods in the house. If you own something as wonderful as a 911 GT3 or a 968 Club Sport do you really need to have a Porsche tea towel or drinks glasses to match? It's rather pretentious to serve guests their drinks in branded receptacles.

Why not stock the cabinets in the dealerships with some interesting Porsche-themed books or DVDs? Shifting a few copies of *Excellence Was Expected* would be a good earner and Derek Bell's autobiography is a good read.

Anyway, rant over. I am looking forward to going with Vic to have his summer tyres refitted and the feast of biscuits that awaits ○

The views of the author are not necessarily shared by the magazine.

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991GT3

Porsche's road racer laid bare

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First published in GT Porsche during 2013





BIGGER. BOLDER. STRONGER.

A new engine, gearbox and body for the first time in 14 years sees the 991 GT3 fighting fit to take on all comers.

Story: Stuart Gallagher Photography: Porsche AG



It is perhaps fitting that in the year the 911 celebrates its 50th anniversary, Porsche will release the fifth generation of its hugely successful 911 GT3. 14,145 examples have been built since the original 996 variant was launched in 1999 and later this year, as a 2014 model year car, the first all-new GT3 for 14 years will start arriving with those fortunate enough to have bagged an example of Porsche's road racer.

Much has been speculated about how Porsche will move the new GT3 on from the heady heights of the 997 models that produced some

of the very best road cars Porsche has built during its 65-year history. Fears that it will have a seven-speed PDK gearbox are confirmed – it's the only gearbox the GT3 will be fitted with – and that the legendary Hans Mezger-designed, dry-sumped flat-six will be put out to pasture is also true. The element that will cause most angst perhaps, is that the introduction of the 991 Carrera models resulted in a less-than-warm reception for the company's new electromechanical power steering, and that also is fitted to the new GT3. It's not looking like a

particularly strong start, is it? More stalled on the grid than taking the lead at the first corner, some might say.

But then you delve deeper into the new GT3's technical DNA and understand this is so much more than just a hotted-up Carrera (not that any GT3 has ever been so) and that Andreas Preuninger and his team don't do compromise. On paper the 991 GT3 starts to present a mouthwatering prospect, and we've yet to drive a new Porsche that has failed to outperform its 'on paper' billing.



As we're discussing a new 911 there is no more logical place to start than at the back of the car, specifically with its engine. With the Mezger motor waved off into retirement, the Porsche Motorsport Department has had its work cut out in increasing the performance levels of the outgoing engine while integrating them into the Carrera S' 3.8-litre engine. The raw ingredients make for a salivating read. The engine is dry-sumped with an on demand oil pump and it's fitted with a new crank, forged titanium con rods and forged aluminium pistons. There is a new valve train, too, that makes the most of the new cylinder heads that have been developed exclusively for the GT3 and feature both larger inlet and exhaust ports, larger valves with a new valve rocker arm control that allows for individual valve control at very high engine speeds, while still allowing for a longer stroke and valve openings for maximum torque. The rocker arm control works in conjunction with Porsche's VarioCam variable valve timing. The GT3 gains direct fuel injection for the first time, too, with multi-hole injectors providing a larger, more usable range of fuel quantities to be injected. There is a new air-intake system featuring a specific plenum on the bootlid that incorporates a ram-air principle, with airflow across the car's body utilised to increase the intake manifold pressure, which is also completely new; made from plastic, it is not only lighter than the aluminium item used on the last GT3, but it is also larger with improved airflow resulting in a further improvement in fattening-up the engine's torque curve. Naturally a sports exhaust is fitted as standard, which is switchable and when activated increases torque by 18lb ft between 3000 and 4000rpm.

An extensive weight saving programme has also been carried out on the GT3's new engine, primarily to reduce mass in the engine – which it has done by 25kg – to enable it to spin as quickly and as freely as possible. And it has clearly worked: the engine revs to 9000rpm! The headline numbers are 475hp produced at 8250rpm and 324lb ft at 6250rpm, increases of a 40hp and 7lb ft respectively over the gen-two 997 GT3, specific output is 125hp per litre. This is an engine that sounds far from compromised.

But surely the 991 GT3 will be compromised by only being offered with Porsche's seven-speed

PDK gearbox, with no option for a manual? Until we drive the car in the late summer we won't know, but Porsche would appear to have gone to great lengths to ensure its new GT3 isn't hampered by its transmission.

The PDK fitted to the new GT3 is a comprehensively revised version of the gearbox first introduced in 2008 with the gen-two 997 Carrera models. The ratios are physically lighter, reducing the PDK's overall weight by two kilos, and are also shorter than those found in the current Carrera models, while the final drive ratio is also 15 per cent shorter. The car's 195mph maximum speed is reached in seventh gear too, whereas on Carrera models terminal velocity is reached in sixth.

Gear selection is as you would expect in any PDK equipped car, the driver either slotting the level into D and letting the electronics deal with it, sliding the lever to the left and changing up by pulling the lever back, down by pushing it forward, or by using the standard fit steering wheel-mounted paddles, left for upshifts, right for downshifts. There are two shift modes to choose from: Sport or Racetrack. Sport mode is a further optimisation of Sport Plus found on Sport Chrono-equipped Carreras, with quicker shifts between ratios with a more concise feedback. In Racetrack mode the shift times are quicker still, less than 100 milliseconds, and are accompanied with an overboost of torque. Other technical enhancements include what Porsche calls 'paddle-neutral'. It works by allowing the driver to pull back on both gearshift paddles simultaneously resulting in opening the PDK clutches, and thus cutting drive to the wheels. There are two advantages to this system. The first is the driver can neutralise the car when it begins to understeer, particularly in a wet corner, where the effect of cutting the drive to the rear wheels redirects additional cornering force to the front axle. Consequentially, the system can also be used to agitate the rear axle on the entry to a corner. Additionally, the same function can be used for standing starts, a manualised launch control if you like.

The technology leap keeps coming with the 991 GT3. Along with tech carried over from the previous generation of GT3s such as dynamic engine mounts and Porsche Torque Vectoring (PTV Plus), Porsche has also introduced rear-









wheel steering for the first time. At speeds up to 50km/h the rear wheels steer up to an angle of 1.5 degrees in the opposite direction to the front wheels. This virtual shortening of the wheelbase (by around 150mm) results in significant improvements in the GT3's agility and suitability in everyday driving, such as reducing the turning circle. Above 80km/h, the system steers the rear wheels in the same direction as the front wheels, resulting in a virtual lengthening of the wheelbase by 500mm, thereby increasing high-speed stability. Rear wheel steering at speed also makes for a more spontaneous and reactive cornering attitude. Porsche claim a decisive element of the 991 GT3's impressive Nürburgring lap time – claimed to be a sub-7min 30sec lap – is down to the chassis' rear-wheel steering.

More conventional improvements to the chassis include lighter all-aluminium components, including the front independent wheel mounts, extended wheel bearings and hubs and a new control arm. In using lighter components Porsche has been able to use lighter springs and damper struts (PASM is fitted as standard), these two improvements alone accounting for a three kilo weight reduction.

The 991 GT3's rear axle is largely a new casting too. Still a multi-link design, it features independent wheel mounts and hubs, as well as larger mounts which are both stronger and offer increased stability. The sub-frame is now made of hollow aluminium, resulting in a 3.9 kilo saving over its predecessor, while being stronger too. The rear axle, like that of the 997 GT2 RS, also features a rear helper spring.

The locking differential is electronically controlled and the electromechanical power steering has been modified and utilised to get the best out of the GT3's chassis. Until we try it, we can't pass judgement, but suffice to say Preuninger and his team have listened to the criticisms that have been levelled at the Carrera's EPAS system and have worked on developing the best system for the GT3.

As is the norm in today's world, the GT3's wheel sizes have increased too. Up an inch in diameter to 20 inches, the front wheels are also half-an-inch wider (measuring nine by 20) with 245/35ZR20 Dunlop Sport Maxx Race tyres. The rear wheels and tyres measure 12 by 20 with a 305/30ZR. The new wheels are also a new lighter, forged item. The GT3's front track (at 1551mm)

and rear (at 1555mm) are both wider than that of the outgoing GT3 RS.

The standard brake setup comprises steel discs with six-piston callipers for the front, four-pots for the rear with these now also measuring 380mm. If you spend the extra on PCCB both the front and rear composite discs have improved ventilation holes and the rear brakes benefit from additional cooling ducts fitted to the rear axle.

There will be no mistaking the new GT3 compared to its Carrera cousins (when has that ever been the case?). For the first time the GT3 uses the wider Carrera 4 shell (previous generations of the GT3 have used the rear-drive Carrera's narrow body, leaving the wide-body for the stripped-out RS models) and once again there is a significant rear spoiler fixed to its glass and carbon-fibre engine cover. The basic shell's weight is reduced by around 13 per cent through the use of aluminium for the front and rear body sections and the floor assembly. The roof, wings, front bootlid and doors are aluminium and overall torsional rigidity has increased by 25 per cent.

There is a new front bumper and lower spoiler design – the front headlamps are also new LED items. The larger openings in the

bumper are designed to draw increased volumes of cooling air over the Carrera. The lower front spoiler not only runs the full width across the front of the car, but continues up the leading edge of the front wheelarches and is designed to improve the level of downforce generated on the front axle. The rear bumper incorporates an outlet behind each wheel and one below the rear wing to draw hot air out of the engine, the rear wing is also adjustable and, like the aero spoilers at the front of the car, the rear wing generates genuine downforce rather than just reducing lift.

Inside, the days of bare GT3 cabins are over; the PCM screen and wide transmission tunnel are here to stay. Alcantara covers the surfaces, trimmed in hide, and a Club Sport option pack will give you bucket seats and a half a roll-cage. But quite frankly, staring at a tachometer that reads to 9000 will probably concentrate your mind to such a degree you won't care what the cabin looks like.

The years of development that have gone into the new GT3 (the 991 Carrera program started while the gen-two 997 was still being introduced to the world's press in 2008) means this is no breathed-on 991 Carrera, but a fully-fledged Porsche Motorsport developed and honed machine. At 1430kg the new car is

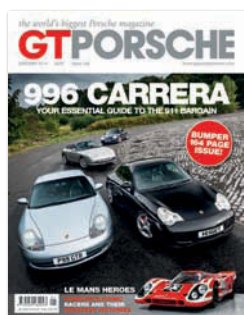
35kg heavier than the car it replaces, but Porsche claims it is quicker too, the 3.5-seconds to 62mph and 195mph see to that. The former is six tenths quicker than its predecessor, and the same time Porsche claimed for the 620hp GT2 RS. The claimed combined urban fuel figure is 31.7mpg, in case you were wondering. And while GT3s have never been about all-out speed, you have to concede these are very impressive numbers. You also have to remember that Porsche is not in the business of building bad sports cars, even its biggest detractors will admit the 991 Carrera is a damn fine car, one of the best despite it losing too much of the 911 character we bang on about. And taking that car as a base, giving it a motorsport-derived engine that will form the basis of the new GT3 Cup's powerplant, a gearbox that will deliver neck-snapping shifts and technology proven to work with, rather than against the driver, and the 991 GT3 is set to be the hottest car of 2013, even in a year that will also see Porsche introduce the 918 Spyder hypercar. When both hit the road in September, the GT3 wearing a minimum £100,000 price tag, it's going to be a tough choice as to which one to drive first. The draw of the GT3 has never been stronger ○



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JANUARY 2014

Cover Story: 996 Carrera Ultimate Guide. **Inside:** 991 Carrera v Carrera 4. Le Mans Legends. 2.4S/T replica. VAD 997 Turbo RSR. Vic Elford. Panamera Turbo and Diesel first drives. Buying a Porsche for £10,000. *The Market Place:* 944. *How Does That Work?* Aerodynamics.



FEBRUARY 2014

Cover Story: 997.2 GT3 v 997.2 GT3 RS. **Inside:** 918 Spyder first drive. 959, GT1 and Carrera GT. *Ultimate Guide:* 996 GT3, Turbo and GT2. 964 Anniversary. 912 revisited. *The Market Place:* 968. Tony Hatter interview. Magnus Walker 911. *How Does That Work?* Turbocharging.



MARCH 2014

Cover Story: PS Bespoke Speedster. **Inside:** 981 Boxster v Cayman S. 911 3.0 RSR rep'. 964 Carrera 'RS'. 997.2 GT3 v 997.2 GT3 RS track test. 964 Carrera 3.8. 911 SC Lightweight. 991 Targa first details. *Market Place:* 997 Turbo Coupé. Buying a Porsche for £30,000.



APRIL 2014

Cover Story: 968 Club Sport **Inside:** Macan first drive. Panamera 4S UK. 991 Turbo S. SVP Cayman SV. Porsche and Le Mans, The Return: Part 1. *Ultimate Guide:* 911 E, T & S. 3.0 Carrera RS replica. 917/30 at Talladega. *The Market Place:* 911 Targa (1995 - 2013).



MAY 2014

Cover Story: 919 Hybrid **Inside:** 550 Spyder. First drive: 911 50th Anniversary Edition. Me & My Porsche: Phil Hindley's 911 SC R. Driven: Panamera S E-Hybrid. Road Test: Parr Motorsport 997 Turbo. René Metge interview. First look: 981 Boxster & Cayman GTS. Porsche and Le Mans, The Return: Part 2.



JUNE 2014

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JULY 2014

Cover Story: *Ultimate Guide:* 987 Boxster **Inside:** 997 Speedster v 991 Turbo Cabriolet. First drive: Boxster & Cayman GTS. UK first drive: Macan Turbo. 996 Carrera 4S. Front-engined Porsches: the V8s 928 - Cayenne - Panamera. 956 1982 WEC debut. *Market Place* 911 3.2 Carrera (1983-'89)



AUGUST 2014

Cover Story: 964 25th Anniversary **Inside:** Porsche at Le Mans, its return. 987 Cayman *Ultimate Guide.* 911 2.4 S Targa. 991 Carrera4 25th Anniversary. Derek Bell and the 962. *The Market Place:* 996 GT3 RS. *Tech Guide:* Strut braces. Buying a Porsche for £80-90,000. *All You Need To Know:* Transaxles



SEPTEMBER 2014

Cover Story: 911 Turbo 40th Anniversary: 930 & 991 Turbo S. **Inside:** Road Test: 991 Targa 4. UK first drive: 991 Turbo S. 914 2.0-litre versus 981 Boxster 2.7. 968 Turbo 'RS'. Pedro Rodriguez. *Market Place:* 997.2 GT3 RS. *Tech Guide:* Roll-cages. Buying a Porsche: £90-100,000



OCTOBER 2014

Cover Story: 993 *Ultimate Guide* **Inside:** 997 GT3 R-GT. LMP2 RS Spyder. First drive: Techart 991 Turbo S. Macan S Diesel 2000-mile test. George Follmer. How To Sell Your Porsche. *Market Place:* 986 Boxster. *All You Need To Know:* Brakes. *Tech Guide:* Steering wheels



NOVEMBER 2014

Cover Story: 944 Turbo vs 3.2 Carrera **Inside:** 911 GT1. Backdated 964 Targa. 997 GT3 3.9. New Cayenne, first details. Porsche's only F1 win. Classic restoration guide. How To Buy a Porsche. *Market Place:* 987 Cayman R. *All You Need To Know:* Weight. *Tech Guide:* Bodywork.



DECEMBER 2014

Cover Story: 1974 2.7 Coupé **Inside:** RPM Technik 996 CSR. Redtek 911 SC. 964 Speedster. 991 Carrera GTS. 909 Bergspyder. Macan Turbo vs Cayman S. *Market Place:* 1974 911 2.4 S. *All You Need To Know:* Carbon fibre. *Tech Guide:* Bodywork pt2.

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This man says
The New GT3
is the best yet.
Why should we believe him?

You have had a month to digest the news and read the views and opinions of those who made the trek to witness the 991 GT3's world debut (and probably some from those who didn't), so what do you think about it? Enraged that you will not be able to change gear manually? Distraught at the thought of the front axle now being steered by an electro-mechanical steering rack and that the rear wheels will also steer? Mourning over the loss of the Hans Mezger derived flat-six?

While the news of these developments may be shocking and saddening in equal measure, there is little that can be achieved by giving Porsche a virtual ear bashing in forums and via social media until we drive it. What we can do before those summer drives – and what we did – is sit the man responsible for the GT3 down and ask him what's going on. And for good measure, we invited his boss along too, Wolfgang Hatz, the head of Porsche R&D. So Andreas Preuninger, what have you done to our GT3?

Story: Stuart Gallagher





"I wish I could let you drive the car off the stand, that will answer all your questions about the new GT3." Preuninger has had a long day of media commitments. His voice is hoarse having spent too many hours answering questions about the car he has spent the last three years of his life working on. And when his duties are completed here he'll be ducking out of the Porsche post-show canapés and champers to catch a flight back to Spain to complete the final sign-off of the first all-new GT3 in 14 years. But for the next 30 minutes we talk GT3. Starting with the decision to switch to PDK...

"PDK has come along way since it was introduced on the 997 Carrera in 2008. In the Carrera, Boxster and Cayman it has been continuously improved and is now one of the best of its kind. But I had my concerns over fitting a GT3 with a PDK: it's heavier than a manual gearbox, which goes against everything a GT3 stands for and I know our customers are very passionate about the GT3 having a manual

gearbox. But what we have done with PDK for this car is build the best double-clutch gearbox. The ratios are shorter – the top speed is reached in seventh gear, not sixth, and the software that controls the gear changes has been developed from what we have learned on the race track. The car doesn't creep like a normal PDK and you can disengage the clutch so you can control the car if you want to slide it around. This PDK gearbox is nothing like any of the PDK cars you have driven before.

"In normal mode the shift speed is somewhere between Sport and Sport Plus on a Carrera model, in sport mode for the GT3... wow! You need to experience it! There's no loss in drive, pull the paddle and bang! You won't recognise it like any other PDK shift. And the paddles, they require 50 per cent less effort – like a short-shift for a manual transmission. On the PDK shifter, we've even changed the manual change function, so now you pull back to change up a gear, push forward to change down, just like a race car.

Perfect for the track day. Even with PDK we have managed to maintain the emotional connection that has made all GT3s so special. It really does feel like the sequential shift in a Cup car; it's nothing like the PDK shift you have experienced in a Carrera."

This is no pre-prepared statement. Preuninger is fired up about this change made to *his* car. Was a manual gearbox tested? Hatz begins to answer before Preuninger turns back to the table and interjects: "From the beginning I didn't think PDK was right for the GT3, like you I want to work in the car, be in control. And I'm a great believer in that seeing is believing and I had to be sure, so we built a car with a manual gearbox and one with the PDK that was close to the finished PDK we have today. It didn't take my team very long to be convinced that the PDK was the best option for the GT3 we wanted to build.

"The night before we showed the cars to board members, many who are GT3 RS 4.0 drivers, two came up to me and said 'you won't convince me



In developing the 991 GT3 Andreas Preuninger and his team had an enviable back catalogue to work with. The 997 GT3 RS 4.0 was the pinnacle of the previous generation GT3s and Andreas has taken much inspiration from it in creating the first 991 GT3. Porsche has yet to confirm it, but it's suggested the new GT3 will be as quick, maybe quicker around the Nürburgring than the 4.0-litre









this PDK in the new car is better than the manual in the 4.0'. In the morning it took one lap for them to be convinced. One lap."

That's the gearbox taken care of then. Now, Andreas, how about this electric power steering? "Like PDK we have worked very hard with the electric steering. We spent two-and-a-half-years just working on the steering's software. EPAS was not very well received, and I was not happy with it when I first tried it on a 991 Carrera. But it's the first system like this that Porsche has developed so the basic system is improving all the time (*something we have experienced with each subsequent drive of a new generation Porsche sports car we drive ~ Ed*); for the GT3 we worked so hard to get it right. This is the same system, the same hardware but the wheel carriers, wishbones, the stabilisers are unique to the GT3, different to the 991 Carrera. We knew we had to get the steering right, it's what makes a GT3 special: the way it reacts, the way it communicates, the way it feels, we had to get all these things right. Not just the same as the 997 GT3 RS, but better.

"Feedback is so important in the GT3, you have to be able to feel when the front tyres are losing grip and be able to react. Getting the feedback right was one of the most important factors in developing the GT3's steering. I promise you, you won't feel any difference between the 991 steering and the steering in a 997 GT3 if you drive them back-to-back. And believe me when I say I was shouting the loudest about not wanting this steering in the GT3.

"With a GT3 the steering is a crucial component, it's one of the areas our customers – and you, the press – always comment on positively. I had very big fears about moving to an electric system. I had yet to drive a car with electric steering that I thought was better than a hydraulic system. I know with the 991 GT3 we have developed the best electronic steering system. When I drove it back-to-back with a car with the old system I couldn't tell the difference. Honestly." That's quite a claim, but from his body language and the way Wolfgang Hatz backs up everything Andreas is saying, there's a sense that this means more than just developing a new car to these two. It's a passion.

Andreas' enthusiasm for the steering continues (accompanied by those brilliantly detailed steering inputs illustrated by delicate finger-tip movements only engineers do, that make the exaggerated armfuls of opposite lock racing drivers do look ham-fisted). "The EPAS on the GT3 is not only quick, but it is more precise than the 997 GT3 RS steering and has more feel and feedback too. When you try it call me and tell me if you don't like it." Er, okay we will.

Interestingly, the GT3 won't be available with Porsche's active anti-roll bars, PDCC, as the car doesn't suffer from the same level of body roll as the Carrera models. Criticisms we have had of 991's and their steering have always been strongest when the car has been fitted with the optional PDCC.

EPAS and PDK are familiar technology now,

fitted as they are to all of Porsche's sports cars. But with the 991 GT3 Porsche has introduced more tech, such as rear axle steering. A gimmick or essential chassis development? "We were working on another project with rear axle steer and the results were impressive and we thought why not try it on the GT3, primarily to see if it could help with high speed stability," Andreas explains. "The results were pretty good the first time we used it. When you do a lane change at 250km/h the car turns and goes where you want it to go. But at slower speeds the car shrinks, it makes the wheelbase smaller and it shrinks around you, really helping in the tighter turns. When we finished the testing these two benefits meant we had to have it on the GT3.

"But like PDK it adds more weight; the motors and actuators are nearly six kilos and the system requires a bigger current so it meant fitting a bigger battery. Every time we tried a new piece of technology and it worked I had to consider if it was worth the weight penalty – what does it add to the car and the driving experience? Like PDK, rear axle steering offered more benefits than its weight penalty brought disadvantages."

That other project? That's the 918 hyper-car that operates out of the workshop next door to the GT3 development team. "They work separately but they are always going next door to see what they other is doing," reveals Hatz. "Weissach is still a very close community, very little is kept secret inside. It's stopping the secrets from getting out that we work hardest on."



How long will it take for us to get used to a PDK lever in a GT3? Porsche claims the shifts are as quick as a sequential race car shift and that after driving PDK and manual cars back-to-back the former was the best option for the car



“The rear wheel steering also helps with controlling the tyre temperatures,” continues Andreas. “On track you know how badly a car can be affected by tyres that overheat, but with the rear axle steering the data we kept getting back was that the tyre temperatures were more consistent and maintained a very consistent temperature. For track driving this is very important. I wasn’t keen on rear wheel steering – I thought here’s more weight, more technology that moves away from the idea we all have of what a GT3 should be – but when I tried it, and it made the car better I had to have it. Nothing we have put on this car is because marketing has told us to do. It’s because it makes the GT3 the best possible car we can make and crucially – and this is really important – it’s an improvement over the old GT3 and as good, maybe better than the GT3 RS 4.0. But the 4.0 was a very special car and you have to remember that today we have launched

just the GT3, not an RS model or something like a four-point-zero, this is just the beginning of the 991 GT3.”

Thirty minutes is not long enough to discuss a car as significant as the 991 GT3 with its creator. This car is all about the detailed input that Andreas and his team have put into it. What look like carry over 991 Carrera parts are nothing of the kind. The engine shares its basic block and DFI credentials, but that’s about it. The crank, pistons, valve gear are all new and unique to the GT3. The gearbox and steering systems carry the same acronyms but they are two very different pieces of hardware controlled by their unique software. But with road cars it is different. Porsche knows its customers better than most, and its GT3 customers more so. It knows what competitor cars it would consider buying and which ones it wants to beat, not just at the bar with technical bragging rights, but out on track.

To do that, to stay at the top and build a road car that delivers at the very highest level and beyond takes commitment and belief in the project. It also means making tough decisions that you know are going to be pulled to pieces and forensically examined by customers and the media alike. If you are Porsche, you need to be ready with the answers. To hear from the man who took those decisions and made the biggest calls, give the answers with passion, enthusiasm and with utter conviction is exactly what you want to hear.

But as Andreas Preuninger said at the beginning, the best way for him to answer all our questions and the concerns customers and current GT3 owners have and quash all our fears and demonstrate that everything that has been done to the car is for the best, is to drive it. And we will do so in the summer, and that drive can’t come soon enough... for us or Andreas ●



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THE KING IS DEAD.
LONG LIVE THE KING.

The talking can stop. We've driven the new GT3 and it's brilliant.

Story: Adam Towler Photography: Oli Tennent

In the end, it takes just one deserted Swabian back road and approximately a minute. After months of waiting, wondering and listening to everyone who's ever held a steering wheel pontificate on the merits of paddle-shift versus a manual transmission, not to mention the demise of the 'Mezger' flat-six, finally the mute button can be firmly squished on that all pervading white noise. It's time to see what the new GT3 can do.

The answer is genuinely shocking: an experience of sheer bloody-minded ferocity that renders me more or less speechless. Pulling away from a T-junction, the GT3 squats down in that inimitable 911 fashion and then slams violently forward. From somewhere over my shoulder the engine, hitherto loud but more mannered in behaviour than of old, gains revolutions like few other engines I can recall; the rev counter needle surges 'round in an instant, and I only *just* snatch at the right-hand paddle in time as 9000rpm comes within range. Thwack. Almost instantly we're already past 7500rpm and into

the sweet spot again. This is simply outrageous.

Theoretically speaking, ahem, this process goes on for at least another couple of gears. A scream of revs, a unique sizzle sound – summon a gear change – a bang – another gear, no pause whatsoever – more engine bellow. Whatever is apparent by the end of this test-drive, whether it's to do with perceived notions of 'character', tradition, or any ephemeral quality open to discussion, one thing cannot be doubted: the new GT3 is an absolute animal of a car that redefines performance in this market segment.

But then GT3s were never just about performance. What we've come to learn in recent months is how Porsche's GT department has sought to create a 991 that not only scales new heights of speed and acceleration (0-62mph in 3.5 seconds!) but that also keeps the GT3 spirit alive and well. The big question is whether they've succeeded: it's a mark of their supreme reputation that no one doubts the car will be a blinder against the stopwatch.

So you already know about the new engine,

loosely based on the block of the 9A1 DFI Carrera motor but otherwise almost all new and complete with titanium connecting rods, forged pistons, and a proper dry sump system. Those new rocker arms allow an incredible 9000rpm limit, and also provide the aforementioned 'sizzle' sound as that lofty marker is reached. There's the gearbox with, yes, no manual alternative. As we now know, a seven-speed manual car was in development for some time alongside the PDK car but was eventually dropped. So it can be done, but Porsche has *chosen* not to do it. Bold. But then again this is PDK 3.0, we have been assured, complete with no auto-change up at the limiter, 100m/s changes, clutch in facility, no automatic 'creep': in other words, this is PDK for the hardcore not just the-can't-be-bothered and the performance-on-paper chasers.

There is also the E-diff, the wider track and longer wheelbase of the basic 991 'shell'; forged alloy wishbones and incredibly light 20" forged wheels. There is more downforce – 120kg at maximum pelt – but then there is also more to



Longer wheelbase, wider track, wider body, new engine, gearbox, steering, differential – the new GT3 is just that: all new

the kerb weight despite the engine alone saving 25kg over the old Mezger unit. With full tanks and fluids it is quoted as 1430kg, with a dry weight of 1320kg. That still makes a mockery of the competition, all told, but the upwardly mobile figure is bound to raise eyebrows.

Andreas Preuninger, head of the GT department, seemed to sense that might cause some consternation, and made two very interesting comments during the briefing. The first was: "At Porsche we love to shift gears manually, but we like to go faster even more." And the second, to paraphrase, was: 'the systems we can fit to the car (such as PDK and four-wheel steering) override their weight gains through the performance boost they bring to the car.' If you want to know how and why the new GT3 is a different kind of car to the type we've all enjoyed, either from afar or behind the 'wheel, over the past 14 years you'd do worse than ponder on those words.

Getting to know the new GT3 starts easily enough. From the outside it exudes aggression,



and I find myself contemplating, as usual, that the 991 looks like a big car 'in the metal'. Climb in and if the optional bucket seats have been specified you're clamped down low for a fantastic driving position. There's liberal use of Alcantara inside here but essentially it's business as usual.

The new engine is loud, but at idle it's more polished than the old motor. Select 'D', and you're soon rolling down the road, at which point it has already become obvious that this new GT3 redefines realistic usage of the type. Porsche tell us that 80% of GT3s will see track action, and it's prioritised that ability like never before, but it's also created a car that is barely, if at all, more demanding in everyday use than a Carrera. With optional PCM and climate

control, why couldn't you use one of these as your sole car? In fact, what the GT department has achieved with the ride quality is something quite special, as although it's obviously firm it is quite beautifully damped. There is no reason, as before, to select the firmer damper setting unless you're on a smooth, modern racing track, so in effect the engineers have come up with a 'one setting works for all' with 'normal' mode. An old fashioned concept these days, but I can't help thinking that's how it should be when done well.

The next thing that's obvious is just what a great job they've done with the electric power steering system. The reaction from dead centre, weighting and self-centring all have a nicely natural feel, and yes, there is genuine feedback

Electric power steering and a PDK gear lever, potentially a recipe for disaster, except Porsche doesn't do disaster

2014 911 (991) GT3

Engine: Water-cooled flat-six, aluminium block and cylinder heads; four overhead cams, four valves per cylinder with VarioCam valve timing; direct fuel injection

Bore x stroke: 102mm x 77.5mm

Capacity: 3799cc

Max power: 475hp @ 8250rpm

Peak torque: 325lb ft @ 6250rpm

power-per-litre: 125hp

Maximum revs: 9000rpm

Transmission: Seven-speed PDK with e-diff and PTV Plus

Front suspension: MacPherson struts, coil springs with PASM dampers, anti-roll bar

Rear suspension: Multi-link, coil springs with PASM dampers, anti-roll bar, active rear-wheel steering

Steering: Electromechanical power steering

Front brakes: Six-piston aluminium callipers, drilled and ventilated 380mm discs; PSM

Rear brakes: Four-piston aluminium callipers, drilled and ventilated 380mm discs; PSM

Weight: 1430kg

Length: 1545mm

Width: 1978mm

Height: 1269mm

Wheelbase: 2457mm

Front track: 1551mm

Rear track: 1555mm

Front wheels & tyres: 9Jx20" with 245/35/ZR20 Michelin Pilot Sport Cup2

Rear wheels & tyres: 12Jx20" with 305/30ZR20 Michelin Pilot Sport Cup2

Top speed: 196mph (claimed)

0-62mph: 3.5 secs

How much: £100,540

On sale: Now



here to confront the naysayers with. I find myself obsessing over it for the purposes of this test, but it's great to report that despite no significant hardware changes, the GT department has achieved a considerable leap forward over the regular Carrera. It doesn't talk away as loudly as a 997 GT3 and definitely isn't chatty like a 996 GT3: where that car metaphorically shouted at you through the rim, the 991 GT3 whispers, so you need to listen harder to pick it up but it's there. Surely, Porsche needs to make this steering setup standard on all 991s as much – and as soon – as possible?

The same goes for PDK. Once you've experienced this new version of the dual clutch 'box there's no going back. At last, this is a semi-automatic setup that feels as though it was

designed by car enthusiasts with car enthusiasts in mind. You can leave it in 'auto' and it does a fine job, shuffling through the gears discreetly in town or working telepathically out on the open road, but I subconsciously drive with it in 'manual' as a matter of principle. In this mode it is a revelation: there's no kickdown to be avoided, no need to worry about the onset of the redline as you approach a corner in case of the dreaded last second up-change. They've even swapped the up and down configuration of the gear lever – now when you're being pushed forward under braking you push the lever forwards to change down, just as it always should have been. Again – PDK 3.0 can't come soon enough on dual-clutch Boxster, Caymans and 991s everywhere.

Soon enough, an opportunity presents itself to put the engine to work. Already there have been glimpses of its potential, when its boisterous engine note and mid-range shove made the 991 seem weightless, but as the revs pass the 7000rpm mark the note hardens and then it goes absolutely feral. The noise and the accelerative force overwhelm everything else going on in the car, at least the first few times it's experienced, and when the next gear hits home it's impossible to deny that PDK works brilliantly. The calibration is so well-judged: it has the ferocity that adds drama without the brutality that makes one cringe with mechanical sympathy. With the sports exhaust open the hills for miles around reverberate to the sound of a 125hp-per litre flat-six (we could hear other GT3s screaming on their way to us once









Much has been made about Porsche's decision to offer the 911 GT3 with only a double-clutch automatic gearbox. But Porsche has gone to great lengths to adapt its PDK 'box to suit the needs of the GT3, such as using lighter ratios. The big mechanical difference is the shorter ratios used in the GT3's PDK compared to the PDK gearbox used in the 911 Carrera S.

Gear ratio: 911 Carrera S v 911 GT3

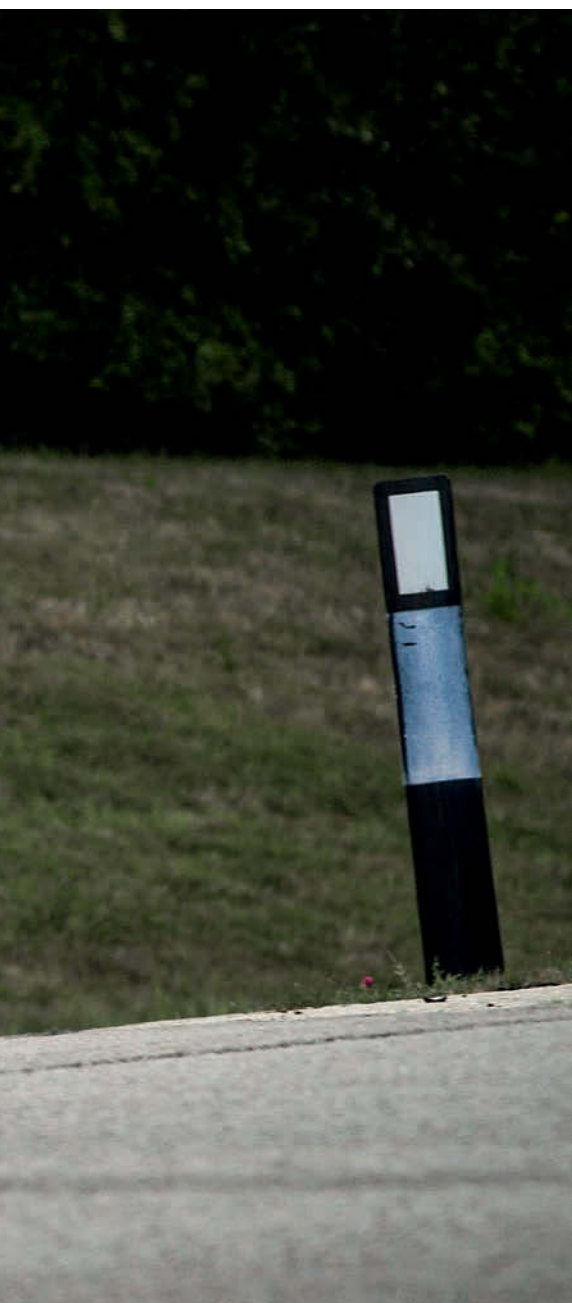
Gear	Carrera S	GT3
1st gear	3.91	3.75
2nd gear	2.29	2.38
3rd gear	1.65	1.72
4th gear	1.30	1.34
5th gear	1.08	1.11
6th gear	0.88	0.96
7th gear	0.62	0.84
Final drive	3.44	3.97
Clutch diameter	202mm/153mm	202mm/153mm

we'd parked up for some photos).

With optional PCCB ceramics – 410mm discs with six-pots shared with the 918 Spyder on the front axle – you don't need me to tell you that the new GT3 stops with a conviction that takes your breath away – literally. Given the way it piles on speed, this is very reassuring, but the regular metal discs aren't shabby either.

Given this brutal new level of performance, what happens in the corners takes a little building up to. Nevertheless, the progress that has been made is immediately apparent because this new GT3 turns into a corner like no 911 I've ever driven. The 911 genes provide some of that, but those raw ingredients harnessed by the GT department have created a 911 that points to an apex with stunning conviction, rendering the idiosyncrasies and techniques associated with

*As the revs pass the 7000rpm mark
the note hardens and then it
goes absolutely feral*



turn-in with all the previous cars instantly obsolete. You turn the 'wheel to where you want the GT3 to go, and it goes there. So you up your entry speed at the next curve and it still goes *exactly* where you want it to go – no bobbing at the front axle – at which point the forces are really squishing your sides and a glance at the speedo reveals some highly improbable numbers. The four-wheel steering? You wouldn't know it was there, but the car is fabulously agile and always light on its feet.

The car is beautifully balanced through a corner and the E-Diff applies the power really cleanly on the exit even with the torque it has to deal with. The GT3 feels smooth and unflustered: looking back on the day the speeds were high but not once did I feel the car was breaking into a sweat. I don't doubt that on a

circuit it'll be a very serious car indeed.

So, we have to try and place the new car in some kind of context, and that inevitably brings to mind its predecessor: there's no getting away from that. But at the same time I think such a comparison is perhaps the worst thing you can do with the 991 GT3. For the simple fact is that it's a very different car, just as the 991 Carrera S is a very different beast to a 997 Carrera GTS. That there is obvious similarity in the way they look tends to hide the notion that it's nearly as removed from its predecessor as the 996 was to the 993.

So if you loved every aspect of the 997 GT3, that feeling of compactness on the road, the traditional upright 911 dashboard, the individual character of the Mezger engine and the overtly mechanically-feeling manual gearbox, don't try

to find that car in the new one because you'll be disappointed. This is a new, completely different machine that works on a higher performance level, but in the process has traded some of the loveable quaintness of old. Some will call that a loss of 'character': Porsche will probably sell more of the new model.

Such intangible judgements can only be made by the individual, and not explained on any computer graph – for instance, I used to enjoy driving the old GT3 slowly, just ambling along drinking in the experience. I just wanted to drive the new one faster and faster.

So personally, I'm keeping my fingers crossed (futile, perhaps) for a Cayman Club Sport with a manual gearbox. It's not that the new GT3 misses the mark, far from it; just that I think based on this first drive, there's room for both ◯

The Making of a Legend

15 years, four GT3s; we take a look at what has made the 911 GT3 the cult hero it is today. Story: Stuart Gallagher

In less than 15 years the GT3 has firmly established itself as Porsche's über-911 sub-brand. It is the derivative that whips the motoring press, existing owners of the current and potential owners of the new GT3 into a frenzy. And that's before you take into account those who will never be in a position to buy one but will have an opinion on it anyway. The GT3 is big news for Porsche and big news for Porsche enthusiasts and 911 die-hards in particular.

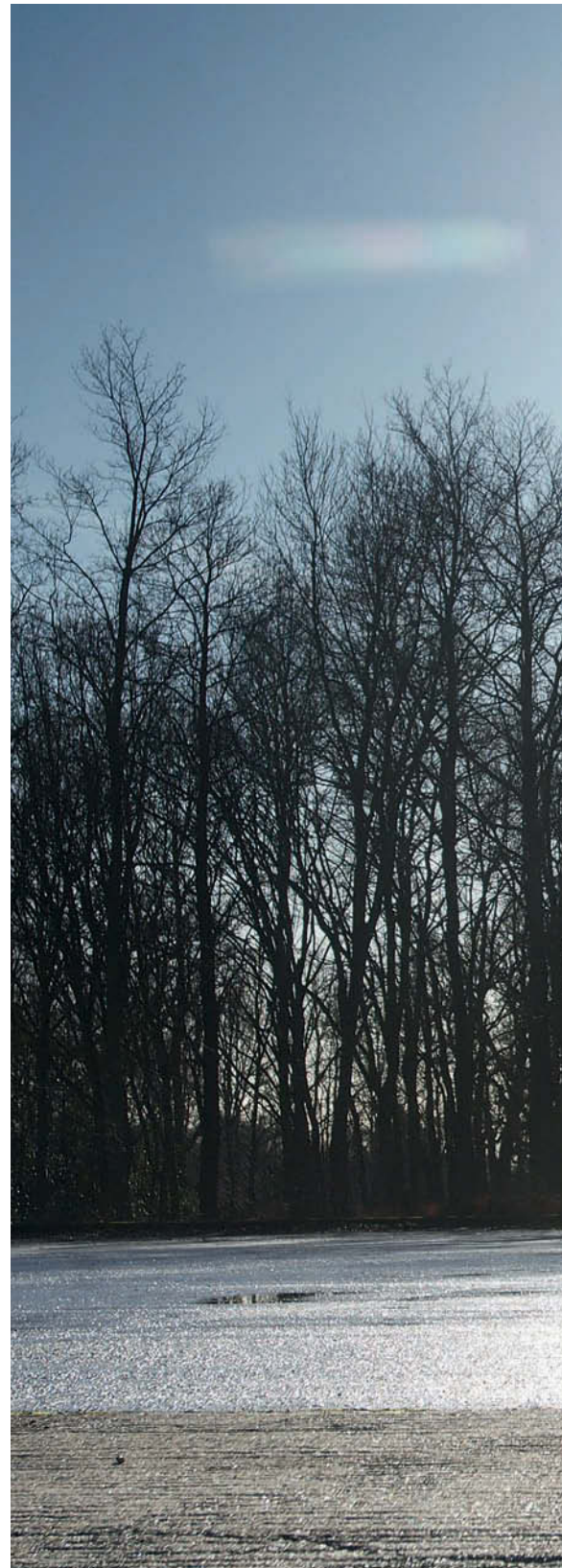
It arrived under the radar in 1999, its announcement in the news pages of the major motoring titles justifying a simple image and a caption with the barest of facts. Only after the great and the good had got behind the wheel of this breathed-upon water-cooled 911 was its full potential understood and the barrier to greatness lifted.

Back in 1999 the GT3 caused quite a few to stop and think exactly what it was that Porsche had delivered. Three years previous a rather marvellous 911 going by the name of Carrera RS had delivered, for many, the pinnacle of air-cooled 911 motoring. It had followed the traditional RS path of less weight, more power. Its chassis was tweaked, honed and signed off by the Motorsport Department before making its debut in the company's Supercup race series. Then it was sent to the OPCs to await collection by the long-serving customers deemed worthy to buy them. But the GT3 was different. For a start, it wasn't an RS and GT3 meant little to those outside of Weissach. It was also heavier than the standard Carrera on which it was based (thanks to its Carrera 4 shell), which would negate any performance advantage its larger capacity (by 200cc) 360hp engine offered, wouldn't it? In a word: no.

I worked on the same magazine as contributor Richard Meaden when the GT3 was launched and still remember how wide his grin was on returning to the office fresh from the car's international launch. That it poured with rain for two solid days didn't appear to dampen his spirits one bit and all he could do was tell us just how astonishing this new 911 was. He'd even make the tea so we would stop and listen to him. But it was for good reason the short of height, high-on-talent road tester was so excited.

Of course, this wasn't just a breathed-on Carrera. That bigger engine was as far removed from the standard car's M96 motor as could possibly be, and has since entered into folklore as one of Porsche's very best. Twelve months prior to the GT3's launch a closely related version of it had powered Porsche's GT1 to the company's 16th overall Le Mans victory and now here it was, a normally aspirated, 'productionised' version of Hans Mezger's dry-sumped masterpiece. Its crankcase may have been shared with the 964 but this was a pure-bred race engine Porsche would become rightly proud of and that those who experienced it would do anything to do so again and again. That it was bolted to a wonderful six-speed manual gearbox and had a beautifully adjustable and rewarding chassis to work with made the GT3 an instant hit. Thoughts that Porsche would struggle to turn the highly regarded 996 into anything as focused as an old-school RS were banished within the first couple of miles of driving the original GT3.

The GT3 was also the beginning of Porsche introducing a clear model cycle and continuous development programme for its cars. In developing the 996 Series the engineers were able to integrate a development plan that would see





Andrew Morgan

Four generations of GT3, 14 years of development and every single one a master of its craft. We'd have any of them any day



the 911 evolve on a four-year cycle, including the GT3. In early 2003 we tested the Gen-2 996 GT3 for the first time, a finely-honed and updated version of the original. The aerokit was sharper, the interior still fitted with essential kit but available with a few more luxury trinkets, but it was the meticulous changes to the car's engine that pushed the GT3 higher up people's 'must-drive' lists. For the generation two car saving weight in the engine was the order of the day. There were stronger but lighter pistons, the connecting rods may have been longer but they were lighter still, and the removal of the vibration damper on the crankshaft not only saved two kilos but further improved the engine's free-revving nature. The valves were reprofiled and the tappets were reshaped, smaller and 42 per cent lighter. The cams were also reshaped and the VarioCam tech and ECU software updated and rewritten respectively. The engine's maximum speed was raised to 8200rpm in the first four gears (a 400rpm increase) and the gearbox was overhauled, too, with steel instead of brass synchros used on third, fourth and fifth to further improve precision and longevity. There wasn't an area of the car nor a component of it that Porsche didn't assess, evaluate and improve upon if required and the results spoke for themselves, as the Gen 2 996 GT3 continued where the original left off when it came to superlatives and winning group tests. Incidentally, this was the first GT3 to be worked on by one Andreas Preuninger.

And then along came the 997 GT3 and with it a PCM module, sat-nav and telephone, even heated seats if you so desired. But it also had Porsche's PASM suspension, the first GT3 to offer active damping (much to the disgust of internet forum lurkers), and a simple traction control system that caused some disciples to call for the head of the man responsible for such treason. Not for the first time the internet was wrong and Porsche was right.

The 997 GT3 was the first significantly overhauled GT3 since the original. As well as the new body and changes already mentioned, the 415hp 3.6-litre engine only carried over the crankcase from the old car. It had new pistons, con rods and a lighter crank to save weight, while every other component within it were redesigned, too.

The engine wasn't the only sign of Porsche's GT3 OCD. Take the front suspension assembly, which comprised bespoke springs, cast aluminium plates, lower arms and uprights, with unique settings for the dampers. This was the first sign that directed you to the importance of the GT3 to Porsche's 911 plans.

Because despite those nods to creature comforts and nannying electronics, the generation one 997 GT3 is one of the very best. Porsche even managed to cut some of the understeer out of it thanks to modifying the diff to have 28 per cent lock-up on power but retain 40 per cent locking on the overrun. The gearshift came in for some stick for being a stiff buggler when cold and not that much more helpful when the oil was warmed up, a result of its shift being 15 per cent shorter than a 996 GT3's and 22 per cent shorter than a 997 Carrera S'. Complaining about a GT3's manual gearshift, who would have thought it?

Time is a cruel mistress and it's when you start to look back at a model's timeline that you realise four years have passed beneath your Michelin Cups and you're still sat at the same desk. Thankfully that means stuck at the same desk thinking up ingenious ways/excuses (delete as applicable) to blag another drive in a GT3. Especially the last of the 997s, the generation two car with the mighty 3.8-litre 'six that was an integral part to one of the most accomplished and revered sports cars of its time. Again the engine was more powerful (435hp), larger too (another 200cc), but again it was lighter, this time by 1.8 kilos, which was better than the three kilos it had gained when steel rather than aluminium had to be used for the liners due to the increase in bore size. Despite the regular Carrera models running a PDK 'box the seven-speed double-clutcher wouldn't fit the Mezger engine so the six-speed manual was retained. The suspension wasn't greatly changed but the minutiae of components were looked into and changes made where deemed necessary, such as a 5cm lowering of the roll centre to further curb understeer, front springs that were 5Nm stiffer and softer front and rear anti-roll bars. The PSM was taken from the GT2, electronic engine mounts were introduced to improve low speed corner traction and reduce high speed vibration, and then there was the more efficient aero, resulting in downforce increasing five-fold. The gen-two was a piece of machinery that looked infallible and uncompromised. As with the trio that had gone before it this GT3 had learnt from its predecessors, honed its technique and evolved into a machine that was appreciated by the very talented, and enjoyed equally by the not so gifted who were welcomed into a rarefied world of pure brilliance.

With every new GT3 we ask how Porsche will improve on its latest car; since 1999 it has never let us down and it doesn't look like it is going to start doing so anytime soon ○



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