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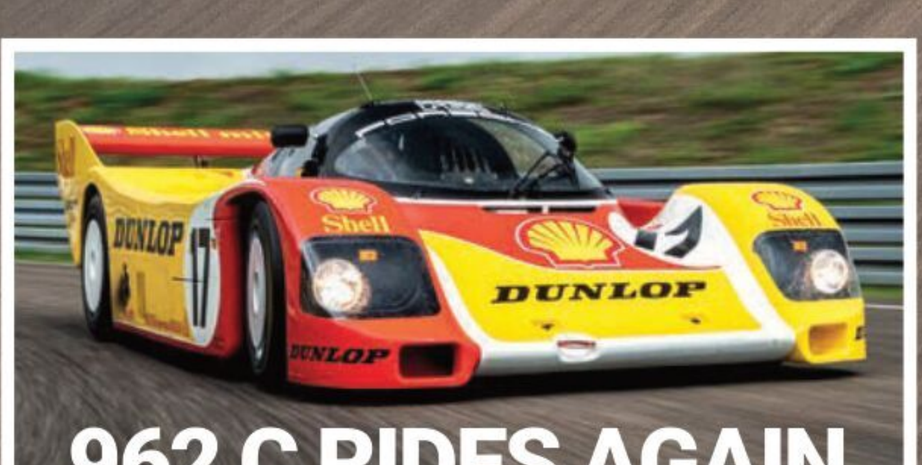

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Classic PORSCHE

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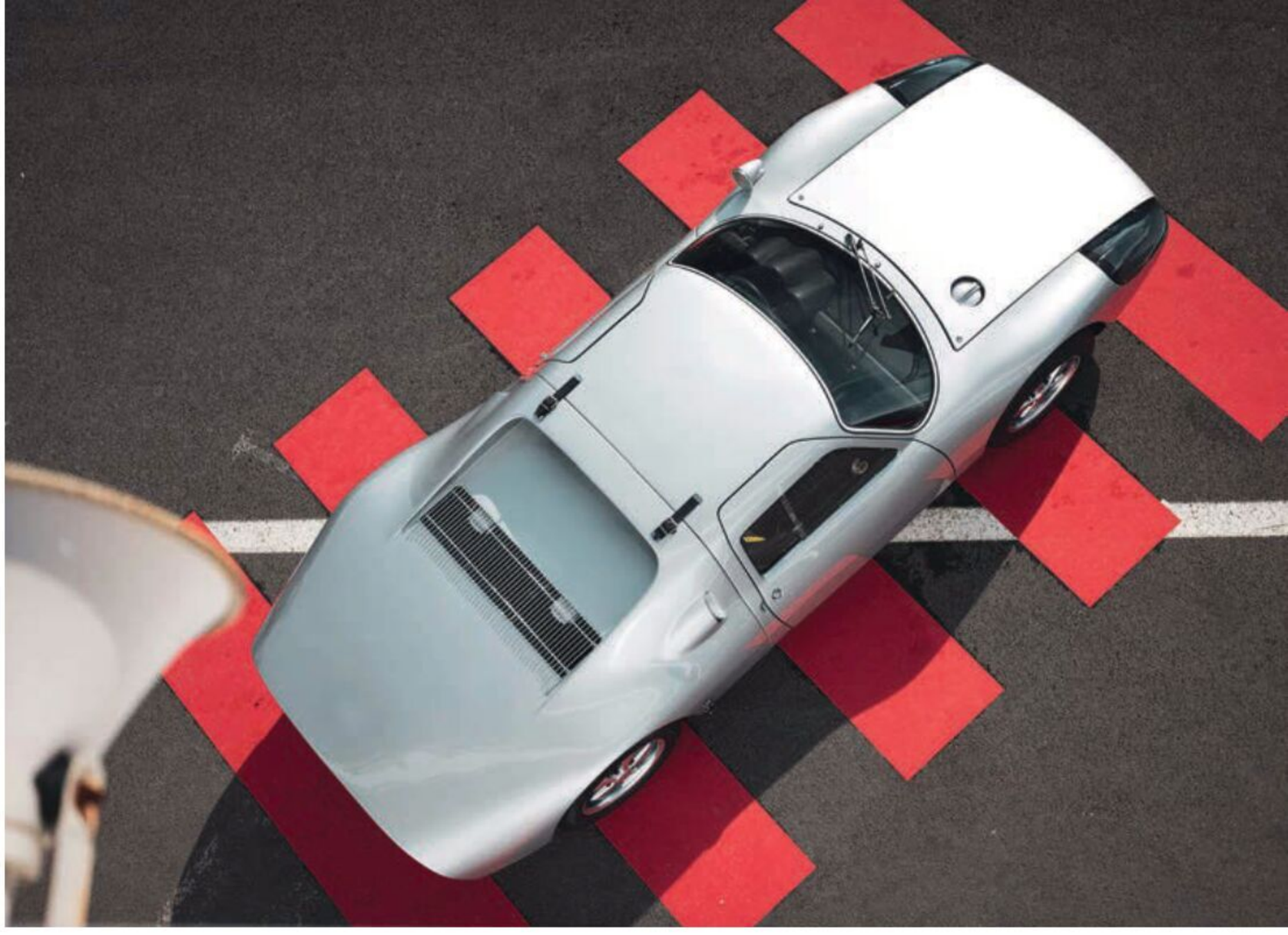

WINNING BY DESIGN

Race cars primarily follow a design of function over form. Of course, those based on production models benefit from the curves, lines and silhouettes manufacturers spend years developing to make their output appetising to customers frequenting dealer showrooms, whereas the appearance of pure racing machines is usually driven by aerodynamic aids introduced to reduce lap times. These cars aren't always pretty, though eye-catching livery can serve to distract from otherwise awkward looks.

Porsche has a strong history of generating attractive race cars, especially those assembled in the early part of the manufacturer's history. Despite the catalyst for creation being motorsport, many of these machines found themselves on general sale, often to meet homologation requirements. At the risk of inviting a stack of emails telling me I'm wrong, I'm happy to stick my neck out and let it be known I'm of the opinion none of Porsche's race car designs, including the 550 Spyder and 906, can hold a candle to the beauty of the 904. Going a step further, I don't think I'm alone in suggesting this is not only one of the best-looking Porsches of all time, but also one of the most beautiful cars ever produced, regardless of manufacturer.

In this issue of *Classic Porsche*, we chart the origins and history of the long-nosed, mid-engined model, which debuted in 1963 ahead of the 1964 race season. Developed at the same time as the original 911 (pre-series 901) and in production for the blink of an eye, this rare racer played an important role in strengthening Porsche's position in world motorsport. Then, at close of the 904's short life-cycle, dealers were gearing up for the launch of another important Porsche product: the 912. I'm delighted to report we've uncovered one of the very first right-hand drive examples built, freshly restored and pictured across the following pages for your entertainment.

Talking of which, Christmas is nearly upon us. After what has been a tough couple of years for everyone, I wish you every happiness during the festive period and best wishes for 2022. I'm looking forward to seeing the finished lockdown Porsche projects many of you have been working on and I hope to catch up with more of you in person as the year progresses. Until then, take care, stay safe and have a cool Yule.

Dan Furr Editor
@DanFurr

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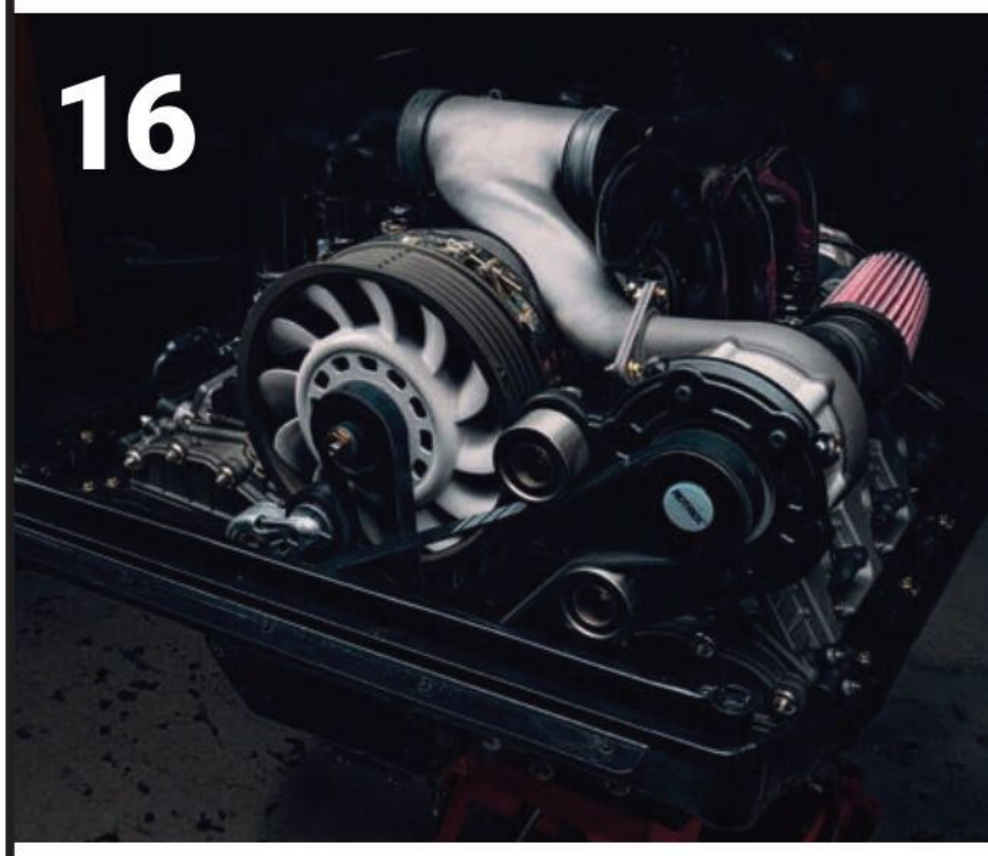
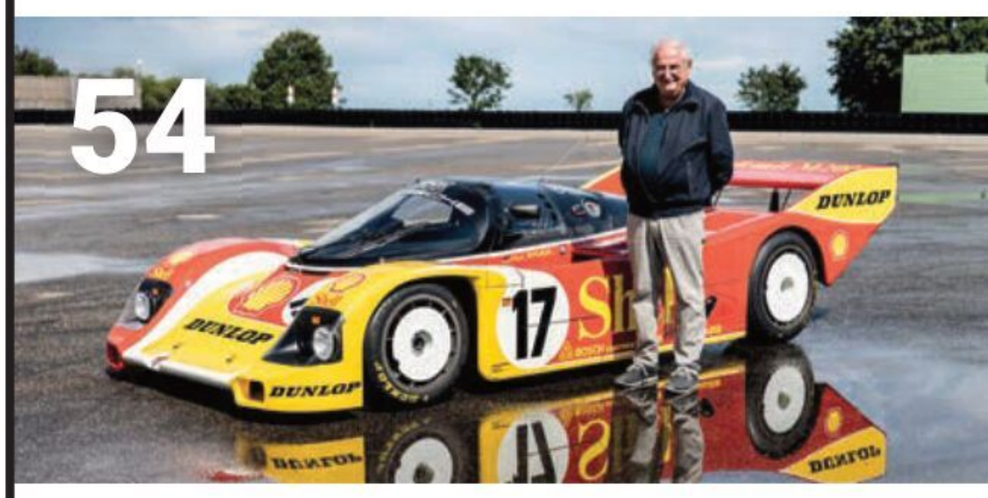
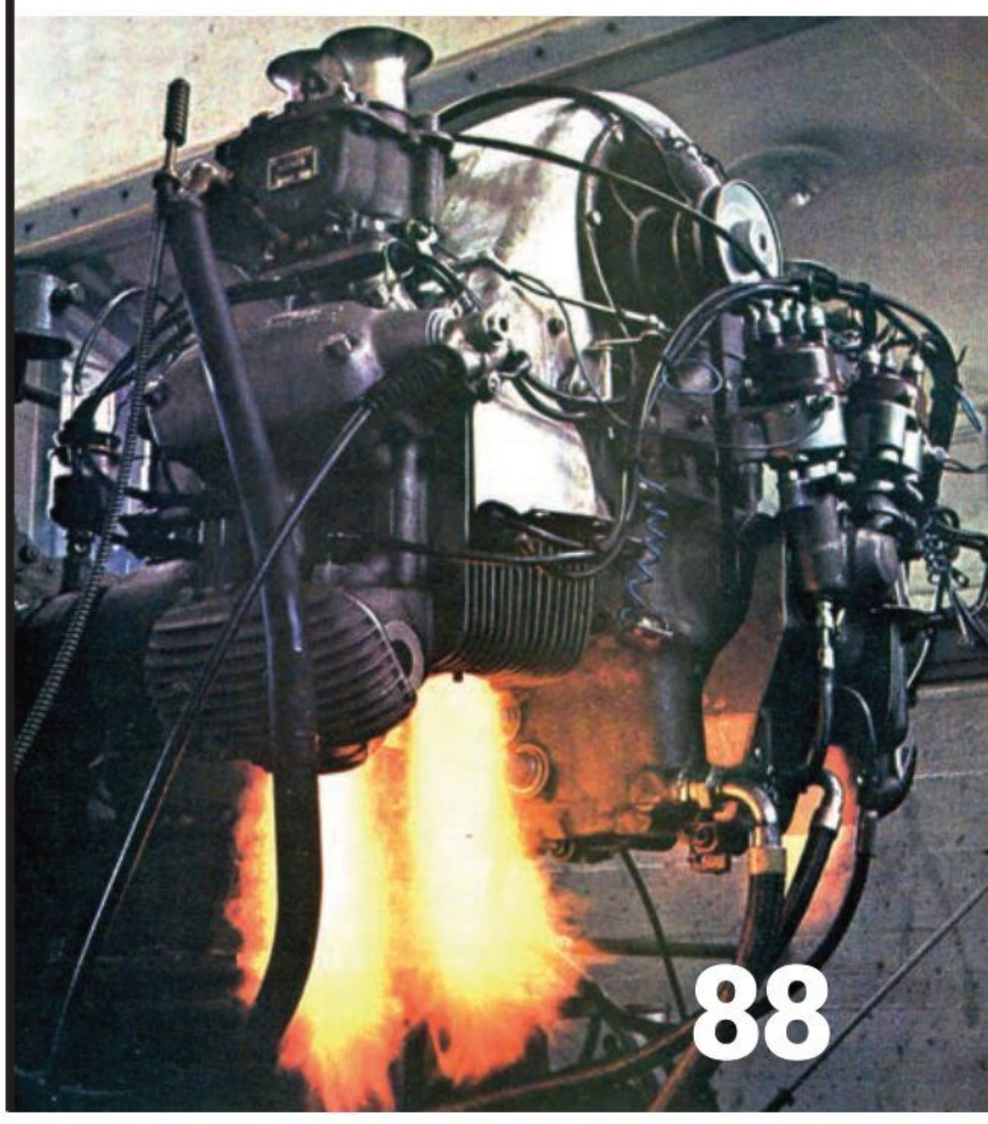






HOT OFF THE PRESS

Freshly restored following retirement from the road more than forty years ago, this 1965 Light Ivory 912 is not only one of the first three right-hand-drive examples produced, but also served as a press demonstrator for Porsche's British sales outpost...

Words **Dan Furr** Photography **Dan Sherwood**

Every German manufacturer had something new to offer at the forty-second Frankfurt Motor Show, which opened on Thursday 16th September, 1965. The Glas V8 broke cover, as did the Volkswagen Type 3 1600 TL, the updated Opel Rekord (pitched alongside the brand's newly launched Kadett B and Karmann-built Diplomat convertible), the Auto Union Audi F103 1700, the Mercedes-Benz W108 and the NSU TT, a high-performance version of the Prinz 1000, launched at the same show two years prior. German brands also brought new and somewhat experimental body styles to the 1965 Frankfurt bash, with Opel's GT sports coupe, NSU's Wankel Spider hard-top and BMW's Karmann-assembled New Class 2000 CS coupe providing a feast for the eyes, the latter carrying disproportionately tall front grilles not entirely out of harmony with the buck-toothed, 'Bugs Bunny' models rolling out of Munich today.

Porsche also unveiled a new design at the Frankfurt event. Presenting a Targa-topped 911, the brand caused a stir with what it described as "the new Porsche convertible", resplendent with permanent rollover bar, a feature introduced to the 911 in response to factory

912

bosses being concerned about rumoured (ultimately unrealised) plans for an update to North American road safety legislation. Ferry and his team were worried about pure drop-tops being banned in the USA following a high number of fatal accidents. By 1965, production figures showed Germany to be the second biggest producer of cars after the United States and, in 1964, some 750k units ahead of the United Kingdom. Though the majority of this success was down to the popularity of output from Volkswagen, which was enjoying a rate of trade equal to a car being sold every eight seconds, Porsche was keen to maintain lucrative export sales to the USA, which had become the brand's biggest market and would remain as such for many decades, until China's appetite for Stuttgart-crested SUVs saw the Cayenne and, later, the Macan, relegate Uncle Sam to second place. Moreover, open-top versions of the 356 had proved massively popular on the West Coast. The 911's designer, Ferdinand 'Butzi' Porsche, resisted developing an *al fresco* version of the new six-cylinder model, stressing coupe styling and associated structural rigidity was essential to maintain the chassis dynamics and overall performance of the still-new Porsche flagship. Nonetheless, the company needed *something* to fill

the gap left by the outgoing 356 Cabriolet. An elegant rollover bar ahead of the 911's back window and a lift-out roof panel (back then, a single, non-folding part) was the answer, bowing to laws the industry thought might come to pass in America, whilst ensuring the semi-open-top 911 kept as much of the coupe's rigidity as possible. It would be another thirty-three years until the first full 911 Cabriolet was introduced.

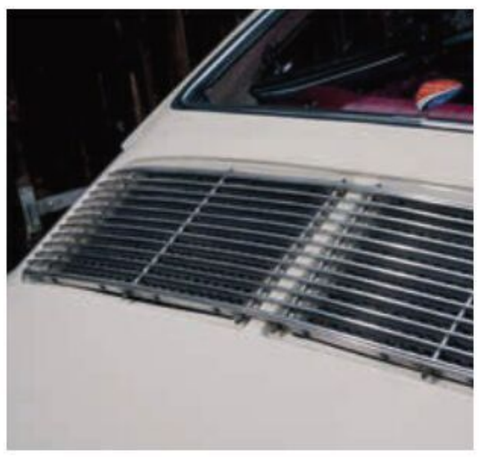
Porsche faced another problem. Regardless of the body style you picked for your new 911, there was no getting away from the fact this was an expensive car, especially when compared to the purchase price of the outgoing 356. All new body styling, the associated tooling and the development of a new two-litre six-cylinder engine contributed to the cost, of course, but the jump in numbers saw customers vote with their wallets — sales of the 911 were much slower than anticipated, affording the 356 a short stay of execution. Porsche needed to act fast if it didn't want to see its modest but valuable share of the sports car market in Europe and the USA rapidly decrease in size.

WORK THE PROBLEM

Following the high cost of developing the 911 and the continued growth of a money-hungry works motorsport programme, Porsche was in no position to develop a standalone model to fill the gap about to be left by the 356, which, by the time of the Frankfurt show, had been in production for almost two decades. The Targa — not an original design by any means, taking heavy influence from the body styles of the earlier Triumph TR4, SAAB Catherina prototype and the same-age Toyota UP15 Sports 800 — at least gave showroom visitors more choice (further hinted at by the Targa on display in Frankfurt wearing a pre-production set of the Fuchs five-leaf alloy wheels) and highlighted Porsche's class-leading standards of finish, but it was clear drastic measures were required to retain the level of sales the Stuttgart squad had been enjoying.

The solution to Porsche's bother came in the form of the 912. By the time of the Frankfurt show, right-hand-drive 911s were landing in the UK and were being offered at a cost of £3,438 (including taxes) through AFN, the Stuttgart firm's sole UK concessionaire. For the 1966 model year, however, and for almost £1,000 less, it was announced customers could buy a 'lower' specification version of the same car, powered by a development of the 356's 1.6-litre flat-four. Essentially, Porsche was taking 911 body shells and chassis, fitting a four-cylinder boxer in place of the two-litre six-banger, removing various items of luxury trim (no wooden strips on the dashboard and a three-dial binnacle in place of the 911's five gauges) and selling the resulting mash-up at two-thirds the cost of its flagship product. Even with the 912's lesser performance taken into consideration

Above Serial number places FYN 912C as one of the first three right-hand-drive 912s



Below MCE has restored every inch of this beautiful four-cylinder Porsche across an exhaustive two-year build

Above Despite being supplied to Mike as little more than a shell and many boxes of removed parts, the original engine and transmission remained with the car

— the sprint to 60mph from rest taking 11.9 seconds, the quarter-mile despatched in 18.2 seconds and 30mph to 70mph in third gear taking 13.9 seconds — the car's claimed top speed of 115mph (in truth, 121mph is achievable from standard specification) coupled with identical looks to the 911 made the 912 impossible to ignore. Needless to say, it significantly outsold the 911 during the early phase of the smaller-engined model's four-year spell in production, which ended with the arrival of the 914, Porsche's next big-selling entry-level product, developed in partnership with Volkswagen and launched complete with Targa-top as standard equipment in 1969.

Joining the 911 Targa on Porsche's exhibition stand in Frankfurt back in 1965 were two 911 coupes (one silver, one blue) and a bright yellow 912. With right-hand-drive versions of the 911 finally being built in Zuffenhausen for UK distribution, there was no delay in shipping same-configuration versions of the 912 to AFN and, in advance of the Earls Court Motor Show in October that year, the Isleworth-based dealer had already taken delivery of the first three examples bound for Blighty. FYN 912C (yes, that's its original registration number) was one of them, retained by AFN and used as a company demonstrator. It even made appearances in the period's motoring magazines, weighed up against other new-for-1966 models from established brands, though it's difficult to imagine anyone looking at images of the Humber Sceptre II or Hillman Super Imp and being impressed with Rootes rides when pictures of the 912 were published alongside, even if the German coupe *was* double the price. Even so, it was thirty quid cheaper than the equally exotic — but considerably slower — Lancia Fulvia Coupe, released into the wild at the same time as the 912. Fuel economy wasn't bad, either, with Porsche promising more than three hundred miles from a single tank of petrol. We dare say this figure would have been based on a car free of passengers, luggage and with a pilot avoiding 'spirited' driving.

VINTAGE PHOTOGRAPHS OF THE CAR CLEARLY SHOWING INTERIOR PARTS FROM THE MORE EXPENSIVE PORSCHE

Below The performance of the car is fantastic, offering the driver every opportunity to reach into zones they might think twice about exploring in a classic 911 on the same stretches of B-road

As is often the case when an automotive brand's press mule has completed its promotional duties, has been driven hard at the hands of journalists who treat every car like an all-terrain vehicle and, in some instances, has been put through its paces by intrigued showroom visitors, FYN 912C was eventually sold by AFN to a private purchaser. The Light Ivory machine remained in regular use until 1979, when it was taken off the road to be partially stripped and recommissioned in readiness for another fifteen years of service. The then owner's best laid plans, however, failed to bear fruit, resulting in the car being sold as a rolling shell accompanied by twenty boxes of removed parts. The same happened multiple times as the years went by, with pieces of trim and bodywork regrettably lost during each successive

relocation. It wasn't until a decade ago, when building contractor, Mark Leeding, was asked to provide an estimate for construction work at the home of an acquaintance, the car's resurrection finally got underway.

"I was invited to the guy's house and, as a sports car enthusiast, I couldn't resist asking questions about the pair of classic Lotus Elans I spotted at the property," recalls the self-confessed Porschephile, who was already in possession of a 911 Turbo (930), bought in 1999. "He explained they were his son's cars, before inviting me to take a look at his Porsche project in waiting. He told me it was an early 912 used as a press car by AFN, but had been off the road since the late 1970s." Recognising he had neither the time or resources to carry out the restoration, the owner revealed he was thinking about selling up, but needed to find a buyer who was brave enough to take on the build at a time 912s weren't worth what they are today. "I was excited by what I saw," Mark continues, "but I was also acutely aware of the fact what was on offer was little more than provenance. After all, without the origins of this car as an AFN demonstrator, all I'd be buying into was a derelict Porsche likely to cost far more to restore than it would ever be worth!"

LOOK SHARP

Wind the clock forward and Mark didn't win the building contract, but he did come away with the 912. "I love early Porsches. They're basic by modern standards, but they can provide just as much enjoyment when serving as a static object to stare at in your garage as they do when you're bombing along behind the wheel. In particular, the 912 is a hugely involving Porsche, not only in the way it drives, but also in the way it looks. This is unquestionably a very pretty car."

Although peak power of the 912 was no greater than its predecessor, the shape of the flat-four's torque curve was improved for the newer Porsche, with 87lb-ft all the way from 2,800rpm to 5,000rpm, peaking at 90lb-ft at 3,600rpm. The 912's 911-sourced underpinnings added weight, though, meaning the 912 is approximately ninety kilograms heavier than the car it replaced. In real-world terms, this means acceleration times aren't improved until 60mph is reached and the 912's better-streamlined body begins to have an effect. In other words, the dash to 60mph from rest is almost half a second *slower* than the 356, but from then on, the 912 proves superior, lopping a full two seconds off the time it takes the 356 to carry on to 100mph.

"I'm no restorer, but I reasoned I could just about get the car back up and running under my own steam," Mark tells us. Missing many parts, he hopped online and searched for spares, a less than easy task when dealing with seriously old Porsches. "I needed headlamps and spotted an advertisement for the same right-hand-drive units this 912 was equipped with in 1965." The subsequent enquiry led him to the door of Mike Champion Engineering, the Banbury-based independent Porsche specialist showcased in last month's issue of

Above The 912 is every bit as charming as a two-litre 911, but available to buy at much lower cost

Below Porsche quoted a top speed of 115mph, though reviewers and brave owners have reported being able to exceed the digits on the dash

Above Interior features many parts borrowed from the 911, all fitted before motoring journalists reviewed the then new car in 1965

Classic Porsche. "On arrival at Mike's workshop, I spotted two short-wheelbase 911s in different stages of restoration, as well as an early flat-four being rebuilt. It was clear to me this was someone more than capable of sympathetically restoring my car to its original condition. I also reasoned he probably had many of the missing parts I was looking for tucked away in his storeroom!"

Excited by Mark's description of the car, Mike wasted no time in visiting Chez Leeding to view the Porsche for himself. "The engine case and transmission were in pieces," he recalls. "The body shell had also been incorrectly repaired and one of the previous owners had carried out modifications, including butchering of the original light buckets to accommodate later lamp units. Thankfully, the Certificate of Authenticity proved the mechanical parts with the car to be original, even if they were in a terrible state. The paperwork also confirmed this 912's build number as third in the sequence for right-hand-drive examples. This Porsche was quite a find."

A simple case of getting the car to MCE, followed by strip down and fit-up, then? Sounds easy. It wasn't, as Mark explains. "Perhaps because this car was destined to be driven by influential journalists and prospective Porsche purchasers, trim was closer to 911 than 912, making the car's original specification different to factory stock," he suggests. "We were keen to restore the car to how it was originally configured, rather than what general 912 specification dictated." Mike supports the theory, pointing to vintage photographs of the car clearly showing interior parts from the more expensive Porsche when new, as opposed to them being retro-fitted by a later owner. "The carpets, for example, were much thicker than you'd expect to find inside a 912. There are also many other interior elements borrowed from the 911, including the wooden dashboard inserts." They'd delaminated, but now look as good as new, in keeping with a cabin freshly retrimmed and making use of replacement red vinyl (or 'leatherette' as it is often referred to in Porsche paperwork) and new carpets.

Below Red vinyl against Light Ivory paintwork is a classic combination working as well today as it did when the car was built fifty-seven years ago

MAKE A DIFFERENCE

As far as parts availability was concerned, Mark was correct in assuming much of what he needed was waiting to be discovered in MCE's stockpile, although Mike still had to fabricate many parts from scratch, including the mounts for clocks, the wooden trim fasteners and the magnetic latch for the glovebox. The same was true of the engine crossmember, which Mike fabricated to the exact specification of the original. "Many people will think this isn't keeping with what you should find beneath the deck lid of a 912, but the magazine articles and images published when this car was new show this is the design of the factory-fitted part. With a car as historically significant as this one, it's important to do your research and observe original specification, rather than simply go for whatever the Porsche parts catalogue tells you was fitted to the model in general. Originality is king, as demonstrated by our treatment of the wings. It would have been easier to fit new panels after discovering the modifications, but Mark and I agreed it was important to retain as much of the original metalwork as possible, which is why we followed a route of repair or restore, rather than replace."

The small demisting vents at the lower corners of the rear window pre-date Porsche's adoption of heated

electric screens. Mike remanufactured these items at the same time as rebuilding the seat mechanisms. The seats themselves had been retrimmed by a third-party at Mark's instruction a few years ago, but other parts treated at the same time weren't up to scratch. The interior rear quarter cards, for example, didn't fit flush over the wheel arch bulges, necessitating further trimming work at MCE.

Our photographs were taken just as Mike was applying the finishing touches to the car after a through two-year restoration. Time for a road test. The first thing you notice in a Porsche of this vintage is the cabin noise. Today, hearing a supremely healthy flat-four roaring from behind is all part of the 912's charm, but when these cars were new, hearing a boisterous boxer relentlessly hammering away at the back (even with all windows closed) was a gripe of many reviewers. In response, Porsche introduced modified engine mounts to quieten the driving experience in later 912s, but during our time with the star car on these pages, we couldn't get enough of the racket from the rear. Sliding through gear changes is a piece of cake, with silent shifting encouraged by the easy clutch and sublime transmission Mike has expertly rebuilt. This thing feels quick, too. Really quick. Where you might only be able to drive a similarly aged 911 at eight-tenths on the country roads we find ourselves bombing along, you can rinse a 912 for all it's worth, driving flat-out and throwing the car into corners in a manner those without experience of 912s may doubt. It clings to bends even at license-baiting speed, the tail easy to keep in check. With every confidence in the ability of this air-cooled classic to follow our instructions to the letter, the only thing we were concerned with was whether the brakes were as impressive as the pace of acceleration. We needn't have worried — the 912's disc anchors (refurbished by Mike) provide plenty of bite at low speed and bring the car to a swift halt when travelling fast, something we put to the test time and again. All in the name of research, you understand.

The 912 was successful car in rallying, often beating 911s at their own game. Back when this car was new, seat belts were a cost-option intended to satisfy those who had motorsport ambitions. While we wholly appreciate Mark and Mike's commitment to originality, it's a retro-fit we'd have applied for peace of mind in modern traffic, no matter how capable the handling abilities of this car happen to be (kudos to Vredestein for the fantastic grip the brand's Sprint Classic black circles deliver), but save for this personal preference, everything here is spot-on. It's exactly the car AFN used to wow the media back in 1965. All credit to Mike for the exceptional restoration — in Mark's hands, this classic Porsche is set to enjoy a new lease of life following decades lying dormant. Expect to see man and machine out and about during the coming show season, but prepare for the inevitable: after seeing this special 912 in the metal, you'll be scanning classifieds for one to call your own. Fortunately, we know just the man to take care of any required remedial work! **CP**

Above Mark is looking forward to taking the car to shows and covering plenty of ground in the coming year

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Our look at what's happening in the wonderful world of air-cooled classics...

SCANDINAVIAN DRIVE CELEBRATES PASSION FOR PORSCHE SPORTS CARS

Every year, Porsche Servicecenter Vejle celebrates another twelve months in business by inviting customers old and new to bring their Porsche sports cars from all over Denmark to participate in the largest marque-specific drive in Scandinavia. From the earliest models to the newest, Porsches gather at Vejle — a town located in the southeast of the Jutland Peninsula at the head of Vejle Fjord, where the Vejle River and Grejs River valleys converge — for a celebration of the Stuttgart brand like no other.

This year marked the fourth such outing and welcomed many early air-cooled cars (notably, a 356 Speedster) right up to the very latest Porsche products. Taycans and 992-generation 911s represented the most recent of Stuttgart's famed sports cars, but there were also plenty of Boxsters and Caymans in attendance, as well as cars from the manufacturer's transaxle family of vehicles. Additionally, 914s, 912s and plenty of air-cooled 911s contributed to a tally of 222 cars descending upon what's recognised as the ninth largest city in Denmark.

POPULARITY CONTEST

"Tickets for this event sell out every year," says Sanne Saaby, Marketing Manager for MyGarage, the huge automotive business park housing Porsche Servicecenter Vejle, as well as Rolls-Royce, Tesla, Formula Automobile and other specialist workshops. "Proving the point, we've already sold a third of the available tickets for next year's event, which will take place on Sunday September 4th, 2022," she adds, acknowledging the success of the annual get-together of like-minded Porsche fans. "We recognise the growing popularity of what we anticipate will become Europe's largest Porsche gathering, which is why we're installing more parking space in advance of the 2022 event. Based on the growth we're experiencing and how word is spreading far and wide, we expect to be visited by Porsche enthusiasts from all over the EU in 2022. Needless to say, we're very excited at this prospect."

MyGarage plays host to many different car shows throughout each year. It's the brainchild of Anders Kirk Johansen, whose country house in Rohden has regularly served as a venue for the region's automotive events, including gatherings for officially recognised owners clubs. The idea for a complex of buildings offering dedicated show space, modern workshop facilities, meeting rooms, storage for classic cars and outdoor areas for social gatherings stemmed from increased demand from clubs for use of his home's grounds.

"Our vision is to be the mecca of the Danish motoring world," Saaby continues. "Nowhere else in the country will you find such a wide range of unique events and specialist workshops in one place. At its heart, MyGarage is presented by enthusiasts for enthusiasts, an ethos maintaining a sense of community. This mindset has been the catalyst for the ever increasing popularity of our Porsche events. We hope to see *Classic Porsche* readers in attendance in 2022. All are welcome!" Interested? For further information, hop online and visit *mygarage.dk*.

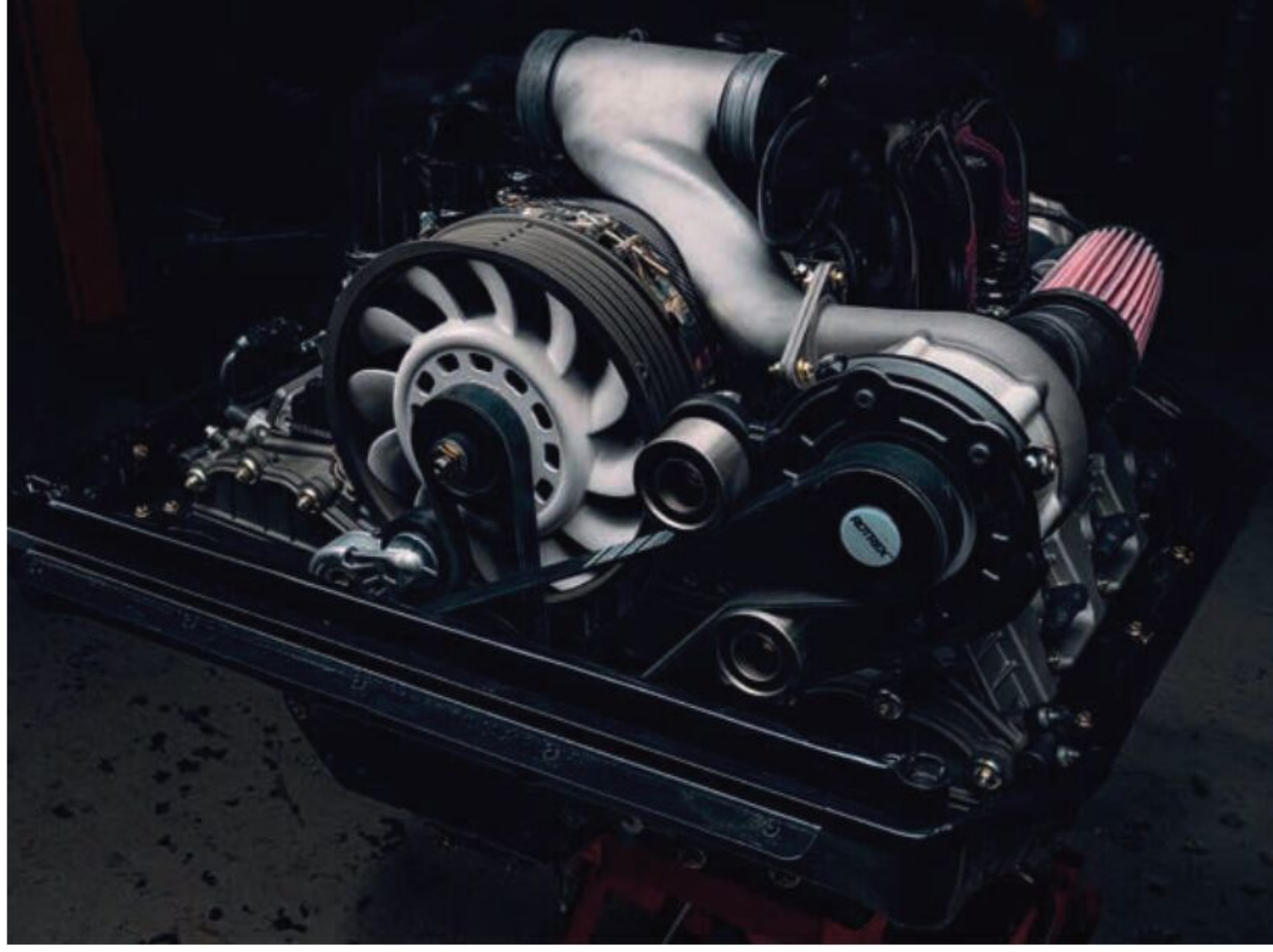
THEON DESIGN REVEALS SUPERCHARGED AIR-COOLED FLAT-SIX FOR NEW BUILD

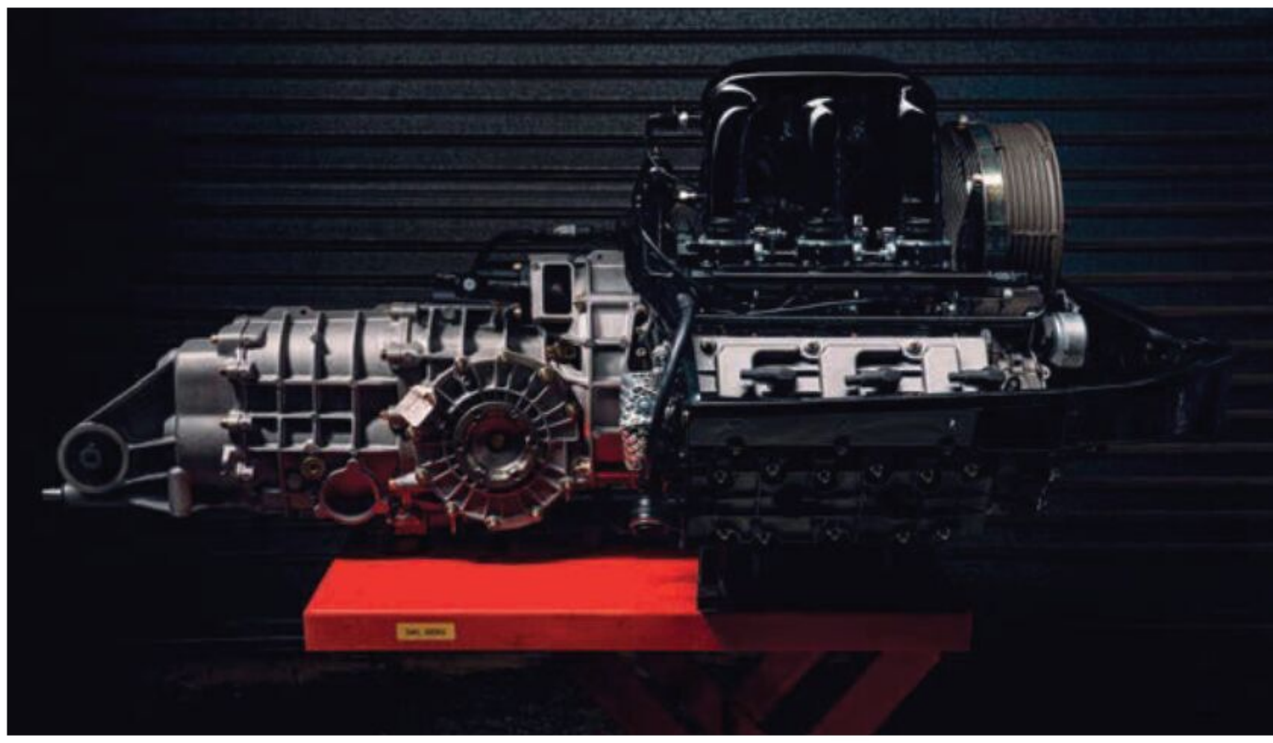
Founded in 2016 by automotive designer, Adam Hawley, Theon Design specialises in producing reimagined 964s. Each car takes eighteen months to build, is entirely bespoke and is a collaboration between the car's owner and Hawley's team, which strives to achieve exacting specification using the best materials and superior quality workmanship.

For the brand's next build, a supercharged 3.6-litre air-cooled flat-six takes centre stage. Featuring a Rotrex blower and a water-methanol injection system, the rebuilt and modified boxer should see a stable 450bhp and 369lb-ft torque, offering real-world tractability and spellbinding top performance with a pleasingly linear power curve. Theon Design already offers customers a choice of three ultra-responsive, high-performance naturally aspirated engine configurations (a 285bhp 3.6-litre flat-six, a 370bhp 3.8-litre unit or the option of a 400bhp four-litre variant), but this supercharged version is the company's first foray into the world of forced induction.

"We wanted to deliver additional performance, but also maintain the seamless delivery of a Porsche naturally aspirated engine," Hawley told us. "This is why we opted for a Rotrex centrifugal supercharger, providing a wonderful, linear power delivery and instant throttle response without the delay or lag associated with turbocharged air-cooled flat-sixes. It was also crucial to us that the Porsche flat-six sound remained undiluted. We're very pleased with the results: the supercharger has a subtle 'whine', but the bark of the flat-six stays front and centre, with wonderful added character."

The Rotrex supercharger chosen by Hawley and his team helps the engine deliver a broad, smooth power surge. It also offers excellent integration and compatibility with the Porsche flat-six engine,



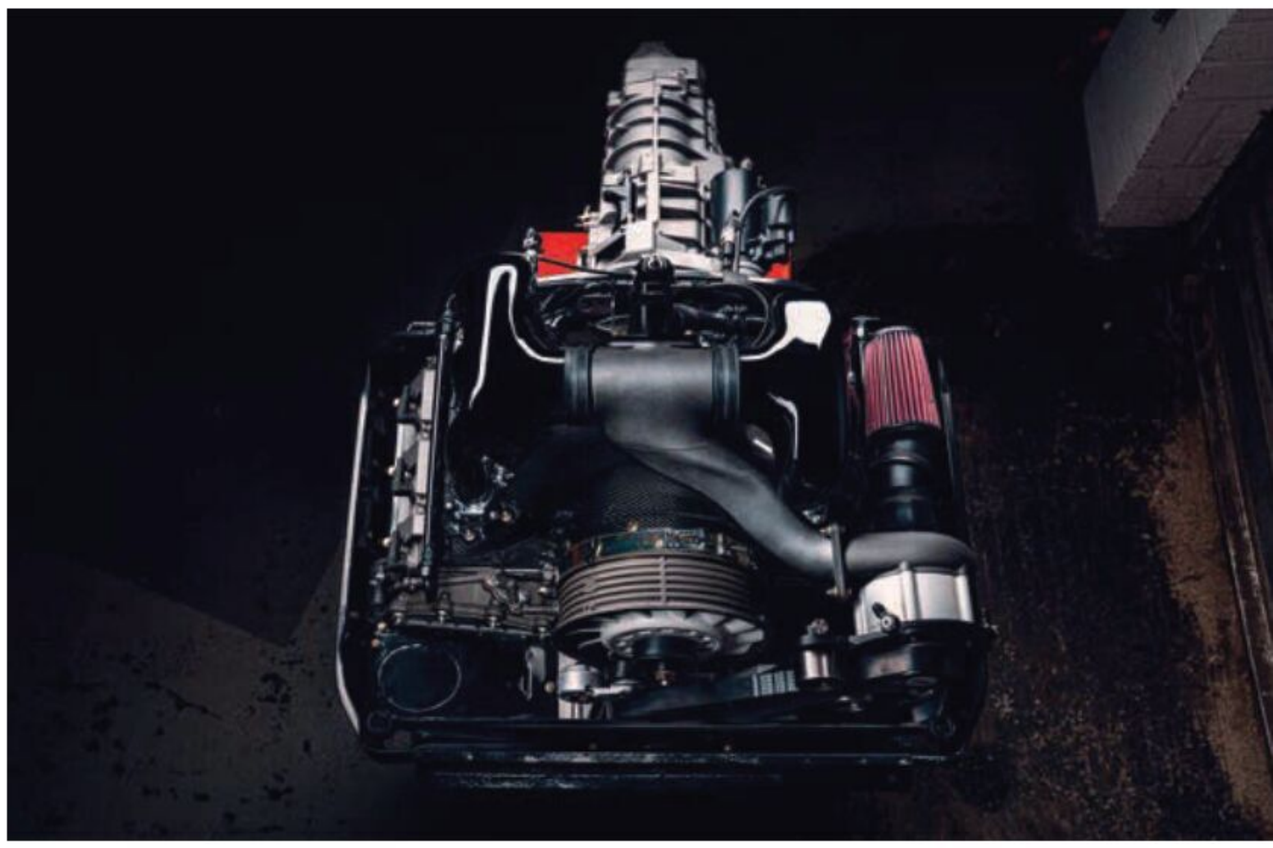


HAWLEY DECIDED TO INTRODUCE A WATER-METHANOL INJECTION SYSTEM TO PROCEEDINGS

advantages Theon Design has further leveraged through its OEM+ philosophy. "As every Porsche enthusiast knows, there's not a great deal of room within a 964 engine bay, which is why we located the supercharger in the space previously occupied by the factory air-conditioning unit," Hawley explains.

A highly focused six months was spent developing the optimum installation solution. The supercharger had to maintain the host engine's character and Porsche's original engineering values. To achieve this, the team utilised some of the existing air-con bracketry to support the Rotrex hardware, developing and designing additional mounts to mirror the design and materials used for the cam covers and other elements. Significant effort was undertaken to ensure this would provide solid and durable support for the supercharger, allowing for no movement or flex, no matter how extreme the driving conditions, whether a bumpy mountain road or a high-speed race circuit.

To maintain a clean look in the engine bay, Hawley decided to introduce a water-methanol injection system to proceedings, negating the need for an intercooler and air intake apertures in the bodywork. "Injecting a water-methanol mix into the engine plenum not only provides the same cooling function as an intercooler, but also increases the octane rating of the fuel, boosting 98 octane petrol to 110 and improving performance as a result," he says. The methanol supply system is fully integrated, with a 3D carbon-printed section to bridge the plenums, complementing a carbon-fibre engine and fan shroud. We'll bring you more detail when the 964 this engine will power is complete.



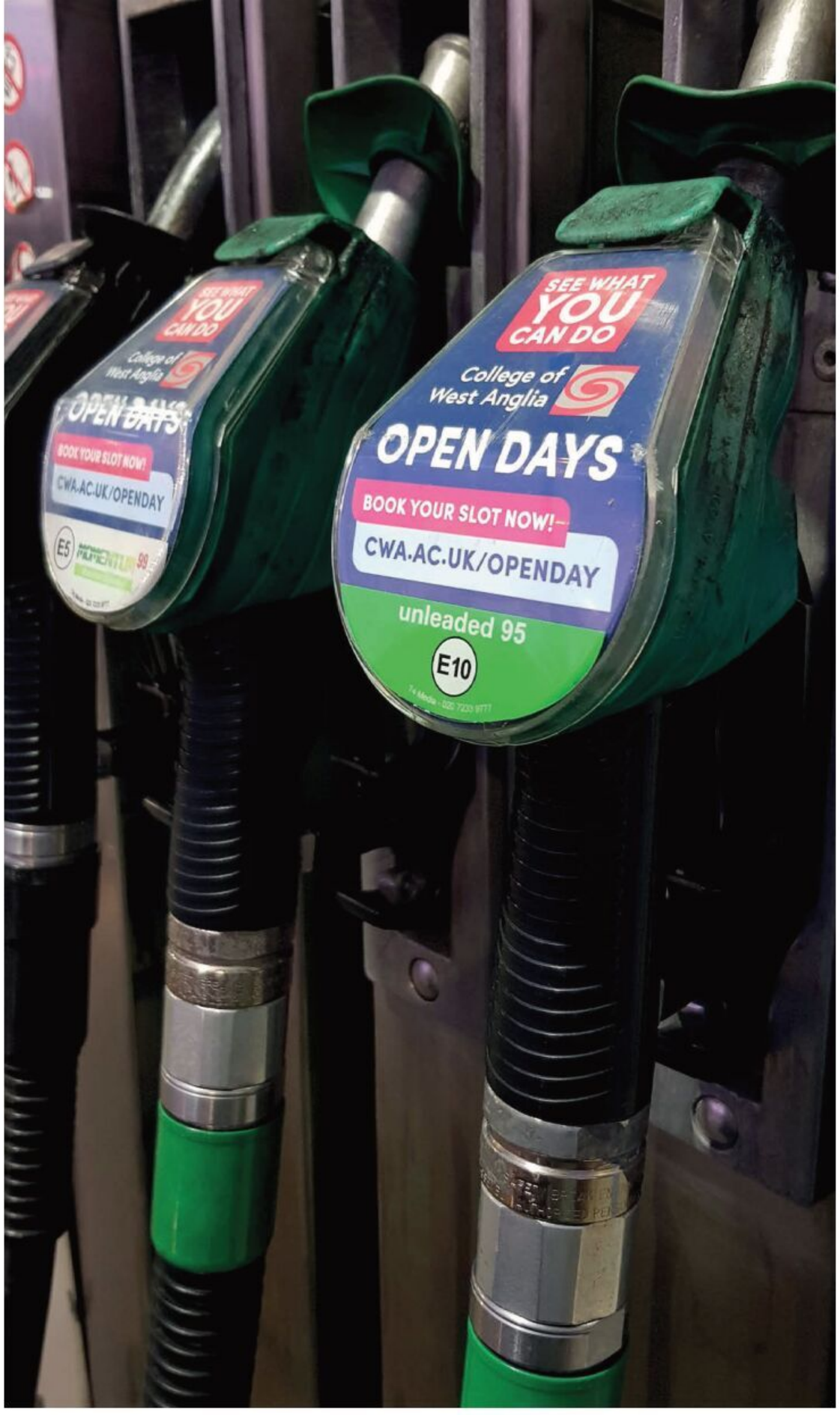
E10 FUEL: WHAT YOU NEED TO KNOW

It's been a long time coming, but E10 is now being pumped on forecourts. As its name suggests, E10 petrol contains up to ten percent ethanol, twice the volume of E5, which has been standard unleaded for the past decade. Concerns regarding ethanol levels in fuel have long been a topic of debate in the classic car world, but E5 fuel hasn't proved to be a problem in practice. E10, however, has classic car owners worried about its effects

There are two main issues with ethanol fuels and older vehicles. The first is ethanol's corrosive effect on metal, plastic and rubber parts in a car's fuel system. The result can range from inconvenient (sticking carburettor floats) to dangerous (perishing fuel lines). Not all vehicles will experience problems, of course, but as per introduction of unleaded fuel back in the 1980s, some cars will need modification to operate free of fault on E10.

The second issue with E10 fuel — and something more of a problem for classic cars than everyday modern vehicles — is that ethanol is hygroscopic, meaning absorbs moisture. Clearly, the longer a car is left standing idle, the bigger an issue this will be, with any moisture absorbed into the fuel only adding to potential problems. So why introduce E10 in the first place? In theory, the use of E10 helps the environment by reducing the fossil fuel component of vehicle fuels and therefore assists in the battle against climate change. Rather than emissions or air quality, the goal is reduced CO_2 emissions. It's thought that by doubling the proportion of the renewable component (the ethanol) in fuel, a 750k-tonne reduction in CO_2 is achieved — the equivalent of taking 350k cars off the road. It's not all good news, though. E10 is slightly less energy dense, meaning an economy reduction of up to one percent.

What can you do about the switch? Owners can use the government's online checker tool (visit *bit.ly/e10check*), which uses information supplied by car makers to suggest suitability. Information is patchy, but has



INCREASED ACIDITY, CONDUCTIVITY AND INORGANIC CHLORIDE CONTENT

improved since the system was first offered and, for many brands, the system will go as far back as the early 1990s. A search for Porsche, for example, suggests E10 is cleared for use in models with petrol engines assembled from 1998, as well as all Boxsters with petrol engines from 1997. The Carrera GT is not cleared for use with E10 petrol. Our advice? Use E5 petrol, which is still available at many larger filling stations due to regulations stipulating bigger forecourts have to sell both E5 and E10. The former will only be offered as the more expensive Super. Sadly, this can be difficult to find in many rural areas. You may also wish to consider a fuel stabiliser additive if your car is left standing for long periods. As an aside, as of 2011, all new cars sold in the UK have to be E10 compatible.

While we're sure most of our readers will continue using E5 whenever possible, some have been happy to use E10. It pays to proceed with caution — some fuel hoses purporting to be ethanol-safe have already been recognised for not being up to this standard. It's always been good practice to ensure your fuel system is in good condition and to renew ancient fuel lines to prevent an impromptu barbecue, but the rollout of E10 and the potential for its corrosive effects to have an impact on the health of your car make this work more urgent. In other words, if you haven't done so already, consider replacing your car's fuel hoses as part of your next round of routine maintenance. In addition to running issues caused by the mixture-leaning effect of E10, however, information issued by the Federation of British Historic Vehicle Clubs (FBHVC) explains how the increased acidity, conductivity and inorganic chloride content of ethanol in E10 can cause corrosion and tarnishing of metal components. But while

this can be controlled effectively by corrosion inhibitor additives, the same cannot yet be said for its compatibility with elastomers such as seals, flexible pipes and other unsuitable gasket materials — ethanol molecules are smaller and more polar than conventional petrol components, meaning there is a lower energy barrier for them to diffuse into elastomer materials. These materials will swell and soften, weakening the elastomer structure and, on drying out, can shrink and crack, resulting in fuel leaks.

TESTING TIMES

As yet, the FBHVC is not aware of, or has tested, any additives claiming complete fuel system protection with respect to elastomer and gasket materials when E10 is used. While there hasn't been an endemic of failures in territories where E10 is already established, the FHBVC sensibly recommends that such materials are replaced with ethanol compatible materials before any owner of a classic car considers using E10. The good news is uprated parts are readily available. For example, over a fifteen-year period, classic vehicle fuel specialist, Burlen, has worked with knowledgeable technical partners to introduce upgraded rubber with Viton content for parts like carburettor needle valve tips, diaphragms and jet seals, along with cellular foam floats and upgraded needle material. Sadly, not all suppliers are as diligent, especially when it comes to fuel hoses. The commonly used SAE standard follows the J30/Rx rating, with the current J30/R9 being the accepted choice for modern fuels. It can handle 100psi (as opposed to the 50psi of the R6 grade commonly used on carb-fed cars in the 1980s and 1990s). R9 has a much stronger barrier against ethanol, with 15g/m²/day permittivity. Compare this to the much higher 600g/m²/day of R6 hose. The higher 'R' rating doesn't necessarily mean the hose is any better for ethanol fuels, though. R10, for instance, is for submerged hoses, but doesn't like under-bonnet heat, while R14 is for lower-pressure applications than R9. It all sounds straightforward: replace all your existing hoses with R9 and be done with it! Sadly, not all fuel hose is what it claims to be, as Alan Baxter from Nuneaton specialist, Volksbolts, explained to *Classic Porsche*. "There is certainly hose of dubious origin out there. A batch of Chinese-marked R9 hit the market a couple of years ago. It turned out to be R6 washed and remarked. Needless to say, it completely failed during R9 testing." In fact, rather than 15g/m²/day permittivity, the hose in question was found to record 325g/m²/day and quickly started to crack.

Genuine R9 will usually comprise an inner layer to carry the fuel, a reinforcing layer, and an outer. The inner will be a fluoro rubber designated by the terms FKM, FPM or the popular brand name, Viton. The reinforcement layer will be cotton or another textile, while the outer usually made up of an eco-type rubber. Non-genuine stuff is unlikely to be of this construction and has been known to crack and perish within six to nine months of installation. Put simply, if you find cheap R9, it's probably cheap for a reason. Volksbolts supplies Danish-made Codan or German-sourced Cohline R9 hose, which begins at around £13 per metre for 5.6mm diameter hose and up to around £20 for the bigger sizes.

As well as being more expensive, proper hose is likely to be branded. "I've always told people to avoid unbranded hoses," Alan says. "If a company is making a good product, they'll generally put their name down the side of it." A trusted brand name still isn't a foolproof guarantee, though. "If a product has a good reputation and people think they can make a few quid through counterfeiting, they do."

Regardless of whether you plan to run E10, if you're not sure about the condition of your Porsche's fuel hoses, buy good quality replacements which can cope with modern fuel. Inspect them regularly. Buy from a reputable retailer and you can't go wrong. After all, nobody wants to see their pride and joy go up in flames.

PRODUCTS

Struggling for Christmas gift ideas? Check out this selection of quality products for you or the Porsche lovers in your life...

JENVEY DYNAMICS SWIRL POT FOR SYTEC TI FUEL PUMP

As part of its expanding range of fuel injection accessories, Jenvey has announced a new 490ml fuel swirl pot combining fuel de-aeration, pressure regulation, sensor tapping, pre-pump filtration and a high-pressure injection pump in a single unit. The fuel inlets generate a fast and powerful centrifugal swirl, which forces air to the centre of the pot and out of the air bleed allowing superb separation, while anti-slosh baffles maintain excellent fuel preparation and ensure the system extracts the maximum from the fuel tanks under even the most arduous conditions. For carburettor replacement, the existing fuel line and delivery pump can be used with a return system to the Jenvey unit, which eases the requirements of plumbing into the vehicle, with only a small air-bleed return to the tank required — ideal for use in classic Porsches. Compact and designed for use with a Sytec Ti fuel pump, each Jenvey swirl pot includes a 3.0bar pressure regulator.

Price: £498

***jenvey.co.uk* or call 01746 768810**

CARBONE BI-LED HEADLIGHTS

Air-cooled Porsche parts and accessories specialist, CarBone, has developed bi-LED headlights to make classic 911s safer, significantly improving the driver's field of view with a bright and sharp beam pattern. The main advantages of bi-LED modules are quick start without illumination, as well as eye-friendly intense white light, ensuring night turns to day without dazzling drivers of oncoming vehicles. Featuring high-quality E-marked Hella lenses and packing the latest LED technology into unprecedented compact dimensions, each headlight unit is a direct plug-and-play fitment into standard H4 sockets, meaning no modifications are necessary. The headlights are levelled traditionally, using screws on the outer ring of the map, the same way F-series and G-series 911 lighting is adjusted, though it should be noted CarBone's offering doesn't work with the 964's electric levelling system. Until now, LED low and high beam lights were implemented using two different projectors, but these bi-LED units make use of one projector, a single diode and a moveable diaphragm, as per bi-Xenon lights. Supplied as a set of two, CarBone bi-LED headlights can be ordered from the company's online store with immediate effect.

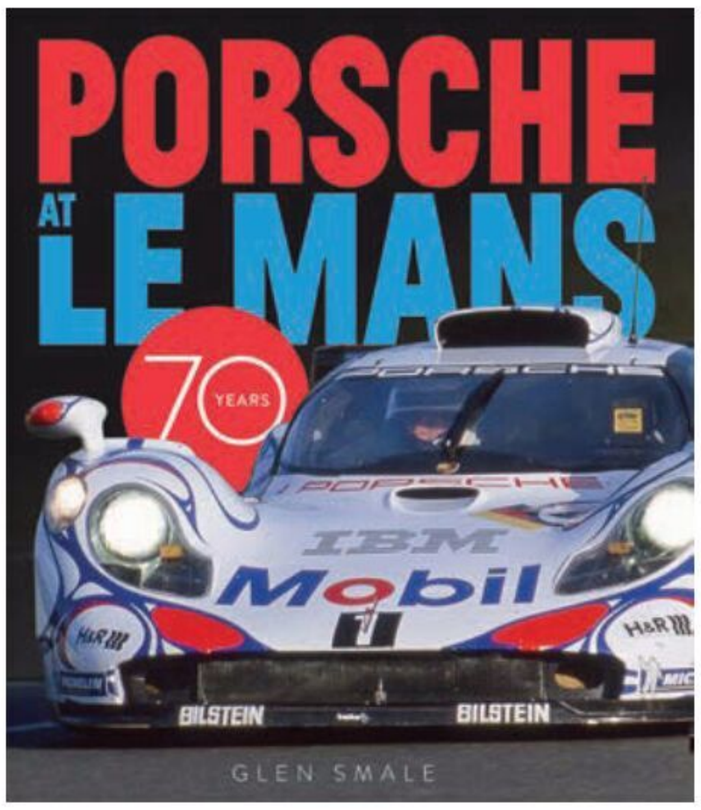
Price: €1,650 (0% VAT for non-EU customers)

car-bone.pl

or call +48 429 422 115

PORSCHE AT LE MANS: 70 YEARS

It's been seventy years since Porsche first made its mark at Le Mans by scoring a class win in 1951 with the aluminium-bodied 356 SL Gmünd coupe. The next seventy years would see the Stuttgart concern become the most successful marque in the history of the event, taking nineteen overall victories in Sarthe, including seven on the bounce between 1981 and 1987, not to mention a staggering 107 class wins. Packed with exciting photography, epic stories and all race results, this new 320-page hardback from motoring author, Glen Smale, is the definitive story of Porsche's remarkable Le Mans legacy. Beautifully designed and extensively illustrated, Smale's coffee table tome chronicles all the works team cars and privateer entries, allowing readers to indulge in the glory of all legendary Porsche racing models to compete at the daylong enduro. Meticulously researched, the book also takes time to recall the exploits of the drivers who made these cars famous (or is it the other way around?!). Released in time for your Christmas shopping spree, the book is currently available through Amazon at a hugely discounted cover price. An indispensable purchase for you or the Porsche fan in your life.



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The engine, meticulously rebuilt and enlarged to 3.6 litre will be fuelled by Jenvey Heritage throttle bodies.

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MEGUIAR'S ULTIMATE DETAILING SNOW FOAM

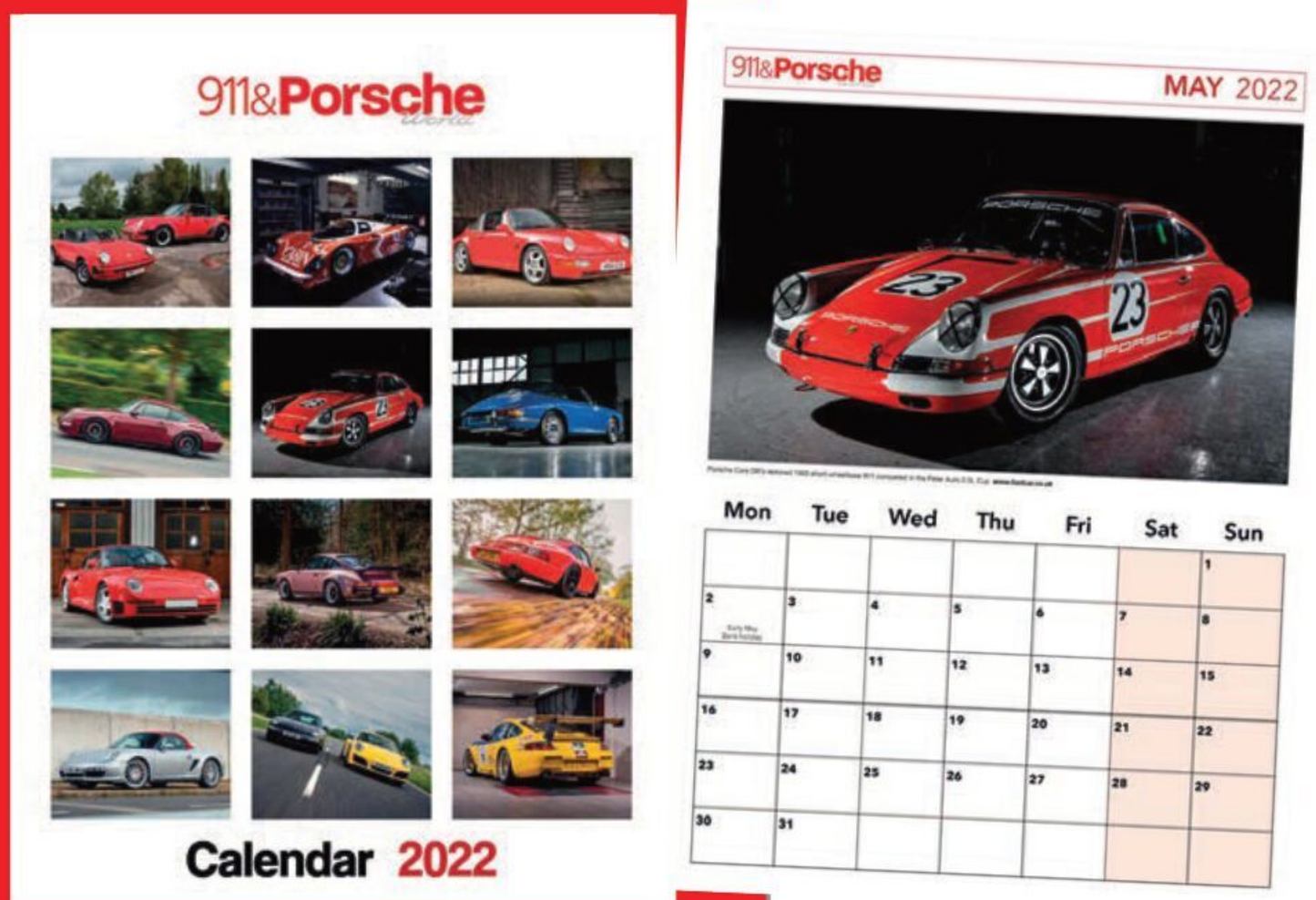
The trusted car care experts at Meguiar's have introduced a new, larger size bottle for Ultimate Snow Foam, the premium formula engineered for use with a pressure washer foam cannon and designed for a swirl-free wash that won't compromise wax protection. Now available in 1.89-litre bottles from online stores and Halfords, the pretty pink product can be used either as a pre-wash prior to the traditional 'two bucket' car cleaning method, or as an agent added to a premium wash mitt and applied to mucky Porsche. With either method, Ultimate Snow Foam will deliver an amazing foaming action helping to loosen dirt and debris whilst lubricating and buffering paint, ultimately preserving your car's protective coating.

Price: £28 per 1.89-litre bottle
***meguiars.co.uk* or call 0870 241 6696**

2022 PORSCHE CALENDAR

Featuring stunning images lifted from the pages of *Classic Porsche* and its sister title, *911 & Porsche World*, this A3-sized wall-hanging calendar proudly displays cars as diverse as a 911 Junior, a 959 and RLR 962-200, one of the most historically significant Group C prototypes to ever wear the Porsche crest. Each day is represented with enough space for you to make notes — perhaps listing key enthusiast events, vehicle maintenance schedules or your car's annual date with an MOT tester?! Displaying fantastic photography throughout, this superb calendar is a must for any Porsche fan and is offered with free delivery to all UK addresses. Low-cost overseas shipping is also offered at the point of purchase from the Kelsey Publishing online store.

Price: £8.99
shop.kelsey.co.uk/911CAL
or call 01959 543747



GOCLASSIC WOODEN GEAR KNOBS FOR 356 AND AIR-COOLED 911

The dimensions, placement and technical form of gearboxes may have changed many times during the course of the past century, but the gear knob has always remained within easy reach of the driver. Porsche accessories retailer, GoClassic, rightly considers this key part of a classic Porsche's controls as important as the steering wheel, which is why the company has introduced these elegant wooden gear knobs for the 356 and air-cooled 911 (all models before the introduction of the 964) in time for Christmas. Four different wood types (mahogany, walnut, Canadian maple, oak) are used to manufacture each beautifully smooth item, resulting in a pleasing colour combination topped by a patinated silver badge with the host Porsche's model name stamped into it. Different combinations of wood are available, including a special 'black edition' gear knob, made using only dark oak recently salvaged from the bottom of the Baltic sea, where it lay for hundreds of years. The short and spherical body of each gear knob perfectly fits an open palm grip for full and soft control of the gear shift and each knob is fixed to the gear stick by way of a stainless steel base connection.

Price: €149, Black Edition €249
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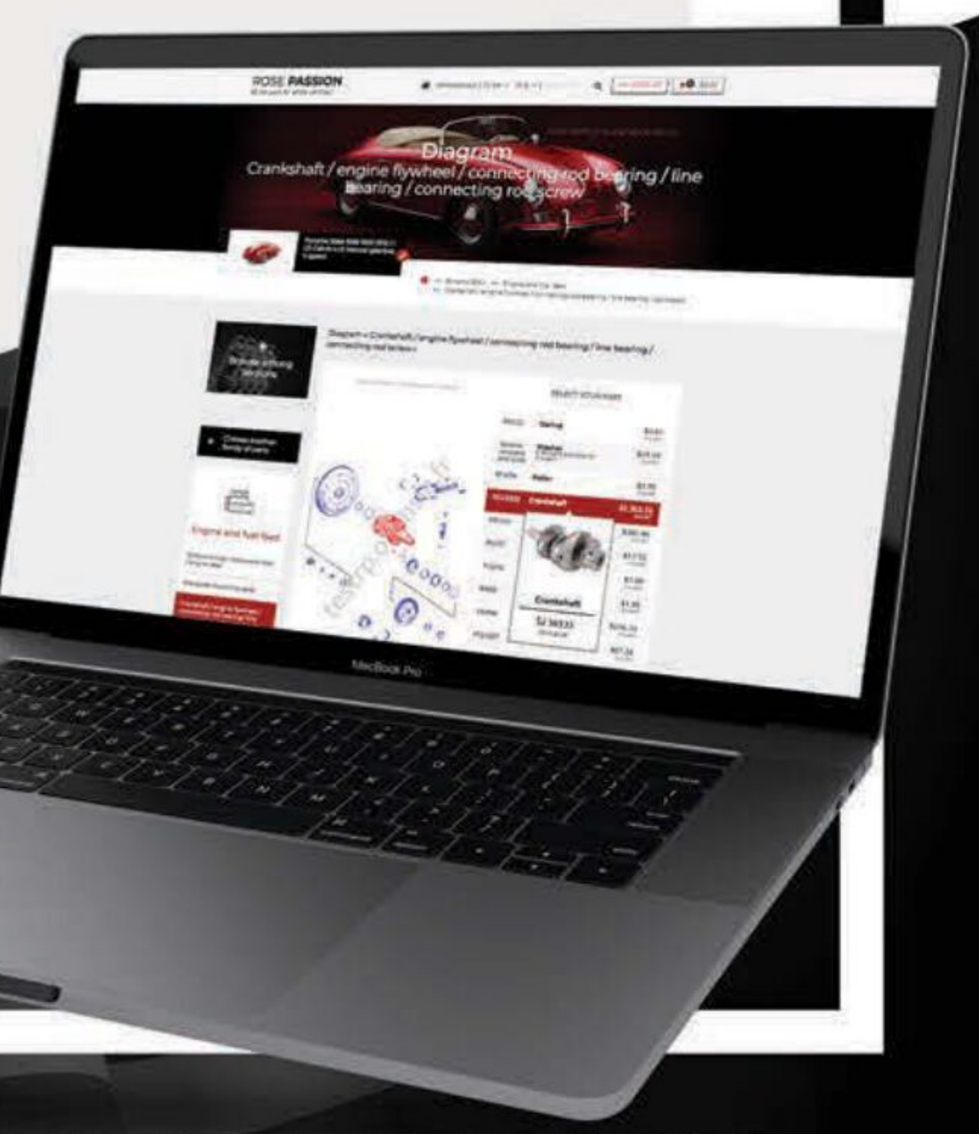

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CHRISTOPHER WARD C60 CONCEPT

Numbers. Easy to throw about, harder to support. With this in mind, let's start with a figure which defines an irrefutable, easy-to-understand fact: 120. That's the number of hours offered by the power reserve in the new Christopher Ward C60 Concept wristwatch. This figure sounds more impressive than five (the same measurement expressed as days) and it's the kind of number one associates with high-end (read: expensive) watches capable of supporting the two barrels needed to power the C60 Concept for such an extended duration.

Inside the C60 Concept's brushed and polished 42mm Grade 2 titanium case is the latest development of the company's in-house-designed and assembled SH21 calibre, of which over 8,000 have now been produced for Christopher Ward's premium models. Launched in 2014 after four years of design and development, the SH21 has now powered twenty models, of which the C60 Concept is, appropriately, the twenty-first. Four automatic and six manual movements form the SH21's list of ten variants, among them versions with central or small seconds, with or without power reserve indicators, and with or without date. All are COSC-certified chronometers. For the C60 Concept, which foreshadows developments in Christopher Ward's forthcoming diving models, the version chosen is the 31-jewel automatic, with central seconds, affording a full view of the movement from both sides. Even the rotor has been skeletonised to ensure nothing is obscured.

This is because, in the C60 Concept, the SH21 calibre has been put through the horological equivalent of finishing school, elevating the already refined model to a level where it is comparable to the workmanship sufficient to satisfy luxury watch *maisons*, Czapek and MB&F. This distinction can be claimed because Armin Strom was consulted for the skeletonising, while the SH21 is finished at Chronode, including the detailing of the bridges and base plate, work requiring at least six hours per watch.

It's impossible to separate the essential, physical details from the hand-applied finishing, for both combine to create the visual impact. As with all the most fascinating and complex movements, the view is so deep it seems like enhanced 3D. The effect is heightened by the mix of finishes on the various surfaces, with contrasting rhodium and grey ruthenium accented by white details and polished edges. For the functional elements, which contribute to the C60 Concept's suitability as a genuine diving watch, these attributes include an embossed screw-in crown and screw-down exhibition caseback, a 120-step unidirectional zirconia ceramic bezel, anti-reflective sapphire crystal, brushed and polished steel hands, sandblasted, brushed and polished blue ring with Super-LumiNova White filling and orange Globolight Triangle, and Super-LumiNova White hands, dial and bezel.

Completing the experience is a Cordura and rubber hybrid waterproof strap with Christopher Ward buckle and quick-release pins for easy changing. Also available is a Titanium Grade 2 bracelet with the same quick-release system. An added frisson is exclusivity: only 210 examples of the C60 Concept will be produced. Another number? £3,495. Let that sink in. A fully skeletonised in-house movement, with twin barrels for a five-day power reserve, all packaged in a titanium case and water resistant to 300 metres. Hand-finishing to standards found only in wristwatches retailing above £10,000, the results are on display at all times thanks to the absence of a dial and a showcase back, reminding the wearer there are no compromises.

Price: £3,495 / $4,370 / €4,440
***christopherward.com* or call 01628 763040**

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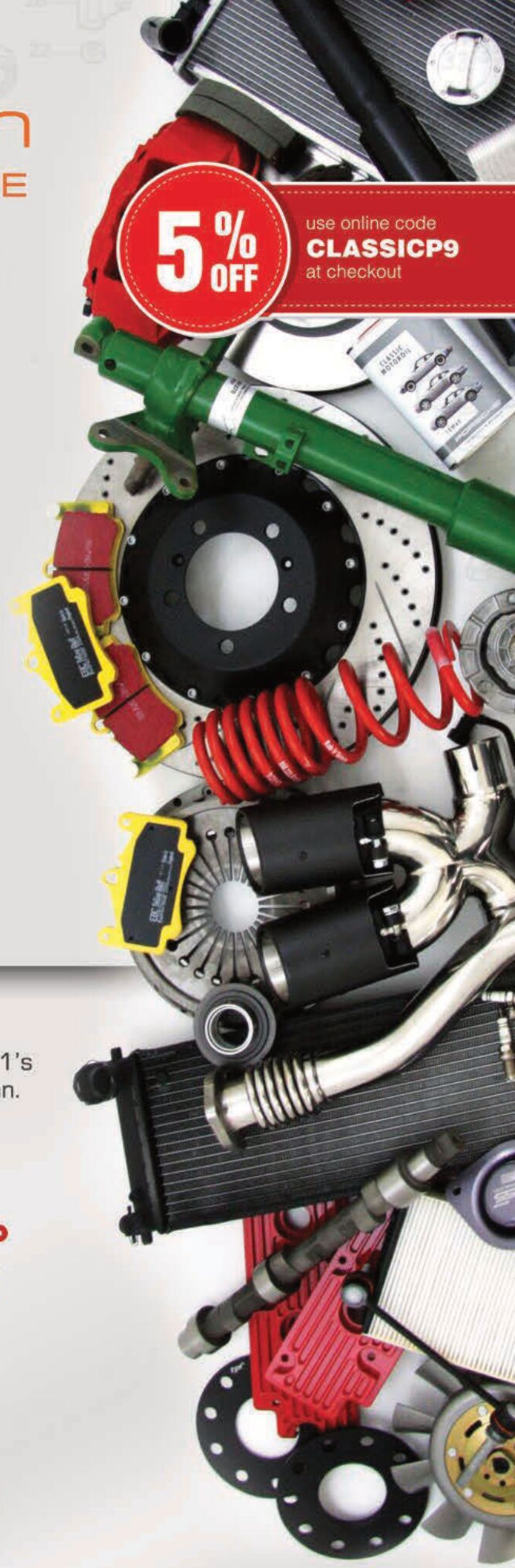

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SNAP-ON BENT HEAD PENLIGHT

Featuring a 90° swivel design providing more flexible lighting when working in tight spaces, this powerful rechargeable penlight from premium tool manufacturer, Snap-on, features a main 275 lumen light with 360° range. Switching to spotlight mode provides 140 lumen, with a variable brightness switch and memory function providing maximum versatility — simply press and hold the power button to set your preferences. A metal clip allows hands-free use, while the robust aluminium body is designed to withstand multiple drops in demanding environments, such as garages or workshops. IP65 resistant to water and dust infiltration, as well as being offered with runtime of up to ten hours (low light mode at thirty lumen) on a single charge, each Snap-on bent head penlight comes with a twelve-month warranty covering repair or recalibration. A 425-lumen version is also available. Speak to your local franchisee to get the best Snap-on seasonal deal.

Price: POA

***shop.snapon.com* or call 01536 413990**

WEBCON 0-5BAR ADJUSTABLE FUEL PRESSURE REGULATOR

A collaboration between performance fuel delivery specialist, Redline Performance, and fuel system accessories manufacturer, Webcon, this top-quality adjustable fuel regulator includes 8mm unions, fuel hoses, clips and a 'push and lock' knob to ensure the desired pressure is accurately maintained. Compatible with Webcon's WFR150 fuel pressure gauge and FGA100 in-line adaptor for maximum accuracy, this easy-to-install add-on will deliver just the right amount of your chosen fuel to the host Porsche's powerplant. Additionally, Webcon has announced the launch of a range of anodised aluminium-finish EFI fuel pressure regulators to complement the blue and red variants already available. Technically, the alu-look product is the same as its brighter-coloured stablemates, but offers a more OEM finish — perfect for those wishing to introduce increased performance and reliability to their Porsche, but without drawing attention to the fact. Various pressure rates are offered, from 2.5bar through to 4.5bar, as well as the adjustable 0-5bar version..

Price: From £53.94

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GUEST SPEAKER

PETER DUMBRECK

When a professional racing driver comes toward the end of their career, new opportunities open up, often in the form of invitations to assist industry figures in the development of motorsport weaponry for competition use. I'm lucky enough to be testing classic Porsches, but you probably know my name from a major incident at Le Mans...

Peter Dumbreck is a Scottish professional racing driver famous for campaigning 911s and setting speed records at the Nurburgring, as well as for surviving one of the worst accidents ever witnessed at Le Mans. Find him online by searching for *@ahlovejoy*

Extensive preliminary testing went well. The CLR's engine was great, and though we identified areas we could improve upon, there was no indication the car was unstable. With a total height of just 1,012mm, the extremely flat GT-prototype was designed and built from September 1998 to meet the extreme challenges of the 1999 24 Hours of Le Mans. The development objectives were aerodynamics for maximum speed with low lift, the lowest possible weight and optimum stability, enabling the car's engineering to withstand constant maximum stress over the duration of what promised to be a punishing race.

Technically, the CLR was based on the CLK-LM, a car which had been tried and tested during the 1998 season. The model's components were then enhanced and, in some cases, reinforce for CLR use. Everything was going well until we arrived at Le Mans. Lead driver and current Porsche brand ambassador, Mark Webber, experienced front axle lift during qualifying. The car became airborne at Indianapolis. Understandably, everyone in the Mercedes camp was taken aback, but we concluded we'd witnessed little more than a freak accident. It certainly wasn't enough to stop us running. Thankfully, Mark was uninjured, but to avoid a repeat of the incident, contact pressure on the two remaining CLRs was increased by twenty-five percent through altered aerodynamic measures. The team were permitted to rebuild Mark's damaged car.

All three CLRs had qualified, but during Saturday morning preparations, Mark once again became airborne over the brow of the Mulsanne. This time, his car rolled onto its roof before sliding to a stop. Needless to say, this CLR was withdrawn from the race.

I remember the drivers coming together in the team bus to discuss what we should do next. I had total confidence in the team's engineers. If they said we race, then we race. Off the back of two major crashes, the decision to continue wasn't taken lightly, especially when Mark stressed he'd done absolutely nothing wrong. The two remaining cars were readied for action, albeit with even more tweaks to prevent instability, plus an instruction to myself and teammates, Nick Heidfeld and Christophe Bouchut, not to get too close to the car in front for fear of encouraging aerodynamic instability in slipstream. Hang on a second. When you're travelling at 200mph, what's too close? 100m? 50m? 20m? And how do you avoid getting close to another car when overtaking on a tight, busy track?

I was fighting hard for second place. It was the seventy-fifth lap and I was catching the Toyota as we approached Indianapolis, the site of Mark's first off. "I'm far enough behind the Toyota, right?!" I remember seeing sky. I knew what was happening, though my memory of the incident is sketchy. I recall my CLR's nose lifting before the car was thrown high in the air. The car pirouetted several times before being fired through nearby trees at rapid pace. Amazingly (and hugely fortunate for me), it landed on all fours.

Unlike Mark's accidents, mine was broadcast live all over the world. Mercedes immediately withdrew the CLRs and dropped out of sports car racing altogether, much like it had done at Le Mans following disaster during the daylong enduro at Circuit de la Sarthe in 1955. Fortunately, nobody was hurt in 1999 – I escaped with only minor bruising, something I'm able to say only because the narrow area of trees my CLR travelled through had been logged a few days before the accident. Unbelievably, I landed precisely where the trees had been cut down.

Despite my many motorsport accomplishments, the CLR crash is what I'm remembered for. I returned to Le Mans in 2006, however, competing behind the wheel of a Spyker C8 three years on the bounce, before switching to an HPD ARX-03a for JRM, sharing driving duties with David Brabham and Karun Chandhok. My final Le Mans was in 2013, when I drove for Aston Martin and finished third overall. As for Porsche, I've participated in both Supercup and Carrera Cup, though my time racing 911s has predominantly been at the Nurburgring as a factory driver for tyre giant, Falken, competing in VLN and the twenty-four hour race for the team every year since 2006. I'm now embarking on a new challenge: working as a test driver for Tuthill Porsche, helping to develop early two-litre 911 race cars and coach their drivers. More next issue.

DESPITE MY MANY MOTORSPORT ACCOMPLISHMENTS, THE CLR CRASH IS WHAT I'M REMEMBERED FOR

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GUEST SPEAKER

ANDY PRILL

The 912 was introduced as a reaction to Porsche showroom visitors being unimpressed by the jump in price between the outgoing 356 and the then new 911. By merging elements of both models, the brand created the 912, a fantastic four-cylinder sports machine currently undergoing something of a resurgence in popularity...

Andy Prill is a qualified mechanical engineer with a love of Porsche stretching back to the restoration of a 912 in the early 1990s. Today, he heads up respected marque specialist, Prill Porsche Classics. Find the company online at ***prillporscheclassics.com***

Sometimes you get lucky and create something great completely by accident. Take the classic Italian desert, tiramisu. Invented on Christmas Eve 1969 by Ado Campeol and his wife, Alba di Pillo, as well as chef, Roberto Linguanotto, at Le Beccherie, Campeol's restaurant in Treviso, Italy, the dish was the result of an accident while making vanilla ice cream. Linguanotto dropped some mascarpone cheese into a bowl of eggs and sugar and, after he noticed the mixture's pleasant taste, he told di Pillo about his findings. The pair then perfected the dessert by adding ladyfinger sponges soaked in coffee, and by sprinkling the results with cocoa. Tiramisu (translating into English as *pick me up*) was born. The rest, as they say, is history. It's also at great detriment to our waistlines!

Something similar happened when Porsche developed the 912, a car our favourite manufacturer didn't plan to produce. I'm glad it did — the 912 has spent most if its time living in the shadow of the 911, but the four-cylinder model is a very good car in its own right, offering more of the charm of the 356 and less of the bravado of the 911. Of course, this should come as no surprise, considering the flat-four-powered Porsche's beating heart is a modified version of the 356 SC engine.

The 912's origins can be traced back to the phasing out of the 356, which, after almost seventeen years of production, could no longer meet increasing stringent safety requirements or keep up with the output of rival manufacturers. This was especially true at the track. Enter the 911 (and the pre-series 901 beforehand). At its introduction in 1964, it was a class leader in every respect. There was a problem, though. Quite a big one: the price.

Nowhere did this affect sales more than in the USA (more specifically, the West Coast), Porsche's biggest market. Loyal as they were to the brand, many enthusiasts lamented the loss of their beloved 356 and balked at the financial outlay required to get behind the wheel of this new six-cylinder flagship from Stuttgart. The solution came in the form of the 912.

By accident, Porsche had a winner on its hands — in North America, the 912 outsold the 911 for several years. Also a winner in a competition environment, the 912's lighter weight and improved handing made it a great car for long-distance driving in extreme weather and challenging road conditions, as demonstrated by it being a regular victor in Group 1 rallying during 1967 and 1968. So good, in fact, Sobiesław Zasada won the 1967 European Rally Championship for series touring cars (including an overall win in the Rally of Poland) in his privateer 912, taking more points than the factory entered 911s.

LOYAL AS THEY WERE TO PORSCHE, MANY ENTHUSIASTS LAMENTED THE LOSS OF THEIR BELOVED 356

It's a shame so many 912s were improperly maintained during the following decades, when buyers passed on the model (out of production since 1969) in favour of a 911. Ultimately, few people have experienced a good 912. If this includes you, I suggest you try one. Be prepared for surprise — these are excellent cars. In the meantime, I wish you and yours every happiness this Christmas and best wishes for 2022.

911 GT3RS (997)

Orange • Black Nomex Bucket Seats
Porsche Ceramic Composite Brakes
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21,947 miles • 2007 (56)

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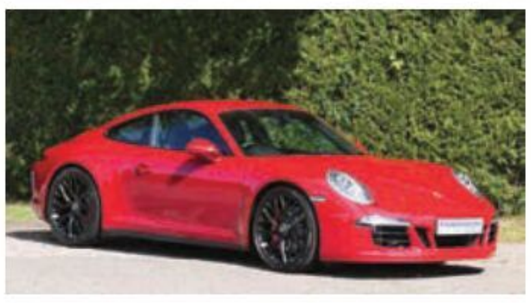

911 Carrera 2 GTS (991)

Carmine Red • Black Leather Sports Seats • PDK Gearbox • 20" Black Centre Lock Wheels • Touchscreen Satellite Navigation • Switchable Sports Exhaust Sport Chrono • 9,870 miles • 2015 (15)

£89,995

Cayman GT4 (981)

Sapphire Blue • Black 918 Bucket Seats
20" GT4 Wheels • Touchscreen
Satellite Navigation • Switchable
Sports Exhaust • Dynamic Cornering
Lights • 9,856 miles • 2016 (65)

£75,995

911 Turbo (997 GEN II)

Carrara White • Black Leather Adaptive Sports Seats • PDK Gearbox • 19" Turbo II Wheels • Touchscreen Satellite Navigation • Sport Chrono • Carbon Interior Pack • 50,578 miles • 2010 (10)

£69,995

911 Carrera 4 GTS (997)

Carrara White • Black Half-Leather
Sports Seats • PDK Gearbox • Sport
Chrono • 19" GTS Centre Lock Wheels
Previously Sold & Serviced by Paragon
23,001 miles • 2012 (12)

£67,995

911 Carrera 2 GTS (997)

Basalt Black • Black Half-Leather Bucket Seats • PDK Gearbox • Sport Chrono
19" GTS Centre Lock Wheels
Previously Sold & Serviced by Paragon
35,182 miles • 2011 (11)

£65,995

Cayman GTS (981)

Carrara White • Black Half-Leather
Sports Seats • PDK Gearbox
20" Satin Black Carrera S Wheels
Switchable Sports Exhaust • Sport
Chrono • 22,819 miles • 2015 (15)

£54,995

Boxster GTS (981)

Dark Blue Metallic • Luxor Beige Leather Sports Seats • 20" Carrera Classic Wheels • Switchable Sports Exhaust
Full Leather Interior • Sport Chrono
29,538 miles • 2015 (15)

£54,995

Cayman T (718)

Jet Black Metallic • Black Half-Leather Bucket Seats • PDK Gearbox • 20" Carrera S Wheels • Switchable Sports Exhaust • Sport Chrono • 6,252 miles
2019 (19)

£52,995

Boxster S (718)

Jet Black Metallic • Black Leather Sports Seats • PDK Gearbox • Touchscreen Satellite Navigation • 20" Black Carrera S Wheels • Switchable Sports Exhaust
16,671 miles • 2017 (17)

£52,995

911 Turbo (996)

Basalt Black • Black Soft Ruffled Leather Seats • Tiptronic S Gearbox • 18" Turbo II Wheels • Satellite Navigation • Factory Hardtop • Previously Sold & Serviced by Paragon • 59,273 miles • 2003 (53)

£49,995

Boxster S (718)

Lava Orange • Black Leather Sports Seats • 20" Black Carrera S Wheels
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THE LAST CONTINENT

Realising a long-held ambition of competing in motorsport, Renée Brinkerhoff has been using her heavily modified 356 A to raise money and awareness for a supremely important cause. Now, after participating in some of the world's toughest rallies, she is preparing to embark on the challenge of a lifetime...

Words **Robb Pritchard** Photography **Valkyrie Racing and Mark Riccioni**

We're always on the lookout for stories which are unusual and inspiring. Take the recent adventures of philanthropist racer, Renée Brinkerhoff, for example. By tackling some of the world's toughest rallies in a 356, her travels tick virtually every one of the checkboxes on our editorial wish list. Her next challenge, however, is even more extraordinary, so much so that when we saw photographs of her Porsche in preparation for what she has planned, we had to check it wasn't April Fool's Day: this December, Brinkerhoff will pilot her Porsche across Antarctica. Before we follow her snowbound exploits at the far south of the globe, let's take a look at the worldwide odyssey that led to this mind-blowing plan of action.

Amazingly, Brinkerhoff decided to start racing while folding laundry. Then in her late fifties and with her four children grown up and having left the nest, a long dormant desire to participate in motorsport came to the fore. Shirts folded, she decided to take action. Her dream car was easy to determine – her husband's cousin

owned a 356 and Brinkerhoff had fallen in love with the air-cooled, four-cylinder coupe. She wanted a classic Porsche of her own.

Despite the ambition being a slow smoulder for more than half her life, she first wore her driving gloves in what you might very well consider 'the deep end': the 2013 outing of La Carrera Panamericana. The week-long, 2,000-mile event on the twisty mountain roads carving through the centre of Mexico is famous for being one of the most dangerous road races in the world, with fatalities occurring on more events than not. It's worth noting, Brinkerhoff didn't exactly attend unprepared – she enjoyed professional coaching from three-time Le Mans winner and former Porsche works driver, Hurley Haywood, at the Porsche Experience Centre in Atlanta.

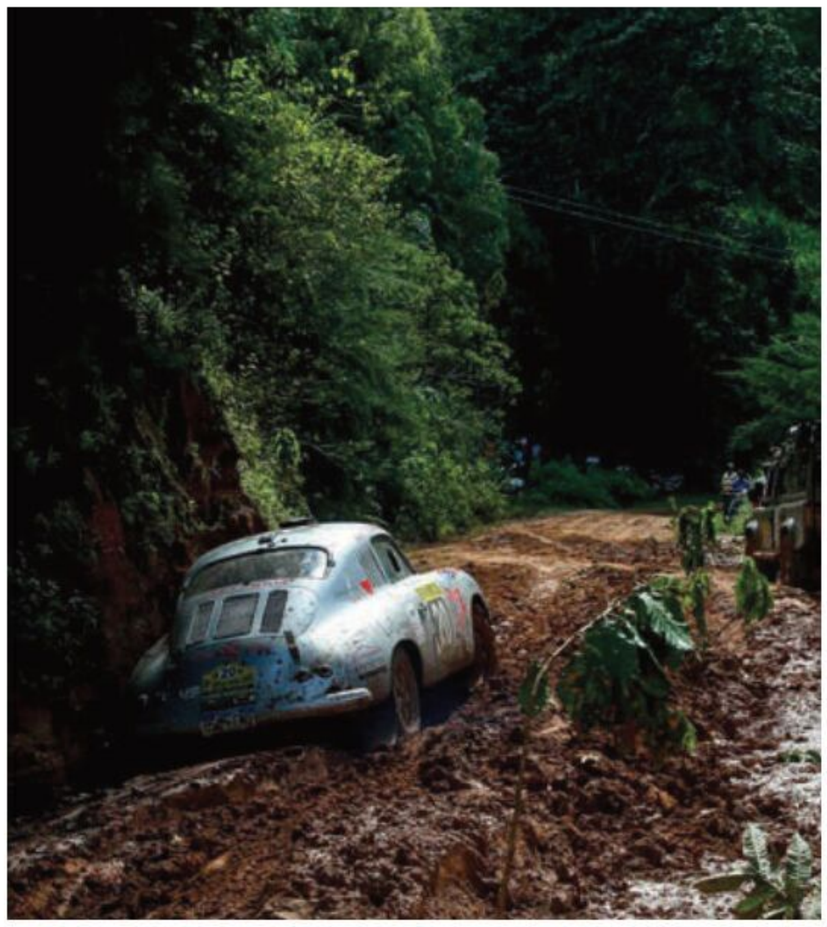
PREPARATION STATION

Much work was carried out to the 356 A she'd bought. The car's 59bhp boxer was nowhere near adequate for the rigours of such a competition, which is why a two-litre flat-four from a much later was installed. With a pair of Weber carburettors, 911 cooling and tuned to a compression ratio of 11:1, power was increased almost threefold to a healthy 156bhp. A five-speed gearbox helped to improve top speed (as well as more control through the rev range), and to accompany the hike in performance, the original drums brakes – deemed dangerously inefficient for the task at hand – were replaced with 911 discs and calipers in each corner.

Naturally, Brinkerhoff's intention in Mexico was to finish the race, but it wasn't just a participation trophy she came home with. Impressively, on her first attempt, she won her class. And with racing enthusiasm piqued (rather than quenched), she decided to form a proper racing team. Valkyrie Racing, named after the women of Norse mythology who guided fallen warriors to Valhalla, was born. And yet, another life-changing experience was just around the corner: she met an agent from the Federal Bureau of Investigation, who was part of a taskforce committed to busting child pornography and trafficking rings. Learning of her intention to travel the world competing with a 356 in remote locations, he facilitated an arrangement for her to serve as an undercover agent on behalf of non-governmental organisations when travelling through Southeast Asia and South America, where she has since engaged with 'handlers' to secure the identities of exploited children and the criminals trafficking them. This information is then fed to local police departments, which use the acquired data to rescue persecuted minors and secure prosecutions.

With extra reason to compete, Brinkerhoff returned to the Panamericana a further three times, bagging another class win and two second-place finishes. Realising her rising popularity and respectable race results could be

Above On inspection of the internal structure, cameras highlighted evidence of previous repairs, resulting in design changes to divert loads away from these areas



Below The go-anywhere Porsche at the hands of a go-anywhere driver

Above Taking the 356 places you might think twice about navigating in a Cayenne

used as a platform to raise awareness about the 1.2 million children trafficked each year, she established Valkyrie Gives, a non-profit foundation raising money for pre-vetted shelters and charitable projects in remote areas of China, Mongolia, Peru, India and Kenya. She reasoned racing on every continent in the same classic Porsche (albeit in different technical configurations) would serve as a great public forum for awareness and fundraising for her causes and, with this in mind, Project 356 World Rally was go.

Not wanting to enter token races or rallies as an easy way of being able to satisfy her mission statement of punishing her Porsche on each continent, Brinkerhoff deliberately chose the hardest events she could find, ones that would be real tests for both woman and machine. The first was the 2018 Targa Tasmania, a six-day, 2,000-mile, forty-stage road rally around Australia's southern island. Famed as being the fastest asphalt rally in the world, it's not an undertaking for the faint of heart. Preparation of her 356 was carried out by Tuthill Porsche, a UK-based company synonymous with preparing air-cooled classics for rallying. Unfortunately, the event began on the backfoot when Brinkerhoff and her experienced Welsh co-driver, Calvin Cooledge (owner of CRC Motorsport, a company with a proven track record of professional motorsport management, working with both works teams and private customer programmes), were unavoidably delayed reaching their destination Down Under. Regrettably, there was no time to conduct a recce and make accurate pace notes. Taking blind crests and corners without knowing what's beyond is, of course, the quickest way to have a serious accident, which is why Brinkerhoff had to drive the whole event exercising caution. Even so, despite her frustration

Below and top right Disaster strikes in spectacular fashion at the La Carrera Panamericana classic rally

at not being properly competitive, she still managed to complete every stage of the event within the set time limit, earning her the coveted Targa Plate.

Next on the big bucket list was Rally Caminos del Inca in Peru, a nine-day rally down the spine of the Andes mountains. With a significant amount of the ground covered being loose surface, Tuthill switched the 356 from tarmac specification, which included work fabricating heavy duty shock absorber mounts and reinforcing the chassis. The trailing arms were also reinforced, and the suspension configured to allow much longer travel. The testing phase was stringent, as demonstrated by the shocks, springs and their mounts subjected to jumps at 100mph.

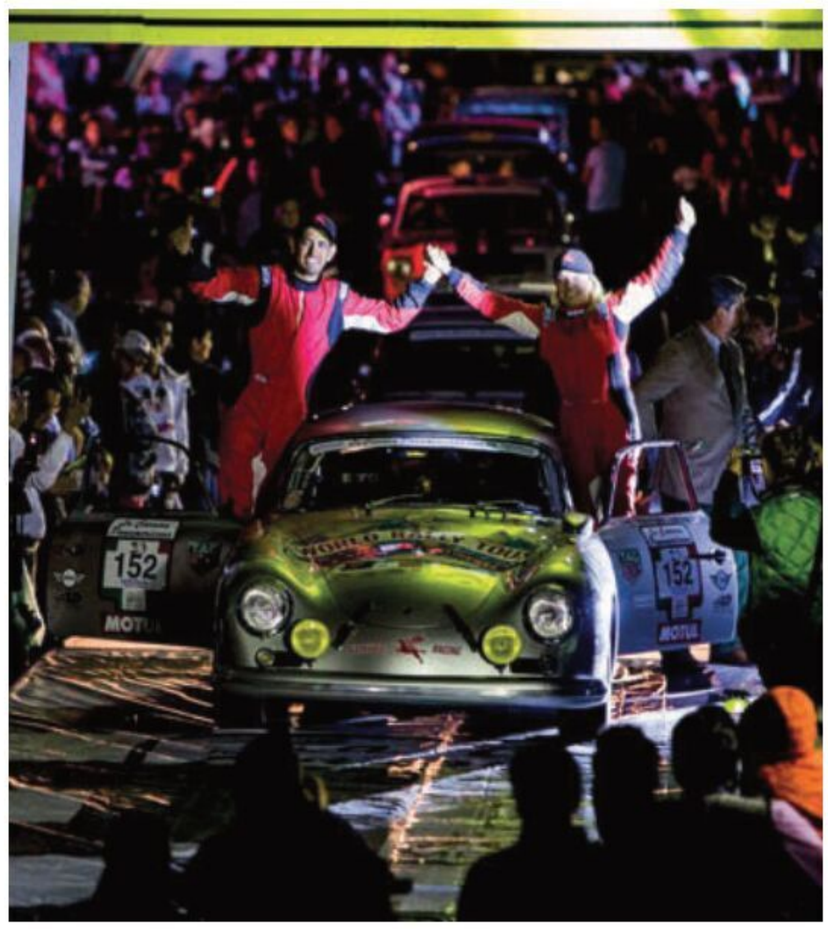
DOUBLE ACT

Cooledge had to pull out of the Porsche's trip to Peru, which is why Peter Lythell, a Tuthill client, was drafted into serve as navigator. Lythell is no stranger to rallying in air-cooled Porsches and, when the 356's throttle cable snapped, he also had to help drive – Brinkerhoff couldn't steer, change gear and pull the handheld throttle cable under the dashboard at the same time. Translating Spanish pace notes and doing what they could to operate the throttle as a twosome, the pair had a challenging sixty kilometres to complete before the end of the troublesome stage, a route taking them up 15,000 feet, where the air was so thin the Porsche would overheat and changing a wheel was enough to make the dynamic duo light-headed.

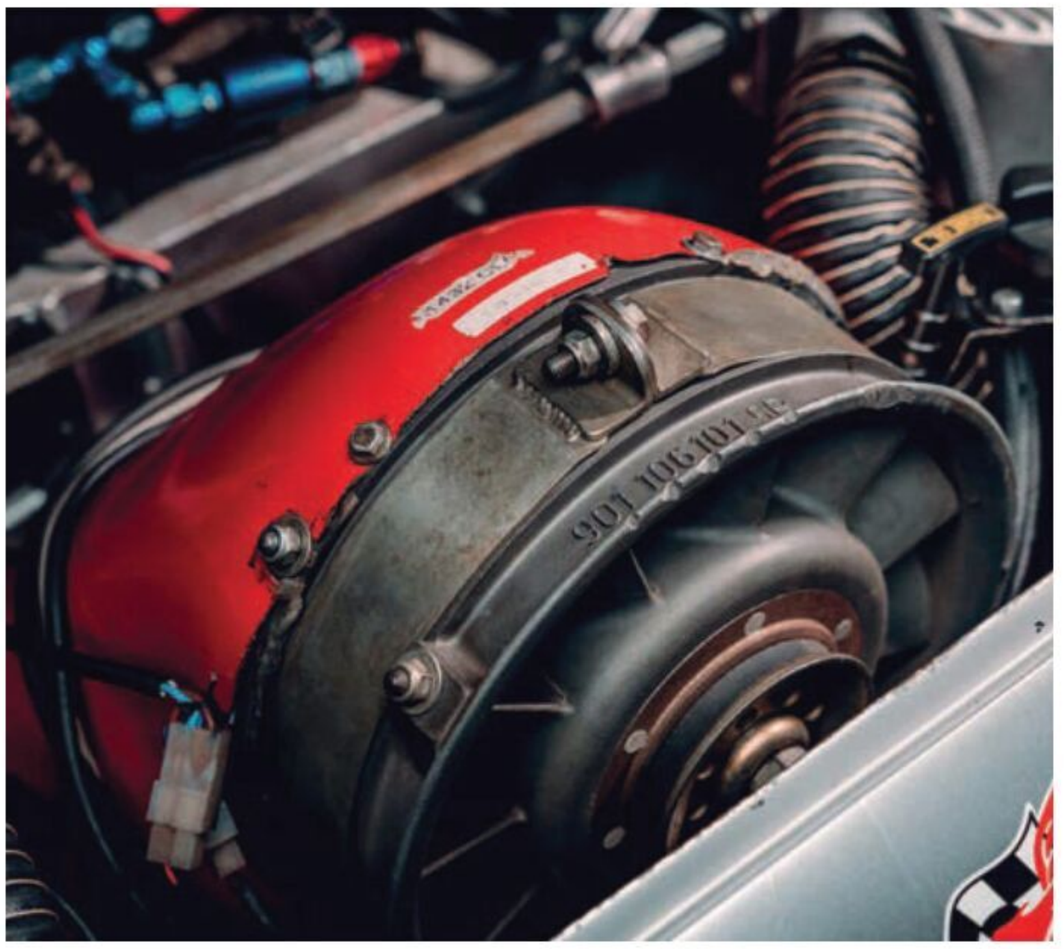
Some of the stages were incredibly long. One was an incredible 600 kilometres non-stop, meaning a service crew had to meet them halfway to refuel. There was also a stage where the 356's occupants were forced to wear full fire-retardant clothing thanks to crowds of curious kids fiddling with the switches on the outside of the car at the start line. One child set off the fire extinguisher. Clearly, Brinkerhoff's Porsche was a real draw, not only because it was the only classic car in the rally, but, as Lythell suggested to us, because it's likely most of the locals hadn't ever seen a 356 in the metal before.

In the summer of 2019, Brinkerhoff was in China for the Peking to Paris endurorally, her toughest challenge yet. The 9,300-mile event took place across a mammoth thirty-six days. The route took the little Porsche along the fringes of the Gobi Desert, the steppes of Mongolia and through the endless birch forests of Russia, before winding through Scandinavia and the Baltics. On such extreme endurance events, even the slightest issue can turn into a major catastrophe. Proving the point, after a service in Mongolia, the engine's replacement air filter wasn't installed correctly, leaving a tiny gap into the intake channel. Entering dust and grit damaged the two-litre powerplant beyond repair. Such is the degree of support Tuthill provides its clients, however, Francis Tuthill himself flew to Novosibirsk in Russia with a replacement 356 engine in tow. Four kilos too heavy, he

Above The perfect classic Porsche for navigating your way across the challenging snow and ice of Antarctica



Below East African Classic Rally was a huge challenge, as was the nine-day Caminos del Inca rally in the Andes



Above Seven continents of extreme rallying required a rethinking of the 356's engine and oil cooling systems

Below Tuthill took care of much of the preparation work, switching Brinkerhoff's 356 from tarmac to loose surface specification when required

had to strip the prepared boxer at the Gatwick's check-in area and rebuild the unit piece by piece when he arrived in Russia with love. His efforts paid off: Brinkerhoff and her 356 made it to Paris.

The last of these events would be a satisfying conclusion to a life-affirming experience for most Porschephiles, but it wasn't much more than a footnote for Brinkerhoff. After the Paris to Peking outing, Kenya's East African Safari Rally in 2019 should have been a doddle, perhaps even a holiday, especially now Brinkerhoff's daughter was called into service as co-driver. Sadly, more rains than the region had seen in forty years made the stages almost impossible to complete and, despite all Brinkerhoff's training and experience, nothing had prepared her for mudslides and falling rocks. Conditions were hard enough for the frontrunners, but by the time the 356 arrived for action, each track was utterly trashed and would have been difficult for even a Land Rover to conquer. "It was brutal," she says. "It was like the hammer of Thor hitting us from every angle. The car simply couldn't take the constant battering. The front steering arm pushrods kept bending and, eventually, sheared off. A month after the event, I was still taking painkillers!" No class win here. The Porsche was lucky to make it to the finish, although Brinkerhoff managed to beat local driver, Ian Duncan, winner of a World Rally Championship round of the same event.

Everything else she's achieved with her Porsche during the past few years has been little more than a prelude for what's to come. No motorised race takes place in Antarctica, of course. An environmental haven, the few vehicles there are heavily modified fourbys rolling on massive tyres, mostly made by Arctic Trucks, and used exclusively for scientific and expedition support. Ever industrious, Brinkerhoff devised her own challenge: a 356-mile trek over the region's ice fields.

It's nothing short of a massive undertaking and there's no guarantee the task will be completed, as hinted at by the astonishing modifications applied to the Porsche in order for it to be up to the challenge of operating free of fault in such extreme conditions.

Brinkerhoff contacted famed polar explorer, Jason de Carteret, veteran of more than fifty expeditions at both the north and south poles, with an invitation to join the project as co-driver. He brought in his regular expedition partner and favoured senior chassis engineer, Kieron Bradley, to re-work the 356. "Originally, Renée was adamant she wanted forty-two-inch tyres on the car, like an Arctic Truck, the usual vehicle you'll see in these parts," he said, speaking exclusively to *Classic Porsche*, "but by cutting so much metal away to get such big tyres to fit, the Porsche would have been unrecognisable. We'd have lost many of its characteristic curves. Plus, to be able to generate the torque required to turn these wheels on the power sapping layer of snow, we'd have to change the whole transmission and add portal hubs. When we said we were going equip her 356 with tracks instead, she went very quiet. You could have cut the air with a knife!"

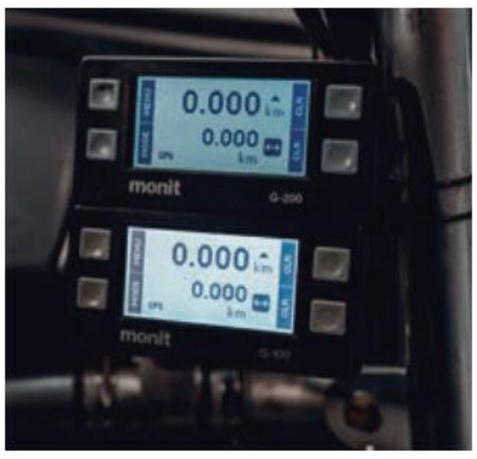
IN THE FACE OF DANGER

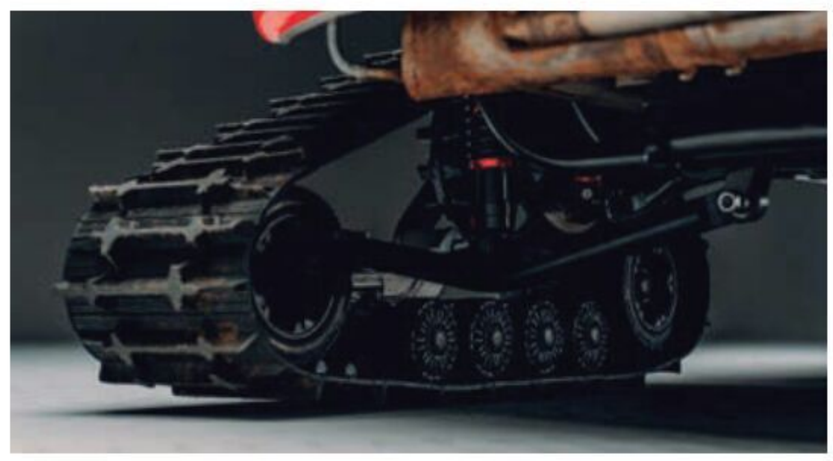
The original 356 frame was nowhere near strong enough to support the new drive system, which is why the car's chassis had to be seriously reinforced with a cage system made from T45 chromium steel. The engine now sits in its own cradle and the protruding metal hoop sticking out the front of the Porsche is necessary in case the car nosedives into an unseen crevasse. With this adornment in place, the car should swiftly stop, rather than continuing to travel where it shouldn't. We hope.

As soon as the 356's revised footprint was calculated, and when the installation location of additional components was finalised, Bradley selected the track system best suiting the car's needs. As it's light enough, he chose equipment designed for an all-terrain vehicle, but because this kit wasn't designed for use on a Porsche (or any vehicle with trailing arm suspension, for that matter), he had to modify the adaption kit. There's now a toothed drive on the 356's rear wheel hub and, because this is half the radius of the original wheel, it results in a reduction gear, pretty similar to 'low box' in big 4x4s, allowing the driver to control the car at very low speed. The track system also raises the car by ten inches, which gives it an instant advantage in getting over obstacles.

"We also had to design a bespoke suspension system," he continues "For this, we went with a coilover shock on a single arm per side. This has the advantage of transferring the load of the vehicle to the centre of the track and removes load from the original hub. It also controls the movement of the track system within the constraints of the wheel arch." Unfortunately, it was still

Above The ski and track combination increase flotation by a much as 300% when compared to Antarctic 4X4 support vehicles on the 42" tires — the 356 will be gliding and leading the pack throughout the entire journey





Above Senior Chassis Deign Engineer, Kieron Bradley, has succeeded in creating a one-of-a-kind ice machine in developing the Polar Porsche

necessary to cut some of the bodywork away. It was, mercifully, a single cut sympathetic to the lines of body and only 0.5mm wide. After the expedition, it will be a relatively simple job to put the original metal back where it belongs.

Acknowledging the opening sentence to this article, another great way of securing column inches is a world record attempt. In this instance, it's Brinkerhoff's determination to achieve the fastest recorded drive in Antarctica. The rules (yes, they exist) stipulate how as well as four wheels, a matching number of tyres and a steering system, the wheel hubs and kingpin must be the same as the host vehicle's original equipment, else it won't be classified as a car. This means the skis you see on these pages had to be designed as a straightforward bolt-on, bolt-off arrangement which can be changed with a minimum of tools out on the ice. "If there's any inherent weakness in the design, it will be the need to run with steering components deigned sixty years ago, used far beyond what they were ever intended for," Bradley confirms. "Although they're braced by sturdy drop arms similar to ones used on solid-axled, coil-sprung four-by-fours, Renée is under strict instruction to keep the steering straight when she encounters an obstacle."

There will be spare push rods and a steering box as spares, plus a few other specialised parts deemed necessary for the brutally cold conditions, which could sink as low as -50°C. DuPont Krytox grease is specifically designed for operating at low temperatures and a portable petrol heater is needed for the engine. There won't be a cabin heater because Brinkerhoff and de Carteret will have to wear their full expedition

clothes at all times in case they're forced to exit the Porsche quickly in an emergency. And, lastly, the car is now painted red instead of silver, which would render it invisible in low light when reflecting snow.

Although de Carteret is one of the most experienced navigators Brinkerhoff could have wished for, her route has not yet been driven… by anyone. "He knows the ice," she says. "And he understands the meaning of all the different colours and textures. I'm confident we'll be safe." The plan is to leave Mount Vincent base camp and head towards the South Pole for around half of the 356 miles, before driving in a big loop and heading back again, though the route can be altered if the unpredictable weather changes for the worse.

As you'd expect, we asked her if she was nervous. "You certainly need to have good nerves on a trip like this. They help you to focus and give a level of consideration for the dangers ahead," she smiles, confidently. "I deliberately chose every race or rally I've entered with this classic Porsche for how challenging the event was, largely to take myself out of my comfort zone. I do feel some trepidation. Obviously, I know I *should*, because it's good and healthy. Some people run away from fear, but I think there is immense power to be found from facing your fears. You don't really know your limits unless you challenge yourself in this way." It's this determination which has seen Valkyrie Gives raise more than $450,000 (£333,000) for the causes it supports, with Brinkerhoff aiming to top $1m (£740,000, a figure you can increase by making a donation at *valkyrieracing.com*). We wish her all the best with the challenges ahead and, of course, we'll be reporting on this latest development in her 356's amazing history in a forthcoming issue of *Classic Porsche*. Stay tuned! **CP**

Above It took two years to turn this 356 into an ice-ready beast ready for polar terrain

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BEAUTY IN SPEED

With its sights firmly set on the FIA's GT class, Porsche developed its 904 racing coupe for the 1964 season. Powered by an improved version of the four-cam flat-four, the new arrival was low, sleek and an absolute masterwork of design by Ferdinand 'Butzi' Porsche…

Words **Karl Ludvigsen** Photography **Porsche**

Make no mistake, it was far and away his prized Porsche. "It was my favourite because I designed it alone and I wasn't under pressure to change it or make it 'newer'. It was simply designed and finished. Time was very short. I didn't have a free hand, but it had to appear as such soon after the clay model was complete. There was really no time for interference." So said Ferdinand Alexander 'Butzi' Porsche, author of the sensuous form of the 1964 Carrera GTS, better known to all the world as the Type 904, a Porsche born to battle heightened competition among two-litre production GT cars and arguably the most beautiful Porsche racing machine ever assembled.

For the 1963 season, Abarth was building his Abarth Simca 2000, a potent little coupe with a full two-litre twin-cam four-cylinder engine. Another Italian rival, Alfa Romeo, hoped to humble Porsches in 1963 by way of a new, lighter Giulia TZ. These challenges gave Porsche's head of marketing and motorsport, Fritz Huschke von Hanstein, all the ammunition he needed to argue within

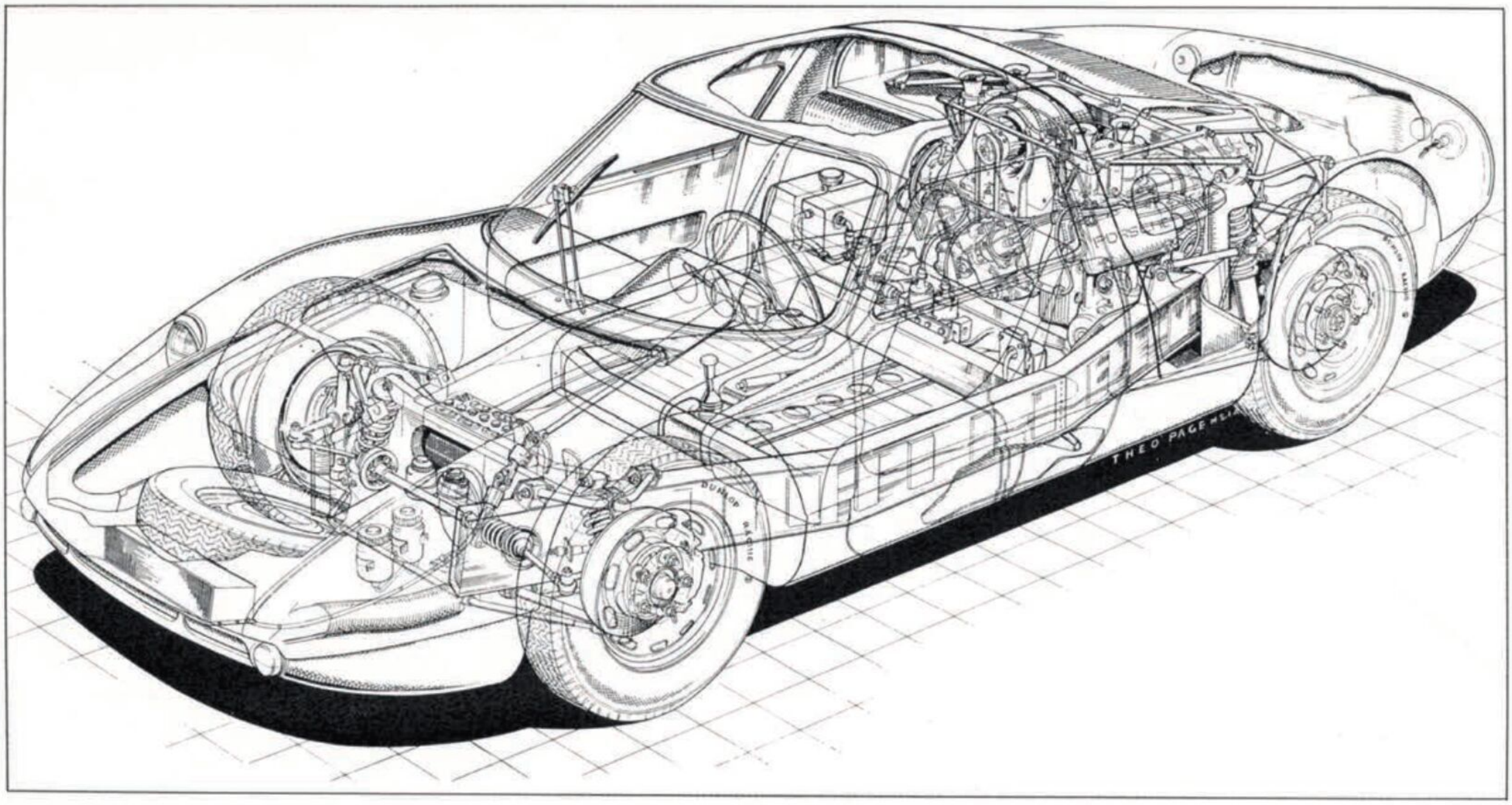
the Stuttgart concern for the development of a newer and faster GT competition car. Consequently, starting in November 1962, Porsche committed itself to the urgent development of a new GT racer. An important issue — that of the car's powertrain —was resolved with the decision to use the six-cylinder engine and five-speed transmission then in the works for a planned new production Porsche, the Type 901, which as readers of last month's issue of *Classic Porsche* will know, ended up being the pre-series model for the first run of 911s.

Yet another decision was self-evident: to put the engine ahead of the rear axle. Porsche had always used this arrangement in its pure racing cars, a category to which the new model belonged, even though some of the 904s built would be sold for road use. The car was made as low as possible to trim its frontal area to the limits passenger space and tyre size allowed. After those parameters had been determined, its wheelbase was set at 2,300mm (90.6in). Track dimensions were drawn at 51.8 inches in front and 51.9 at the rear. Within these criteria, Butzi had to evolve a form both functional and attractive because Porsche had to sell one hundred examples — not all of them for racing — to satisfy the FIA's homologation requirements. "The primary demand from engineering director, Hans Tomala, was focused aerodynamics," he said. There was just enough time available for his team to evaluate models of proposed body shapes in a wind tunnel testing station.

FRONT RUNNER

Working closely with engineer, Gerhard Schröder, and modeller, Heinrich Klie, Butzi transferred many key design features directly to the 904 from Porsche's pure racing Type 718 RSK (*Rennsport* for racing, *kurz* for short). One of these carry-overs was the deeply curved glass windshield, which was almost identical in shape. Another was the continuation of the door cut line into the roof, to gain more entry room. Still another was the chisel shape of the 904's nose, which had long headlamp fairings and an air inlet for an oil cooler at its leading edge.

The wide, smooth deck lid formed the inboard edges of the headlamp covers. Running lights were neatly



Above Phantom-view drawing by Theo Page was based on one of the 1963 prototypes and shows front-mounted oil cooler and spare tyre, plus universal joints in the vehicle's steering column

tied into the design, not the usual afterthoughts. And the wings wrapped so tightly around the wheels it was hard to believe there was room enough for them to move —indeed there was not, at first. Side windows were shapely, narrowing slightly toward the rear.

Three more decisions contributed to the 904's exceptional good looks. One was an overhanging character line running the full length of the body at hub level. It lightened and stretched the look of the car and also related to the way the body was made and serviced. "One can actually see the joint run-through around the entire car," said Butzi. The second decision was the rakishly turned-up tail, into which the character line blended.

The designers' third decision was the soft, flowing line of the roof, which was broken by a cowled recess for the rear window and the engine-room vents. This 'sugar-scoop' roof line (a hallmark of the 904 design) deeply influenced auto stylists in Europe, America and Japan for the next half-decade. It was also efficient. Later tests of a full-size 904 established its commendably low real-world drag coefficient of 0.330.

Butzi credited the 904's exceptional style to the pressurized atmosphere of its creation. "This car was four months of working days and nights, from the first plasticine model to completion of the driving prototype. Completing the 904 was almost like living in an enclosure, in a monastery. The body remained unchanged simply because we were told nothing could be changed. Time really was that tight." In February 1963, he and his team completed a full-size model of the body shape for the 904, made of reinforced plastic resin. The model was required as the master for the moulds that were needed to make the body, which was to be built entirely of glass-reinforced plastic (GRP, also known as fibreglass), a first for a Porsche sports car. Tomala's engineers were to make much more than superficial use of the properties of GRP: they utilised it to add substantially to the overall strength of the car.

SROCK AND ROLL

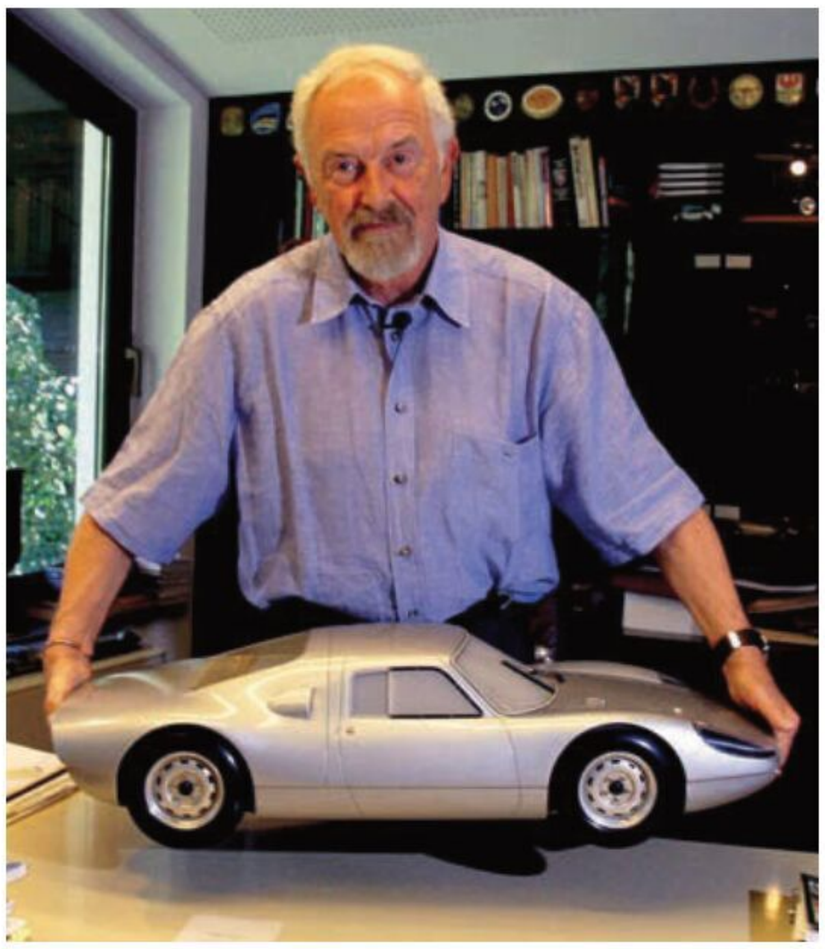
Schröder and Porsche product development manager, Rainer Srock, conceived the 904 as a vehicle of mixed construction, relying on both a ladder-type frame and its GRP underbody, wrapped around and bonded to it, thereby providing overall stiffness and strength.

THE SIDE RAILS WERE JOINED TOGETHER BY TWO LOW CROSSMEMBERS BELOW THE COCKPIT AREA

The elements seemed simple and inexpensive to tool for limited production: the cost of the body tooling, in female moulds of wood and GRP, was approximately £12,500. Porsche found a supplier which could make the entire body frame and deliver it to Zuffenhausen ready for final assembly. This third-party was Heinkel Flugzeugbau at Speyer on the Rhine, six miles from Hockenheim. Heinkel had workshop space and personnel available because the company had just concluded a major job — making components for a series of Lockheed Starfighters built in West Germany.

Chassis design of the 904 began by carrying over the basic wheel and brake assemblies from the production 356 C. Wheels were of the same design, but with light-alloy rims five inches wide and fifteen inches in diameter. Brake discs were the same size as those in the 356 C (10.8 inches at the front, 11.2 at the rear) using the same

Facing page Driving ancient 904 chassis 005, Joe Buzzetta and Gerhard Mitter finished seventh overall at Daytona in 1966 and won the Sports 2000 class (Bill France is pictured left, extending his congratulations)



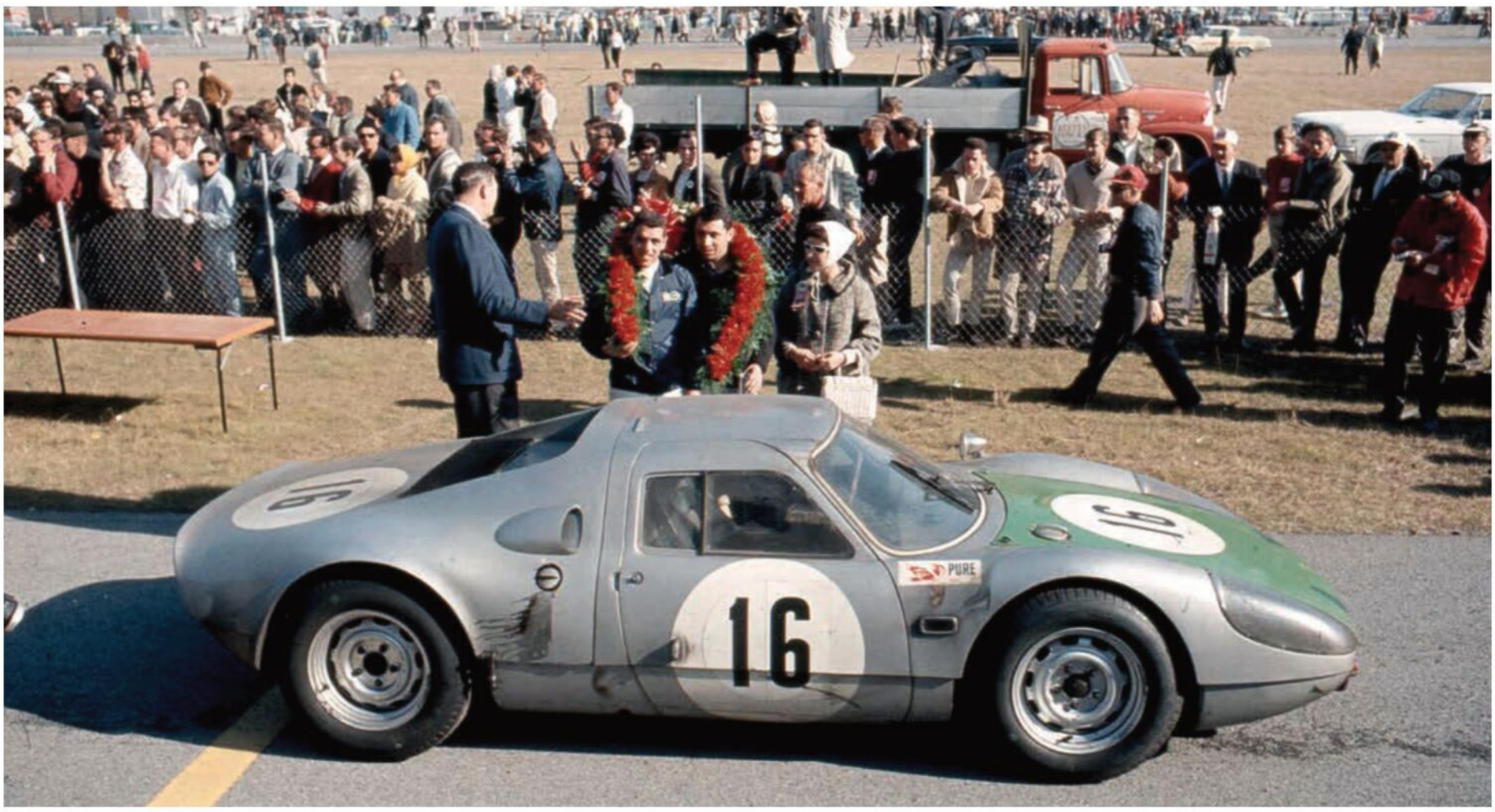
Above Butzi Porsche remembered how when it came time for crash-testing to validate the impact performance of the front of the 904 for road homologation, Porsche devised a practical solution!

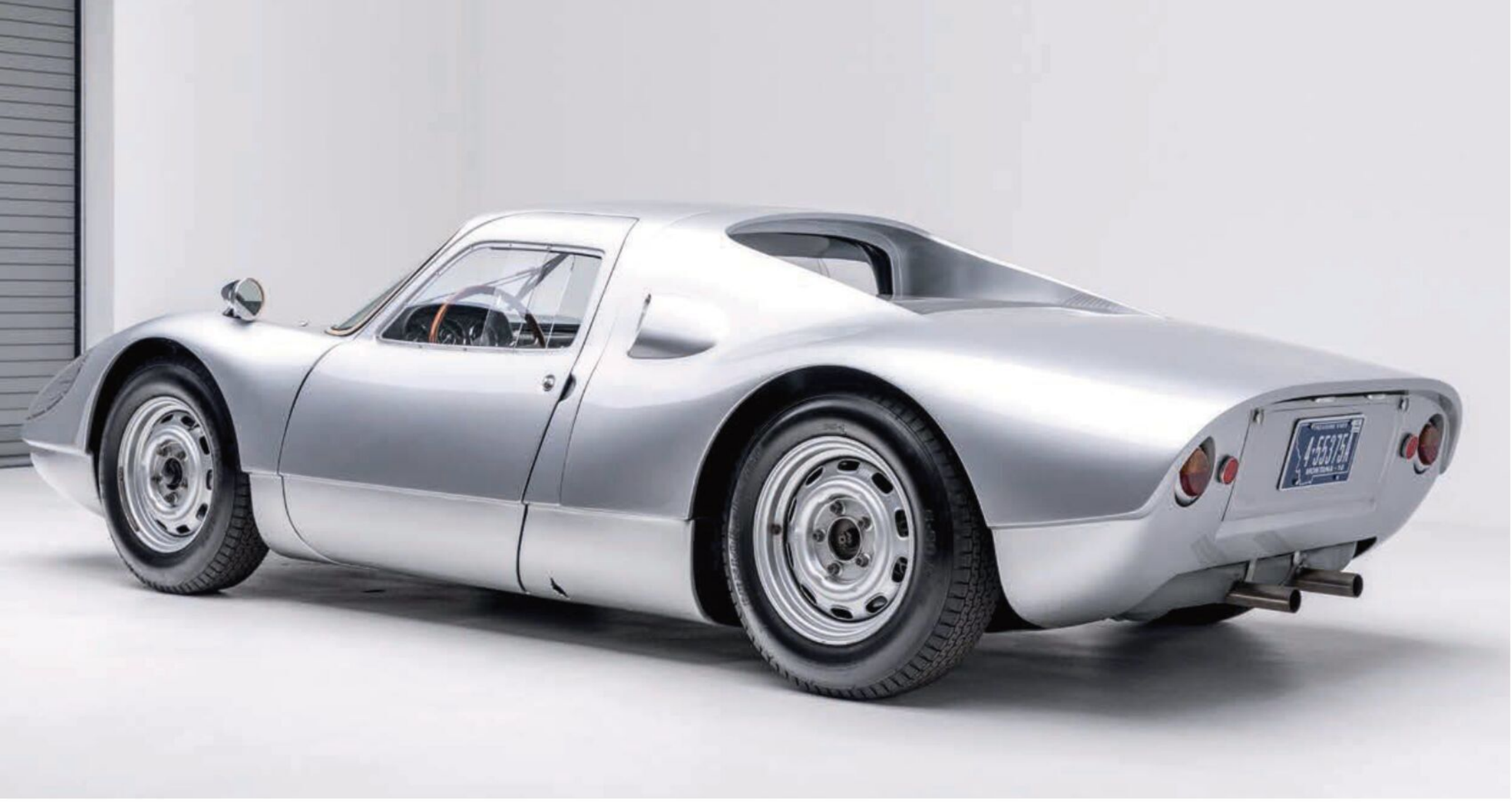
Top right 904 production interior had its gauges under a single cowl, with the ignition switch positioned in the middle of the dashboard

small drums for the rear-wheel handbrakes. Ahead of the front wheels, a ZF rack-and-pinion steering gear was installed between the stub ends of the frame members. Steering arms protruded forward from long vertical knuckles ball-jointed to upper and lower tubular steel wishbones. Wishbone pivot axes were angled slightly inward, in plan view, toward the chassis centreline. This introduced an anti-dive reaction when the brakes were applied. At both front and rear, anti-roll bars were fitted, while concentric coil-spring and damper assemblies provided the springing media.

The 904's rear suspension was a further development of the successful wide-based twin-wishbone layout used on the late Type 718 and 718/2. Its new cast light-alloy hub carrier was guided by two wide-spaced lower links and, at the top, an inverted wishbone, with its wide base outboard, braced forward to the frame by a radius rod. It was an unashamedly British-looking suspension for the newest German sports-racing car. Meanwhile, frame design was unusual by any standards. It was composed of two boxed sheet-steel side members, each cross-section that of a slim vertical rectangle from front to rear. These members were made from an inner C-section pressing boxed in (on its open outer side) by a corrugated and flanged steel strip attached by spot-welding, a technique usually associated with large-volume production, but cleverly adapted to this limited run of 904s. The side rails were joined together by two low crossmembers below the cockpit area and by deep boxed hoops at the front and rear. The weight of the complete 904 frame was less than fifty-four kilograms.

In spite of its flimsy appearance, the frame alone was slightly stiffer in torsion than the bare 356 C frame and vastly stiffer than the Type 804 and 718 multi-tube





frames. The body itself was not so stiff, being made of some fifty individual GRP parts, one of the largest being the pan forming the back and floor of the cockpit, with deep indentations for the seats. The aim of Schröder and Srock was to increase the floor pan's contribution to the overall chassis strength by bonding it directly to the frame.

Production of the bodies progressed at the rate of four or five a day, curing overnight in Heinkel's spacious premises. Weighing less than eighty-two kilograms, the body made the total body-chassis assembly of the 904 half-again as torsionally stiff as the Abarth Carrera and a shade stiffer than the steel-bodied 356 C coupe. In this respect, the composite construction was entirely successful. Rigidity was even found to increase significantly as bodies aged and 'seasoned'. On the negative side, the blend of mechanical and chemical structures was found to produce assemblies varying unpredictably in their weight and strength. Additionally, the bonded-on underbody hampered the discovery and repair of corrosion of the hidden frame members on 904s piling on miles in bad weather.

DRAWING BOARD

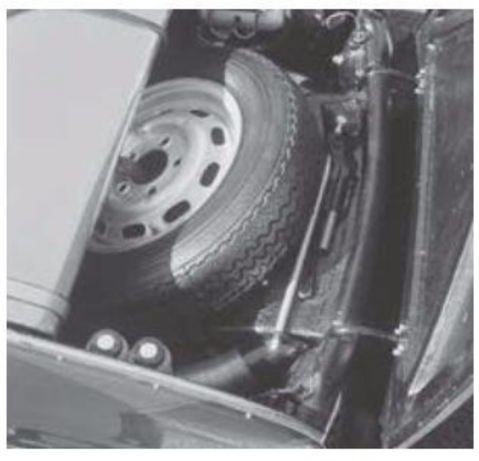
It was evident before a 904 prototype had been completed the modified flat-six would not be 'ripe' in time to be used in Porsche's new GT car. In fact, the unit wouldn't even go into production for the 901/911 until the autumn of 1964. Instead, the project's engineers turned to an improved edition of the Type 587 two-litre four, which had served so well in the 356 Carrera 2, both in racing and on the road. As used in competition in the 1963 season (in Carrera 2s and Abarth-Carreras), the flat-four bore the Type 587/2 designation and developed 155 net horsepower at 6,600rpm. Fresh opposition from Alfa Romeo and Abarth Simca made it evident more power would be needed for 1964, as well as greater durability from an engine which had to be suitable for production. One of the men assigned the task of reaching those goals was factory engineer, Hans Mezger, who was just winding up his work on Porsche's 1.5-litre flat-eight Grand Prix engine in early 1963. By his own estimate, he was spending thirty percent of his time in the drawing office and seventy percent in the company's 'experimental department' where, as the *Rennmezger*, he was recognised for his knack of making engines stronger quicker.

To get more power, Mezger had to make the flat-four reliable at higher crankshaft speeds. Bigger valves and new cam lobes helped breathing, as did a reshaped combustion chamber. In the plain-bearing bottom end, the critical connecting-rod design was strengthened. As in the Carrera 2, the joint between the cap and the rod proper was serrated to ensure the cap was firmly and securely located. Special aluminium cylinders for the 904 featured a Ferral iron bore coating and more cooling area than their predecessors.

Designated Type 587/3, this last of Porsche's big two-litre four-cam flat-fours was produced in a batch of

Above The fibreglass body was bonded to a steel chassis for extra rigidity, achieving a drag coefficient of 0.34

Below Although the original plan had been to use the 901's flat-six, the Type 587/3 two-litre four was updated to give race-ready performance, resulting in what many engineers consider one of the most complex four-cylinder powerplant ever built



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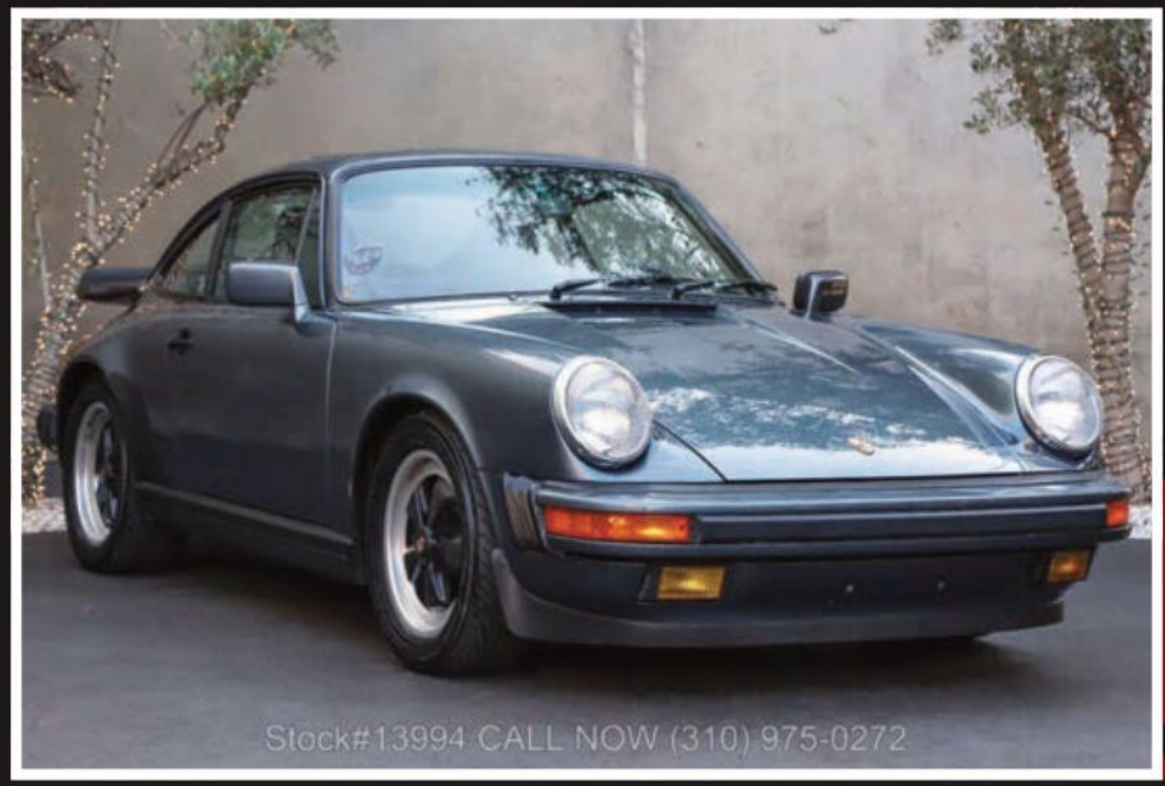


1988 Porsche Carrera Coupe stock #13994

Presenting this pristine special ordered 1988 Porsche Carrera Coupe featured with matching numbers and is available in its (special order) color code #36P Venetian Blue Metallic with a blue interior. The vehicle comes equipped with a 5-speed G50 manual transmission, spoiler (front & rear), automatic speed control, air conditioning, steering wheel with elevated hub, power windows, locking differential, automatic heating control, sunroof, 4-wheel disc brakes, Fuchs wheels, spare tire, tool kit, air compressor, and jack. Both the color code and options sticker are still in place under the hood. Also included with this vehicle are paint meter reading photos as well as service records dating back from 1997 to 2019 documenting the vehicle's history and totaling over $18,000. An excellent and original air-cooled Porsche that is ready to be driven and enjoyed. Do not miss your chance to own such a beautiful sports car that is mechanically sound. For $108,500

1983 Porsche 911SC Sunroof Delete Coupe #14141

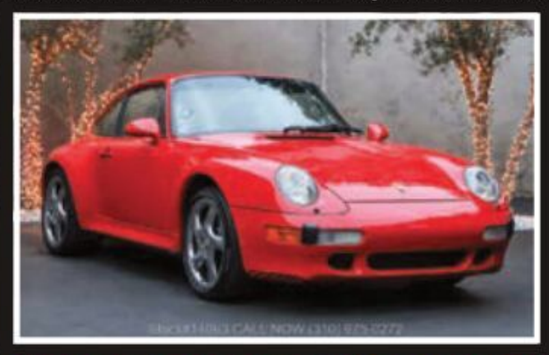
This exciting color combination 1983 Porsche 911SC Sunroof Delete Coupe featured with matching numbers is available in Slate Blue Metallic with a blue interior. The vehicle comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.0-liter engine, air conditioning, MOMO steering wheel, power windows, 4-wheel disc brakes, and spare tire. Also includes the original owner's manual as well as service documents and receipts dating from 1997 to 2011 totaling over $11,000. A very desirable air-cooled 911SC that has just come out of long-term ownership and is mechanically sound.

For $44,500

1995 Porsche 993 Carrera Coupe #14343

Presenting this gorgeous special ordered 1995 Porsche 993 Carrera Coupe that is available in its (special order) color code #39S Aventura Green Metallic with a black interior. The 993 comes with a clean Carfax and is equipped with a 6-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power mirrors, power windows, power steering, sunroof, 4-wheel disc brakes, jack, spare tire, and tool kit. Both the color code and options sticker are still in place under the hood. Also included are service documents and receipts dating back to 1995 to 2018 totaling over $20,000. An amazing color combination air-cooled Porsche that is mechanically sound.

For $67,500



1998 Porsche 993 Carrera S Coupe #14093

Presenting this exciting 1998 Porsche 993 Carrera S Coupe featured with 67,634 miles on the odometer and is available in its factory color code #84A Guards Red with a black interior. The vehicle comes equipped with a 6-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power windows, power mirrors, power steering, sunroof, 4-wheel disc brakes, Porsche Twist wheels, and spare tire. Both the color code and options sticker are still in place under the hood. Also includes the original owner's manual as well as service documents and receipts dating back from 2001 to 2011 totaling over $19,000. The last and most desirable year of the famous air-cooled 993 that is ready to be driven and enjoyed. A well-equipped original California car that is mechanically sound.

For $129,950

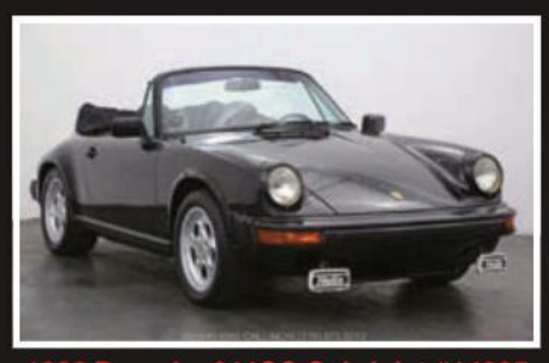
1998 Porsche 993 Carrera S Coupe #13650

Here is an original 1998 Porsche 993 Carrera S Coupe that is available in its (special order) factory color code #L3AX Zenith Blue with a sand beige interior. The vehicle comes with a clean Carfax and is equipped with a 6-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, sport suspension, engine sound package, LSD Limited Slip Differential with 40% lock, ABD Automatic Braking Differential (Traction control), Board computer, Cassette-radio Becker Porsche CR-210, 6-disc CD changer Becker Porsche CDC-3, air conditioning, sport seats with height electrically adjustable (left & right), leather front seats, power mirrors, power windows, power steering, sunroof, Dark Rootwood shifter, Dark Rootwood parking brake lever, Stainless steel tailpipes (oval), 4-wheel disc brakes, 18" Technology wheels (lightweight hollow spoke), jack, tool kit, and air compressor. Also included are paint meter reading photos as well as receipts totaling over $15,000. An excellent vehicle that is ready to be driven and enjoyed. Do not miss your chance to jump into the ownership of this well-equipped air-cooled sports car that is mechanically sound. For $167,500

1976 Porsche 911S Coupe #14031

This highly desirable 1976 Porsche 911S Coupe is available in its factory color code #027 Guards Red with a grey interior. The vehicle comes equipped with a manual transmission, Flat 6 Cylinder 2.7-liter engine, 4-wheel disc brakes, and Cookie Cutter wheels. A well-priced 911S Coupe that could use some light cosmetics and is mechanically sound.

For $39,950



1983 Porsche 911SC Cabriolet #14095

The 1983 Porsche 911SC Cabriolet featured here with matching numbers is available in its factory color code #700 black with a black interior. This vehicle comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.0-liter engine, air conditioning, power windows, soft top, boot, Hella fog lights, 4-wheel disc brakes, and Phone Dial wheels. A well-priced 911SC that has just come out of the dry desert state of Arizona and is mechanically sound.

For $38,500

2004 Porsche 911 Carrera 4S Cabriolet 6-Speed #14360

Presenting this well-equipped 2004 Porsche 911 Carrera 4S Cabriolet 6-Speed that is available in its factory color code #Y1 Seal Grey Metallic with a black interior. The C4S comes with a clean Carfax and is equipped with a 6-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, power mirrors, air conditioning, heated seats, power windows, power steering, power seats, power soft top, 4-wheel disc brakes, Porsche Twist wheels, and spare tire. An excellent original car that is mechanically sound.

For $26,500

1964 Porsche 356C Factory Sunroof Coupe #13555

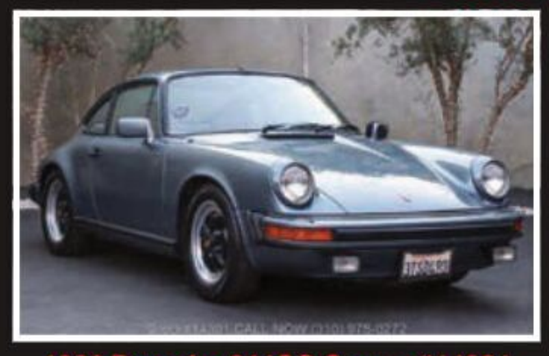
Here is a rare 1964 Porsche 356C Factory Sunroof Coupe featured with matching numbers (Kardex copy included). Available in its factory color code #6407 Signal Red with a black interior. The vehicle comes equipped with a 4-speed manual transmission, 1600c engine, dual carburetors, sunroof, matching numbers hood/decklid, chrome wheels, and 4-wheel disc brakes. An excellent 356C Coupe that is ready to be driven and enjoyed. This extremely sought-after Porsche had the same owner since 2000 and is mechanically sound.

For $119,950

1956 Porsche 356A Coupe #13995

Here is a beautiful 1956 Porsche 356A Coupe featured with matching numbers (Certificate of Authenticity copy included). Available in its highly desirable factory color combination of black with a red interior. The vehicle comes equipped with a 4-speed manual transmission, 1600 engine, dual carburetors, matching numbers hood/decklid, beehive tail lights, spare tire, tool kit, and jack. Also included with this vehicle are service records and receipts dating from 2006 to 2016 totaling over $70,000. An excellent original 356A Coupe that is ready to be driven and enjoyed. This extremely sought-after air-cooled Porsche is also mechanically sound.

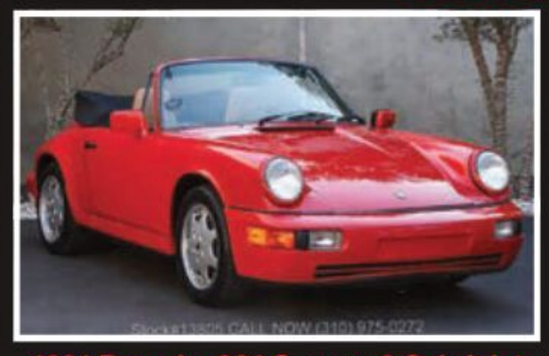
For $185,000



1983 Porsche 911SC Coupe #14381

Presenting this one owner 1983 Porsche 911SC Coupe featured with matching numbers (Certificate of Authenticity copy included). Available in its factory color code #661 Slate Blue Metallic with a linen interior. The 911SC comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.0-liter engine, air conditioning, power windows, sunroof, 4-wheel disc brakes, Fuchs wheels, jack, and spare tire. Also included is the original owner's manual, warranty/maintenance booklet (service stamps included) as well as service documents and receipts dating back from 1989 to 2020 totaling over $23,000. An amazing color combination air-cooled 911 that is mechanically sound.

For $59,950



1991 Porsche 964 Carrera 2 Cabriolet #13805

Here is a 1991 Porsche 964 Carrera 2 Cabriolet featured with 43,600 and available in its factory color code #80K Guards Red with a sand beige interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power windows, power steering, soft top, boot, 4-wheel disc brakes, and D90 wheels. A well-equipped and taken care of low mileage 964 Porsche that is mechanically sound.

For $62,500

1994 Porsche 964 Carrera 4 Wide-Body Coupe #13921

Here is a one-year limited production factory 1994 Porsche 964 Carrera 4 Wide-Body Coupe (1 out of 267 produced) featured with 64,031 miles on the odometer and is available in its factory color code #741 black with a sand beige interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power windows, power steering, Dark Rootwood shift knob, 8-way electrical seat (left), sunroof, 4-wheel disc brakes, and 5-spoke wheels. Do not miss your chance to jump into the ownership of this highly collectible air-cooled factory wide-body coupe. This well-equipped sports car is also mechanically sound.

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one hundred specifically for the 904. It was officially rated at 180 net bhp at 7,200rpm with a racing exhaust, with which it also yielded 145lb-ft torque at 5,000rpm. The respective power and torque figures were 155 and 124 when the road-going exhaust was fitted. Deliveries of 904s were split more or less evenly between the two types of exhaust systems.

Torque from the 139-kilogram engine to the 904's transaxle was transmitted through a 7.9-inch single-disc clutch. Essentially, the transaxle was the same unit that was to be used in the 901, with top gear closest to final drive and the lower ratios spaced progressively away from top toward the far end of the case. First, second and third gears were still engaged on the lower shaft, but the clutches for fourth and fifth were moved to the upper shaft, where the larger gears were better able to accommodate the engagement clutches.

A ZF limited-slip differential was fitted, but this designation no longer identified the sliding-cam differential Porsche had used in many of its creations since the mid-1930s. Based on an American patent, the new ZF design used four differential pinion gears between side gears backed by two packs of clutch discs, each controlling the movement of one axle shaft. From the transaxle, the drive was taken to the wheels by exposed Nadella universal-jointed shafts. Inboard joints had a toggle-type swinging action allowing them to accommodate the changes in shaft length required by rear-suspension geometry. This shaft was shared with the 901.

In the Porsche tradition, three prototypes were built, each using pre-production GRP body parts and the less powerful Type 587/2 engine, primarily because Mezger was still perfecting the 587/3. The first test was on the skid pad at Weissach on 29th August 1963. This was followed in early October by intensive and accelerated tests conducted at the Nürburgring (for handling) and at Hockenheim (for durability). Front-suspension guidance was improved with the use of Boge's Flanbloc bushings, while metal-to-metal joints were fitted to the rear suspension. After final trials in late October, the rear-suspension pivots were lowered thirteen millimetres to provide more ground clearance and suspension travel. Tests of the prototypes also showed how the 356 C disc brakes, as originally installed, weren't up to the demands of competition use in the 904. Brake discs were therefore improved in detail, with discs 10.5mm thick being used instead of the 12.7mm discs also tested.

Air for the rear brakes was taken in at the rear quarters of the roof through protruding scoops in the production 904s. Nicknamed 'ears' at Porsche, these replaced the grilled openings of the much-photographed prototypes. Their original purpose was, in fact, to exhaust air from the engine room. "The idea behind it," Butzi explained, "was that hot air was sucked out. The aim was to have the aerodynamic shape achieve 'removal by suction', but there was no time to work the design perfectly." The steering column was telescopic in order to change the wheel position because the seats, set into recesses

Above The 904 was the first Porsche not to use a trailing arm front and swing axle rear suspension system

Bottom left and overleaf Colin Davis and Antonio Pucci took first place at the 1964 Targa Florio with the 904

Above Swinging up the front lid of the 904 reveals the fuel tank, a spare wheel, essential tyre-changing tools and the occasional act of vandalism from a former factory driver!

moulded into the floor pan, were not adjustable. Pedals, on the other hand, were adjustable to three different distance locations. Moving a lever by the seat freed them and a spring pushed them to the nearest position. Unsurprisingly, owners of 904s were encouraged to avoid adjusting the pedals while driving the car.

WARM WELCOME

On the left of the dashboard were controls for the optional Webasto gasoline heater, placed in the very nose of the car. Sixty-seven of the production 904s left the factory with this heating system in place. Also under the front deck lid were the spare wheel, jack, tool kit (with some twenty tools), a fan belt and the twenty-nine-gallon fuel tank, with a filler protruding through the lid. The large tank's forward placement accounted for a marked change in the 904's weight distribution as petrol was consumed — front/rear balance was 42/58 percent at the kerb with an empty tank, altering to 48/52 percent with the tank filled to the brim.

During November 1963, Heinkel delivered the first production chassis-body unit to Porsche, thereby providing concrete evidence the tooling was ready and series building could commence. The final test of all development modifications was held at the Nordschleife in mid-November, with Herbert Linge lapping in an excellent nine and a half minutes. Accordingly, Porsche decided the time was right for a showing of the car and scheduled its unveiling for 26th November at the Solitude circuit in Stuttgart. The price of obtaining a 904? Fixed at DM29,700 ($7,425) ex-works.

Tall trees around the roads of Solitude were dripping

Below Mid-engined layout was inherited from Porsche's 718 RSK racing machine

Zum 5. Mal
Gesamtsieger

TARGA FLORIO 1964

Gesamtklassement und GRAN TURISMO:

1. PORSCHE Carrera GTS/904 — Barone Pucci/C. Davis
2. PORSCHE Carrera GTS/904 — H. Linge/G. Balzarini
7. PORSCHE Carrera GT/2 ltr. — G. Klass/J. Neerpasch

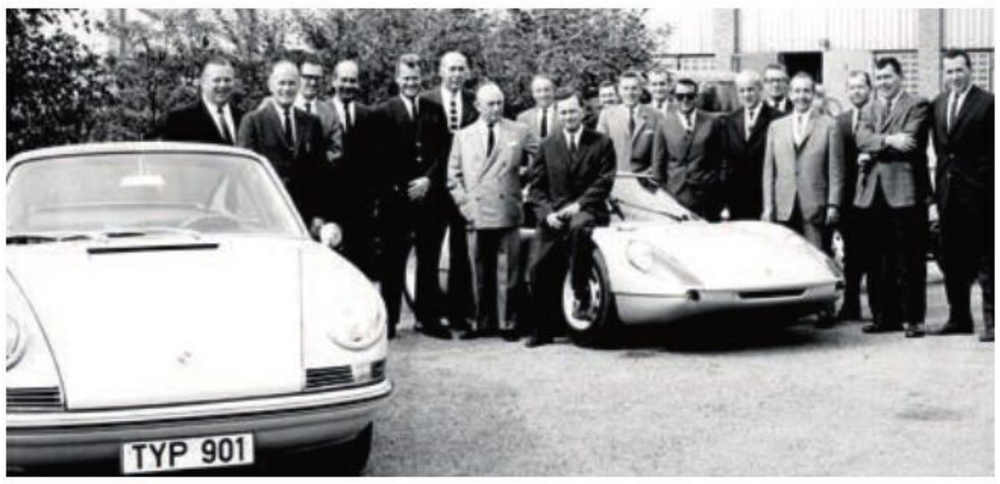
Prototypen:

1. PORSCHE Carrera GTS/8 Zyl. — E. Barth/U. Maglioli

BP Dunlop Bosch

PORSCHE

Printed in Germany Dr.-Ing. h. c. F. Porsche KG. Januar 1964 Entwurf: Volz

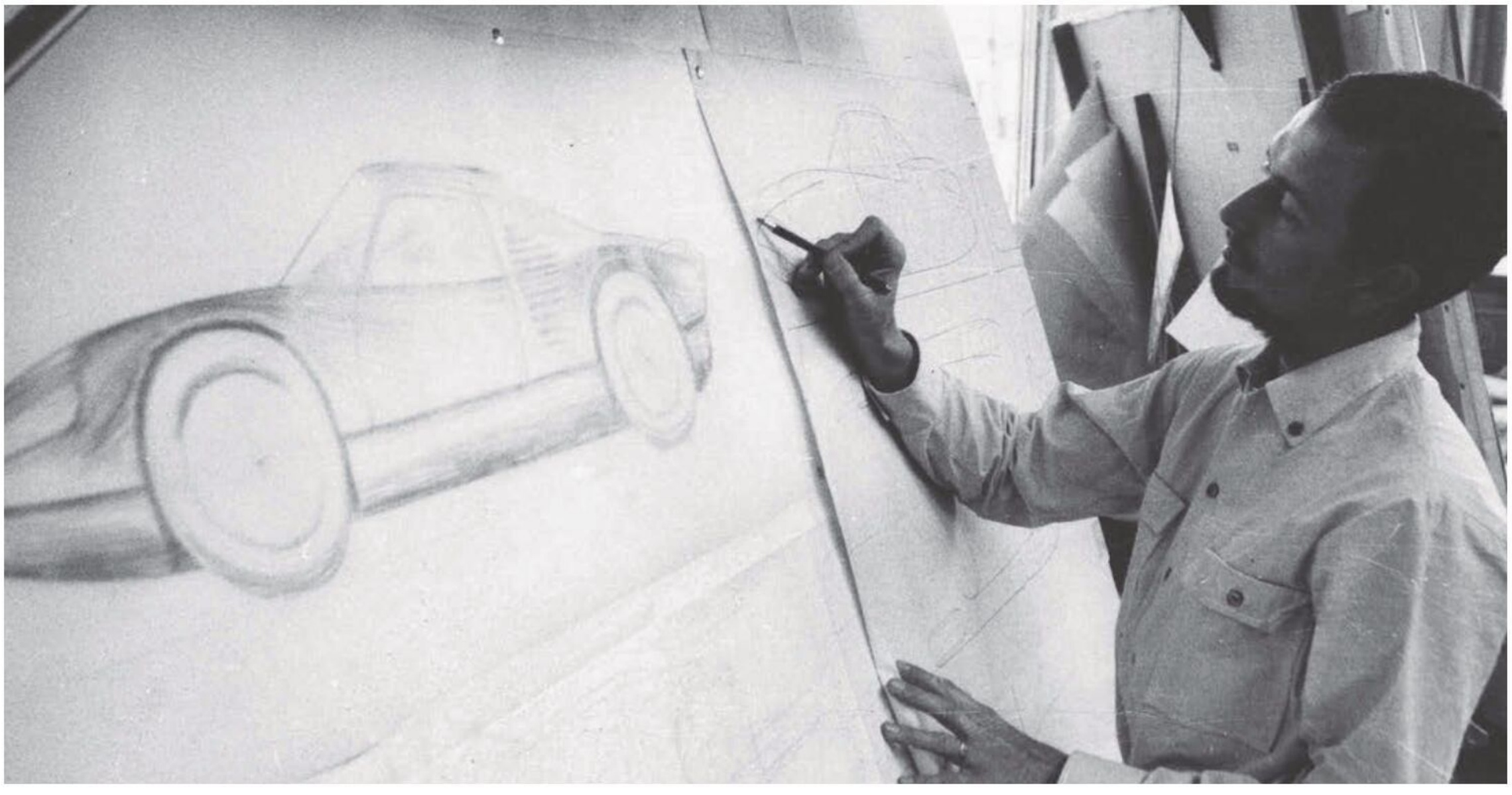


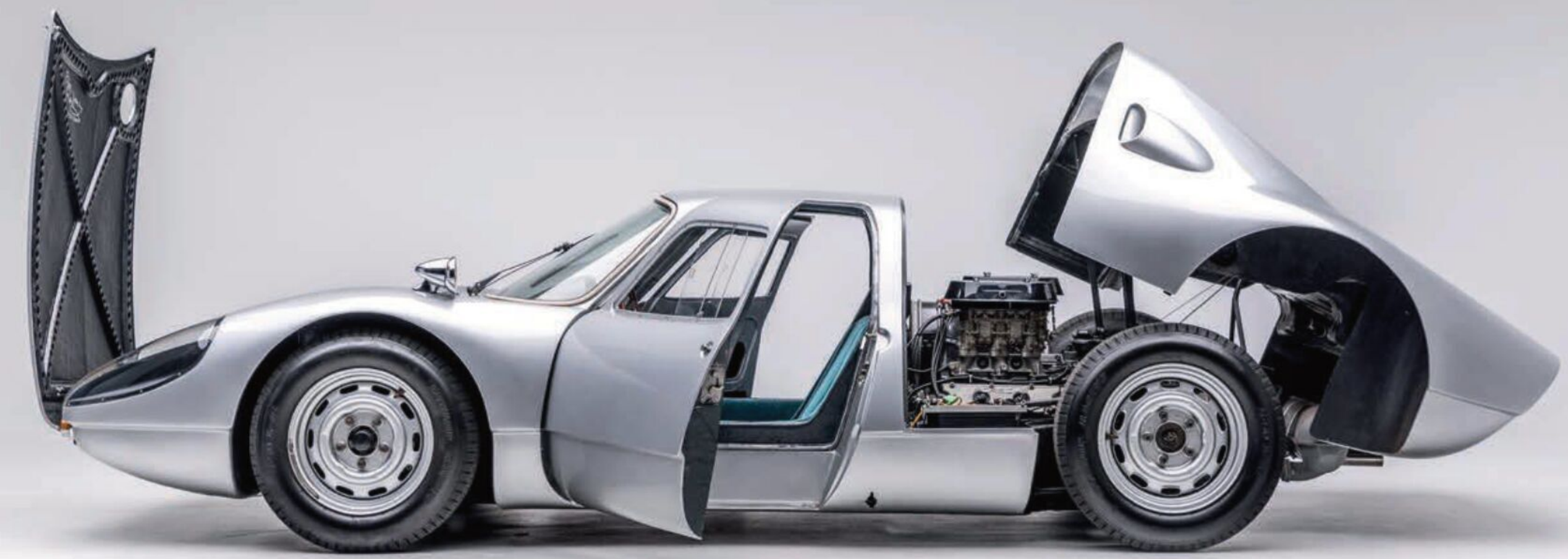
Above Swiftly renamed Carrera GTS owing to the same naming rights problem plaguing Porsche with the then new 901, the 904 celebrated its première at the Geneva Motor Show

with rain when Linge and Edgar Barth chauffeured members of the press at high speeds in the 904 prototypes. Prospective customers tried the cars, too. Within two weeks, all but twenty-one of the ninety cars which would be sold — the first ten chassis numbers being kept by the works team — were spoken for. This was a reassuring reception for the radical new Porsche. Indeed, up at Speyer, production of 904 hulls was in full swing after the year-end holidays. Heinkel initially supplied raw bodies-in-white, but Porsche soon changed this to a system in which the aircraft company fitted each body with glazing, an electrical harness, instruments and the fuel and oil cells.

Paint was also applied at Heinkel, with cellulose lacquer chosen because it looked good and was easy to repair. With a staff of eighty employees, Heinkel was able to make two completely dressed hulls a day. This built up a comforting backlog at Zuffenhausen, where the rate was nearer one finished car every twenty-four hours. So strong was demand for the Carrera GTS, preparations for the building of a further hundred units — including the ordering of subassemblies, such as front and rear suspensions — were started in the spring of 1964. In the summer, however, these plans were suspended. Sadly, despite anticipated extra deliveries, on 27th July, a letter from the Porsche sales department went out to all dealers advising them one hundred 904s had been built and that no more would be made. Not until late 1965, the letter said, would a new competition Porsche be available for sale. How many 904s were *really* made, though? A factory document dated 16th April 1964 lists available serial numbers for sale, excluding the earliest ones, up to 106. The last four were described as being "made with spare-part body structures" — an indication of the strength of demand for the car. According to factory historian, former works driver and Weissach

Below The 904 gave Butzi Porsche a prized opportunity to create a complete car from scratch, working with engineer, Gerhard Schröder, and modeller, Heinrich Klie





development guru, Jürgen Barth, final production volume for the Carrera GTS came to 109 units "and possibly up to ten spare chassis and bodies."

LOVE LETTER

The first deliveries were shown as occurring on 17th January 1964, with two silver cars — chassis 011 and 012 — earmarked for Otto Zipper in Los Angeles. Other United-States-bound cars were the first 904s to race. Two were entered in the Daytona Challenge Cup on Valentine's Day 1964, in which the cars placed fifth (Bob Hagestad) and ninth (Chuck Cassell) among much heavy American metal. Then, in a report dated 26th March, the Porsche expeditionary force detailed technical problems they experienced with the cars at Sebring. Their post-race inquest led to many detail changes on the last 904s assembled.

To start with, new throttle cables and mountings were installed. Fuel tanks, which had tended to split at the seams, were more robustly welded. The front engine bearer was cut to make it easier to change the fan-drive belt and, because the pedals were found to work improperly in the most distant adjustment position, that position was blocked off. Additionally, ventilation of the engine bay was improved with reference to the results of six different test arrangements tried on the autobahn near Baden-Baden on 8th April.

These and other improvements played a part in one of the most unexpected of all Porsche victories. In his press release of 15th November 1963, announcing this new model, Huschke von Hanstein wrote, "Porsche does not intend to build 'airport-racers', but rather cars which can be entered successfully in all kinds of motorsport, including the Targa Florio." Just five months later, on 26th April 1964, Porsche scored its fifth outright victory in that very race and did so with a production 904, followed in second place by another just like it.

In the legendary Sicilian endurance event, both 904s outlasted Cobras, Ferraris, Abarth-Simcas and even another 904 which once held the lead. The winners of the race were Porsche drivers, Colin Davis and Antonio Pucci, followed by fellow works pilots, Linge and Gianni Balzarini, in second place. This amazing success under the brutal conditions of the Italian enduro proved Porsche engineers had met their goals in designing and testing the 904 — and then some. **CP**

Above Even with its internal organs exposed, is this the most beautiful Porsche race car ever assembled?

Below The 904 was already well-established as a top-rank race car when this Mitter/Buzzetta machine won its class in the 1966 24-hour race at Daytona Speedway

Bottom left Using internal lighting, Porsche dramatised its first composite body, which made by Heinkel Flugzeugbau and married with a ladder-type frame

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RETURN OF THE KING

Restored to as-new condition, this championship-winning 962 was recently reunited with its key personnel to celebrate completion of the work in advance of Group C's fortieth anniversary...

Words **Robert Smith** Photography **Porsche**

962 C

Hans-Joachim Stuck has had to wait almost thirty-five years for a reunion with the fully refurbished 962 C on these pages. The surprise was therefore all the greater when, after his arrival at Porsche's Weissach Development Centre a few weeks ago, the silk cloth was drawn back to reveal the twin-turbocharged sports prototype he drove to victory back in 1987. Now one of the star cars in the Porsche Museum's fleet of historic motorsport machines, the gorgeous flat-six-powered beast has been restored to its original condition, a process taking just eighteen months. "It feels like coming home," smiles the former Formula One, DTM and Le Mans driver, stroking the car's left wing.

Following the decade Porsche spent developing the 911 into the world's most successful race car, a new era brought new challenges in the form of the FIA's Group C sports prototype rules for the World Sportscar Championship. Under the watchful eye of Porsche Motorsport chief, Norbert Singer, the 956 was brought in as a replacement for the 936, which won at Le Mans in 1976, 1977 and 1981.

Featuring an aluminium monocoque and a mid-mounted turbocharged flat-six developing close to 650bhp, the 956 clearly shared much in common with the Porsche prototypes of yore, but where the newer sports car excelled was in its aerodynamic design, allowing all three works 956s to take podium places at the 1982 24 Hours of Le Mans. In fact, so successful was the 956's aero, it locked out nine of the top ten places at Le Mans in 1983, the same year the

Nürburgring Nordschleife lap record was set by Stefan Bellof, who used the potent Porsche to complete the gruelling circuit in a time of just 6m 11.3s.

Seven of the top ten finishers at Le Mans in 1984 drove a 956, a car used as an early testbed for Porsche's now celebrated PDK transmission system, as well as for the Porsche P01 Formula One engine used by McLaren. Victory came Porsche's way in France again in 1985, with both first and second place occupied by the 956 and six of the following eight places taken by a mix of 956s and Porsche's newer prototype, the 962, which was a direct development of the older car and built to adhere to new IMSA GTP safety regulations, chiefly concerning the position of a driver's feet, which in the case of the 956, were somewhat worryingly situated ahead of the front axle centreline. Stuck romped home to third place overall in the no.14 Rothmans 962, ably assisted by Derek Bell, who would go on to drive the model to twenty-one victories between 1985 and 1987.

DOMINANT DECADE

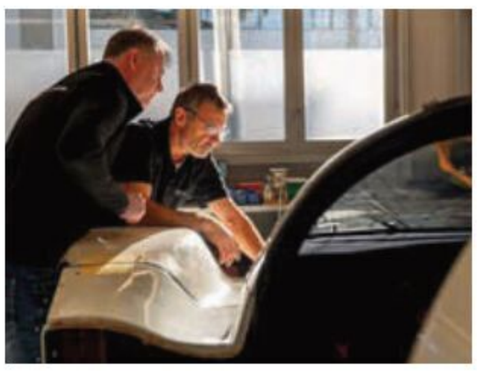
A twin-turbocharged flat-six propelled the 962 to multiple world championships, as well as welcome Le Mans wins in 1986, 1987 and — thanks to an exploited loophole in race regulations — again in 1994, a full ten years after the 962's debut. Along with Bell and American works driver, Al Holbert, Stuck was the controls of the victorious 962 in Sarthe for both the 1986 and 1987 wins. The engine initially used for the model in 1984's IMSA GTP class was a development of the older 934's flat-six. The resulting Type 962/70 was a quad-cam, twenty-four-valve air-cooled 2,869cc boxer using a single turbocharger and good for 680bhp and 487 lb-ft torque. For the World Endurance Championship, however, the 962 was powered by a three-litre water-cooled development of the twin-turbo flat-six. Needless to say, with fifty-one championship titles and seven Le Mans victories, the 956 and 962 twins are rightly regarded as two of the world's most successful race cars.

"By arranging this reunion after more than three decades, we have not only surprised Stuck, we have also taken a little journey through time," says Achim Stejskal, Head of Heritage at the Porsche Museum in Stuttgart. "The car was originally built in Weissach, which is why we considered this venue the perfect setting for its resurrection." As well as Singer, graphic designer Rob Powell, the man responsible for the car's black, yellow and red livery, is in attendance.

Thirty-five years have passed since Stuck won Germany's prestigious and fiercely contested ADAC

Above The classic 'let's get ready to put the car back together' photo

Below Hans-Joachim Stuck driving the 962 C in the ADAC Würth Supercup championship's 200 Miles of Norisring race in 1987



Above Brecht starts with disassembly of the 962 C following inspection and the compilation of a list of parts to be produced at Porsche's foundry in Weissach

Würth Supercup with this particular Porsche. During the inaugural series for Group C sports car prototypes, he tested the early iteration of the PDK dual-clutch transmission at higher racing speed than it had previously been subjected to. Such was the system's success in these punishing conditions, it went on to become a staple in new Porsche vehicles. It's worth noting, the appearance of the 962 seen here changed before the second race (the 200 Miles of Norisring) of the competition, when oil giant, Shell, joined the team as sponsor after sensing victory was on the cards. Porsche also competed with yellow and red the following year, further employing Stuck to defend his Supercup title, which he did successfully.

POWELL BROUGHT ALONG VARIOUS THICKNESSES OF TAPE, STENCILS AND SKETCHES FROM THIRTY-FIVE YEARS EARLIER

The Porsche pictured before you began its second life as a test car in the aerodynamics department at Weissach after Stuck won the Supercup competition for a second time. Armin Burger and Traugott Brecht from Historic Motorsport were jointly responsible for the recent rebuild, which kicked off during the first period of lockdown in 2020. "We kept passing this car each time we walked through the warehouse," Burger recalls. "Then, about a year and a half ago, we decided to get it out of there, transfer it to Weissach and start work on the restoration." He and his team had to rebuild many parts because originals were long gone. "The car was missing many components, presumed lost during its second life as an aerodynamics test mule, but cooperation with the other departments at Porsche was great. Everyone seemed to be searching for what we needed, resulting in many previously absent items being found within a radius of thirty metres!" he laughs.

At the very beginning of the reconstruction work, he invited Powell and Singer into the historic motorsport workshop at Weissach. "When you hear the guys who worked on this car in period talking about it, many mysteries are solved. We learned an incredible amount from these two witnesses who were right there when it all happened," Burger continues, before telling us he and Brecht completely rebuilt the car's underbody, changed the arrangement of the radiators and made many other bodywork adjustments.

Below The car enters the pits during the Supercup round at the Nürburgring in 1988

ART ATTACK

Powell brought along various thicknesses of tape, stencils and design sketches from thirty-five years earlier. "Stuck immediately liked the design of my first sketch back in the day," he recalls. The German speed merchant gives him an affirmative nod across the roof of the car. "I still think the colour combination of yellow and red looks modern. We did a great job with this car," Powell adds, sliding rolls of coloured tape over his arm. Meanwhile, Stuck, who not only drove this 962, but was involved in the model's development, patiently waits for his turn to tackle the first laps on the run-in and test track. "I'm a big fan of the PDK dual-clutch transmission and I'm proud to have tested it in the 962 all those years

ago. Being able to keep my hands on the steering wheel when changing gears at full throttle felt great right from the start," he says. "I can see why so many owners of today's new Porsche production cars choose PDK over a manual gearbox."

A second surprise awaits Stuck just a few metres from the test area, when he discovers the red race suit he wore in the 1980s is waiting for him. He appears even more delighted to discover he can still fit into it. "My time with Porsche was the most successful of my entire career," he says, acknowledging time served as a driver for teams fielding cars from other popular German manufacturers, including Audi, BMW and, in 1996, Opel, when he competed for Keke Rosberg's team in the International Touring Car Championship, driving a V6-powered Calibra equipped with four-wheel-drive.

He dons his white star-decorated helmet and climbs into the 962 C's cockpit. "We gave Stucki a very warm welcome at Porsche," Singer reveals. "He was always one of the drivers whose feedback I could interpret accurately, much like data from a sensor." Stuck starts his first lap on the two-and-a-half-kilometre test track in Weissach and those of us lucky enough to watch fall silent as the Group C racer springs to life. Well, almost all of us. "This car automatically takes me on a journey back in time and brings back many fond memories," Singer smiles, as the force-fed boxer propelling the Porsche makes itself known. "I will never forget the atmosphere at the race tracks."

Following retirement decades ago, this special 962 made its first public appearance at the Porsche Museum's digital Sound Night a few weeks ago. It will attend many more engagements throughout 2022, with driving and presentation events planned to mark forty years of Group C in the coming months. "The 962 was one of the few cars I was allowed to drive on my own, without team-mates and with exactly the setup I wanted. You never forget a car like this," Stuck concludes, promising to celebrate Group C's fortieth birthday in style. We don't doubt him. **CP**

Above Back up and running, the car is due to participate in many Group C celebratory events throughout 2022

Bottom left Disassembly and restoration of the car took place in the historic motorsport department at the famous Weissach Development Centre

Below Powell sits in front of the car before Norbert Singer recalls the car racing in period

Bottom right Fresh out of the Weissach paint booth and ready for body graphics

Holidays are coming...

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WAR CHEST

Following last month's issue of Classic Porsche, celebrating ninety years since Ferdinand Porsche opened his design and engineering studio in Stuttgart, we take a look back at the earlier part of his career, when he penned ingenious land-based military vehicles while employed at Austro-Daimler...

Words **Shane O'Donoghue** Photography **Porsche**

Ferdinand Porsche was an experienced and accomplished engineer long before his name was displayed on an air-cooled sports car. Aspects of his very early career, such as his work creating the world's first petrol-electric hybrid vehicle (the 1900 Lohner-Porsche Mixte), have been well documented, but his designs resulting in combat machinery for armed forces are less widely talked about. This story begins in 1906, when two separate events resulted in Porsche – then just thirty-one years of age – landing the job of Chief Engineer at Austro-Daimler. The first was the regrettable departure of the Lohner company from the automotive world. The firm simply couldn't make a commercial success of Porsche's part-electric technology. In the same year, Austro-Daimler received a huge injection of capital from a new owner, Emil Jellinek, who wanted to transform the business from a glorified workshop outpost of Daimler-Motoren-Gesellschaft to a fully-fledged automotive firm in its own right.

Jellinek was a successful diplomat and businessman, eventually settling on car sales as a way to make his fortune. His fame, however, comes from conceiving the Mercedes brand, named after his first daughter. Jellinek paid Daimler-Motoren-Gesellschaft to develop a car to his exacting specifications and, for assorted reasons, it was launched as the Daimler-Mercedes. It, and the Mercedes brand, very quickly became a tremendous success, leading Daimler-Motoren-Gesellschaft to pay

Above The heavy-mortar carrying Porsche-penned M 12 pulling car, also known as *Hundred* because of its 100bhp six-cylinder engine, featured individual cylinders, a motorised winch, a tensile load of twenty-four tonnes and fifteen percent climbing ability under full load

Above Newly developed M12s in the factory yard of the Austro-Daimler company in Wiener Neustadt, with Ferry Porsche and his sister Louise standing atop the vehicle second from right

Below The Austro-Daimler Landwehr-Train on a test drive on the Semmering south of Wiener Neustadt in 1913

Jellinek handsomely for use of the Mercedes name. He used the funds to invest in Austro-Daimler and was responsible for appointing Ferdinand Porsche in the position vacated by Paul Daimler himself. The renowned Eduard Fischer, however, remained. He and his brother had started the business as a specialised engineering production facility in the Austrian city of Wiener Neustadt way back in 1866. By 1899, the Fischers had forged close links with Daimler-Motoren-Gesellschaft in Germany, resulting in their business being rebranded as Daimler-Motoren-Kommanditgesellschaft Bierenz, Fischer & Company. From then until 1906, as the name suggests, it manufactured Daimler products and parts.

Encouraging yet another name change, this time to Austro-Daimler, Jellinek's investment was used to update the company's facilities, located in the south of Vienna, close to the Hungarian border. The electric and petrol vehicles he oversaw, however, were flops. Losing money hand over fist, he'd abandoned the business by 1908. Fischer and Porsche stayed put, however, and were fortunate to secure an order from the Austro-Hungarian army soon after Jellinek's departure. Earlier, in 1906, they'd worked on the M 06, essentially a four-wheel-drive military 'tug', which looked a little like a pickup thanks to a cramped and upright two-seat cabin, a load bed on the rear and its engine just aft of the front wheels. The M 06 was designed for towing heavy loads over rough terrain.

The contract Austro-Daimler received in 1908 was for a number of new 'tugs' to tow heavy mortar weaponry. All interactions between the company and the military were initially through Captain Robert Wolf, head of the army's research and development department and an enthusiastic fan of vehicle motorisation. Wolf's commanding officer, Archduke Leopold Salvator, had the final say, though. Remarkably, Salvator patented his own idea for a four-wheel-drive system in 1907. In other words, he didn't need a to be convinced of the merits of such a design. Wolf, meanwhile, had already stipulated any such vehicle should also feature a powerful winch to enable pulling itself and a heavy load out of challenging situations.

TRACK AND FIELD

Luckily, Porsche didn't have to start work on the army's tugs from a blank sheet of paper. His predecessor, Paul Daimler, pioneered a new four-wheel-drive system to underpin a stillborn armoured car project in 1904. This formed the basis of the M 06 and the new M 08 tug, nicknamed the *Robbe* (*Seal*). Where the M 06 used an 8.5-litre engine producing 50bhp, the M 08 featured a new 13.9-litre six-cylinder unit producing close to 80bhp. This vehicle was developed into the more capable M 09 (nicknamed *Titan*) in 1911.

By then, the Škoda Works company (yes, that one) had established itself as the largest manufacturer of arms for the Austro-Hungarian army, with vast experience in heavy steel castings. It produced a wide array of huge cannons, mortars and howitzer weapons and, to transport them, Karel von Škoda forged a partnership with Austro-Daimler. By 1913, Škoda took a controlling share in the firm, though Porsche was effectively in charge of

day-to-day operations. Impressively, the company employed more than 1,000 staff at this time.

In 1906, Škoda had secretly started development work on a new siege howitzer, designed specifically to penetrate concrete forts in Belgium and Italy. The Škoda 30.5 cm Mörser M.11 was ready by 1912 and, even today, its stats are staggering. As the name suggests, it fired a shell measuring 30.5-centimetres in diameter, the heaviest of which weighed 384kg. In its initial specification, the maximum firing range was quoted as seven miles and, when a target was hit, the shell could penetrate reinforced concrete two metres thick. With a well-drilled crew, up to twelve rounds an hour was possible, causing devastating damage in a very short period of time. These shocking figures were of little use if the weapon couldn't be mobilised to where it was needed, though. For this, Škoda worked closely with Porsche. It's important to note, though the M.11 could be broken down into three sections (the firing platform, carriage and three-metre-long barrel) for transportation, it still weighed nearly twenty-one tonnes and required a team of up to seventeen men to operate. Obviously, they too had to be transported.

The result of their collaboration was the Austro-Daimler M 12 tug, known as *Hundred*, referencing the power output of its 20.3-litre six-cylinder engine. This vehicle looked more truck-like than its predecessor and it weighed nearly eight tonnes. Double rear wheels of larger diameter than the fronts were fitted and, though the M 12 retained Paul Daimler's four-wheel-drive system, the vehicle was also equipped with a locking centre differential to allow it cope with difficult terrain.

UPHILL BATTLE

History shows the combination of Škoda's howitzer and Porsche's tug had a strong influence on early engagements of the First World War. In fact, the design of the tug was the subject of continual improvement and evolution until 1916. In the interim, however, the Holt, an American vehicle with caterpillar tracks, was shown to

Above The 150bhp six-cylinder petrol engine of the C-train generator car was coupled to a 90kW direct current dynamo

Below Austro-Daimler 'Mechanical Horse' was designed to pull a plough and was also used during the war to pull light pieces of artillery

Above 1910 second-generation M 08 with the bonnet open and being inspected by personnel from the Austrian Army

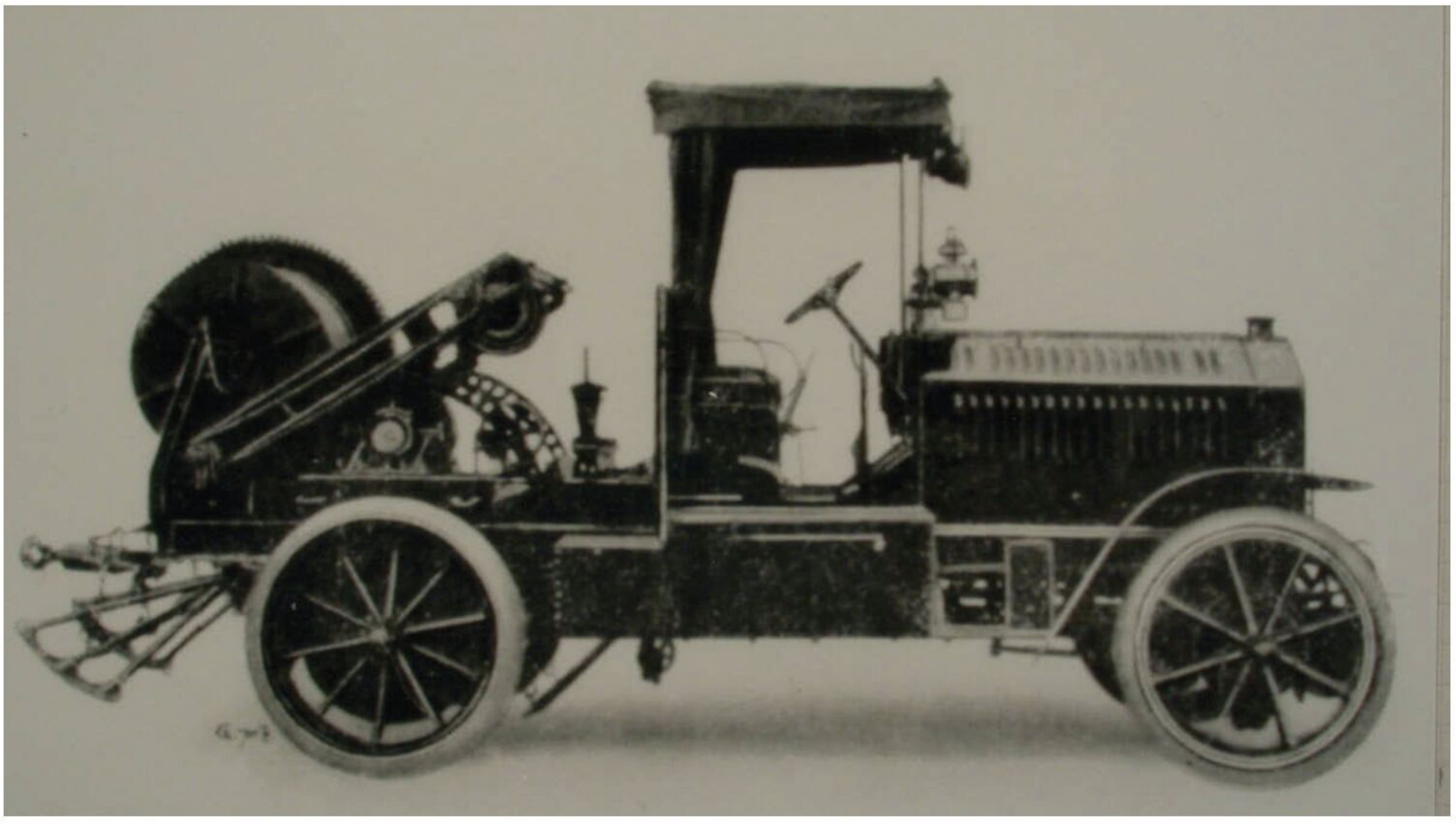
Top right Austro-Daimler C-Zug gun train with generator car and trailer cornering in the German mountains during the first World War

Below M08 cable winch devices at the front and rear span three hundred metres and could be operated from the driver's seat

be better over poor ground than the Austro-Daimler tugs. Porsche set about further updating his designs and the end result was the mighty M 17.

Labelled *Goliath*, the M 17 was a huge vehicle. It weighed ten tonnes and could tow the complete Škoda M.11 weapon with space for shells on the tug itself. A new engine was required, one heavily influenced by Porsche's innovations in the field of aeroplane engines at that time. It was a four-cylinder unit of 13.5-litre capacity, with inclined overhead valves. Though the power rating of 80bhp is down on that of the M 12, it was produced at just 800rpm, which equates to approximately 530lb-ft torque. Top speed was 9mph. Just as importantly, this vehicle used four huge steel wheels with wide rims, replacing the solid rubber tyres of previous tugs. On the rims were sharp cleats digging into soft ground to better aid traction, while the wide design of the wheels distributed weight more efficiently, furthering the vehicle's off-road capabilities. Škoda's 15 cm Autokanone M. 15/16 was the first heavy field gun designed specifically to be transported by Austro-Daimler's tugs and the M 17 was given this responsibility.

As brilliant as Porsche's tugs were, they had limitations, especially when it came to traversing weak bridges, tight uphill corners and poor ground. An alternative vehicle was conceived by major Ottokar Landwehr von Pragenau, credited with inventing the idea of a multi-wheeled land train. Austro-Daimler was contracted to develop his idea into an operational vehicle in parallel with the company's work developing tugs. Porsche had to toil within the confines of strict design criteria, including a maximum load per axle, the need to



conquer tight corners and the ability to scale or safely descend a twenty-three percent gradient. The finished vehicle also had to be capable of reversing the way it came and, crucially, there was a need for operation on rails. The switch from road to rail had to be achieved in a relatively short period of time.

Porsche dusted off his work on the Lohner-Porsche Mixte for inspiration and, by 1910, the first *A-Zug* (*A-Train*) was ready. It used a massive 20.3-litre petrol engine with six cylinders up front producing 120bhp at 1,000rpm (627lb-ft torque). Instead of channelling this output to the wheels via a gearbox, it was used to turn a huge DC generator on the tractor unit to generate electricity. This was then used to power electric motors on the tractor's rear wheels. The unusual appearance, characterised by little over the front wheels, is thought to be due to the need to pilot the vehicle using unassisted mechanical steering – all of the weight was biased to the rear.

The real cleverness, however, came from distributing electricity along the length of the train via a thick, but flexible, cable. This powered electric motors on every second trailer. The coupling of the trailers was in itself clever, too, chiefly because they featured a leading front axle and a steering second axle, using gearing to keep the trailers exactly on-track with those in front. Pneumatic brakes were employed and, to meet the need to reverse back the way it came, the last trailer featured controls to steer and operate the whole train. Ingeniously, the tractor unit could be decoupled from the train and could cross, for example, a weak bridge, on its own, without disconnecting the electrical cable joining it to the trailers. Instead, it uncoiled, allowing the trailers to follow behind separately,

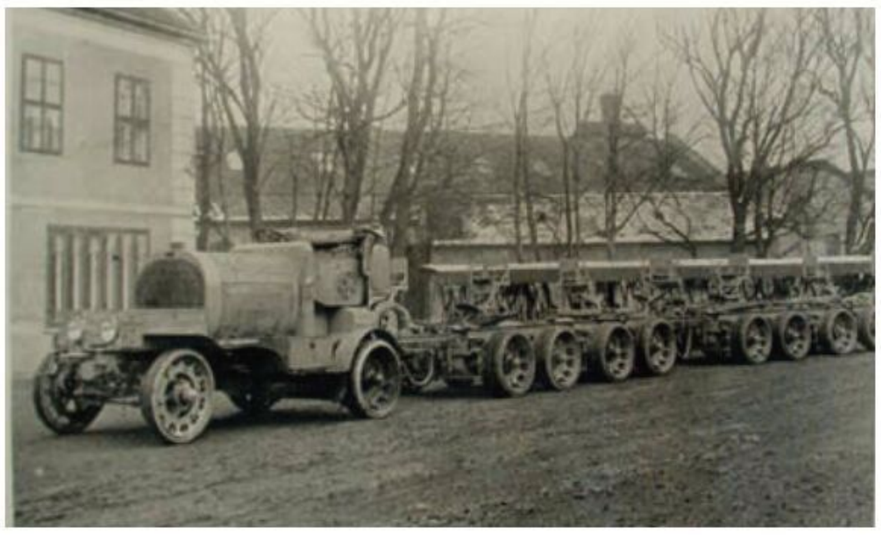
THE DESIGN WAS SO AHEAD OF ITS TIME, C-TRAINS WERE IN USE UNTIL THE CLOSE OF THE SECOND WORLD WAR

Above M 12 with caterpillar chain drive pictured in 1914

Below 1919 M 17 Goliath shown in Chile with loaded trailers during use for a copper mine business

Bottom left Goliath test drive on the premises of Austro-Daimler with Ferdinand Porsche standing on the embankment

Bottom right 1916 Type M 15 petrol electric train



Above M 14 B-Zug petrol electric train in 1914

Top right 1916 M 16 C-Zug with two unloaded trailer chassis photographed in the Austro-Daimler factory yard

Above right 1914 M15 B-Zug petrol electric train with ten trailers for passenger transport on rail

Below The 'Mechanical Horse' with howitzer gun trailer being tested by the Austrian field artillery in 1917

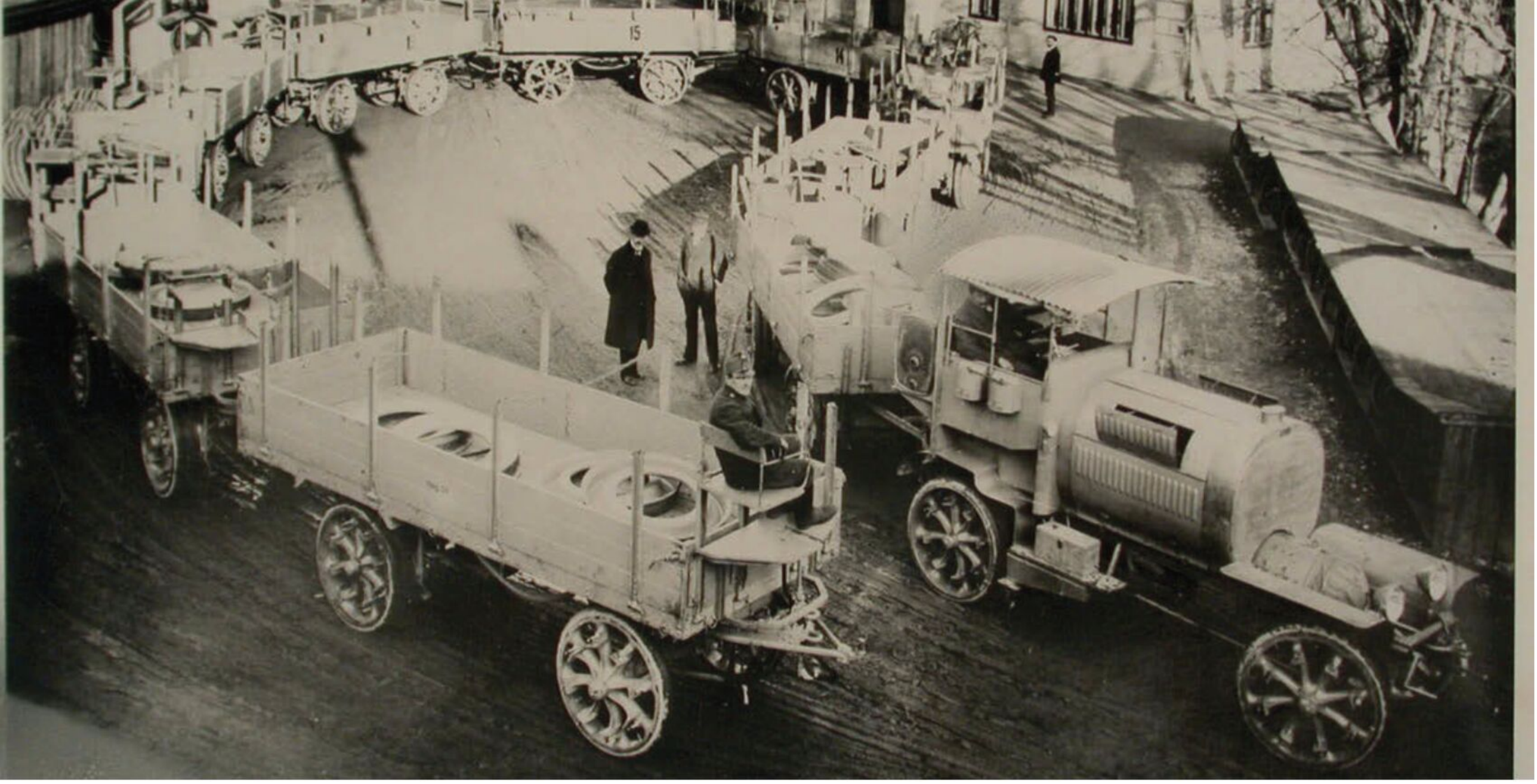
even individually if required to do so. Evolving into the *B-Zug* (have a guess) in 1913, the running costs in comparison to a horse-drawn load train were estimated at just a quarter. In 1914, ten examples were used to support the use of Škoda's mortar guns, ferrying supplies to instalments in the mountains. Speeding up the process, the wheels of the *B-Zug* could run on rails (as Porsche's brief dictated) and it took a pleasingly short amount of time to convert from one system to the other, allowing quick deployment on railroads before finishing a journey on whatever roads could be found.

SHELL SHOCKED

Next up was the imaginatively named C-Train, which, on the face of it, shared much with the tugs. Nonetheless, it retained the idea of an electricity-generating tractor unit using petrol power, but featured only a single trailer. It was a monster of a machine, designed around equally monstrous weaponry, such as the Škoda 42 cm Haubitze M. 14/16. This, as the name indicates, had a 42-centimetre calibre and it could fire shells weighing over 1,000kg a distance of nine miles. Little surprise how it could weigh well over a hundred tonnes, then?! A total of five C-Trains were required to transport each weapon and its ammunition.

The 20.3-litre engine was uprated to 150bhp at 1,200rpm (that's 657lb-ft of torque) and the output current of the generator was increased. As before, the tractor unit was rear-wheel drive, while a cable brought power to the single trailer. This featured eight wheels, split into two bogies which could steer independently. There was also an electric motor turning each of the wheels. This allowed speeds of up to 22mph on rails, but, more importantly, it also enabled the transportation of howitzer parts up twenty-six percent gradients. This would be key to each vehicle's usefulness – records show they managed to tow weapons as high as 1,600 metres on missions requiring heavy guns. The design was so ahead of its time, C-Trains were in use until the close of the Second World War.

We made mention of the efficiency of Porsche's vehicles when compared with the traditional way of



doing things (e.g., using horses). Efficiency, however, wasn't the only consideration toward the end of the First World War, when horses were becoming harder to come by, a consideration spurring development of the Austro-Daimler KP II, or *Pferd* (translated as *horse*). While the tugs and road trains were designed to do the job of dozens of horses, the KP II was conceived to match just one. Perhaps two, at a stretch.

It was an odd-looking vehicle, effectively taking the form a two-wheeled tractor. The KP II was initially designed to tow light weaponry, but ended up being used for farming, towing ploughs and other machinery. Power came from an air-cooled four-cylinder petrol engine producing out a modest 14.5bhp. Steering in later iterations was performed via the coupling connecting the KP II to whatever load it was towing, while its steel wheels featured variable-length cleats for traction on slippery surfaces. During development, Porsche and his engineering team struggled to invent a robust and simple method to tackle this task.

He had already determined a variable system was required, primarily because flat steel wheels would be useless over rough ground, while fixed cleats would make the KP II excessively uncomfortable on smooth surfaces. The solution was presented by Karl Rabe, then a young engineer working at Austro-Daimler, later Chief Designer at Porsche. His suggestion allowed for variable height cleats, adjustable at the hub.

This wasn't to be the last agricultural tractor to come from Porsche, of course, but of more importance to the path Porsche took was the introduction of Rabe to proceedings. He was instrumental in the creation of the 356 many years later. Like Porsche, his background in engineering for the military gave him a solid grounding. By the end of the First World War, Porsche was still only forty-three years of age, but already counted a lengthy list of engineering achievements to his name. And he was only just getting started, as we'll show in the next issue of *Classic Porsche*. Subscribe to the magazine online by visiting *bit.ly/subscp*. **CP**

Above M 15 on display outside Ferdinand Porsche's office at Austro-Daimler

Bottom left 'Mechanical Horse' was controlled by a two-wheeled steering axle tube rigidly connected to the steering wheel and went backwards (tail steering

Below C-Zug trailer with left bedding unit, preparing for unloading in 1916

Bottom right Twelve M 09 train cars were supplied to the Austrian Army in 1909

AASE OF BASE

The Midwest region of the United States boasts a vibrant Porsche scene, thanks partly to enthusiast-owned Porsche businesses, such as Aase Sales in Ohio. Company owner, Ron Thomas, collects classic Porsches – a pack of air-cooled road and race cars are displayed on the ground floor of his house, purpose-built to accommodate this amazing fleet…

Words and photography **Stephan Szantai**

Private car collections come in all shapes and sizes. Literally. *Classic Porsche* has featured several through the years, although few welcome as many Porsches as the shrine to Stuttgart's finest curated by Ron Thomas, a Porschephile living near Columbus, Ohio, a state with a deep-rooted link to Germany. Indeed, tens of thousands of the country's inhabitants emigrated to the Midwestern state early in the twentieth century, so much so, in fact, Germans represented sixty percent of the population in nearby Cincinnati. Sadly, this heritage was somewhat diminished during the following decades, not least due to the impact of two German-led world wars in quick succession, but Germanic influence remains clear to see in the form of stunning architecture inspired by what you might see in the heart of mainland Europe. This legacy has also affected Ohio's local car culture, with more German vehicles seen on the state's roads than anywhere else in the Midwest.

Recently, we hit Ohio to indulge in a handful of Porsche-related activities, including Cincinnati's annual Volkswagen & Porsche Reunion event. We also took time to visit Aase Sales, a Galena-based marque specialist dealing in the sale of restoration parts, cars, posters, models and vintage racing components for air-cooled Porsches and models from the manufacturer's transaxle family of products. Owned and operated by Ron, Aase Sales is closely related to Aase Motors, profiled in an issue of *Classic Porsche* this time last year.

VARIOUS RACE BANNERS AND A CREW RACE SUIT WORN BY FORMER PORSCHE WORKS DRIVER, AL HOLBERT

To understand the relationship between these two similarly named companies, we need to introduce you to Randy, Dave, and Dennis Aase, three brothers associated with the Porsche marque for more than forty years. Back in the mid-1970s, Dave and Dennis opened Aase Brothers as a Porsche wrecking yard in Orange County, California. The business closed in 2008, leading Dave to move to North Carolina, where opened Aase Sales as a one-stop shop for classic Porsche parts. In 1978, Randy opened Aase Motors as a facility for Porsche tuning and mechanical work, along with services including race car preparation. It remains operational to this day.

There's more. Dennis and Randy launched Aasco Motorsports in Orange County in 1995. It produces bespoke aluminium flywheels and other performance enhancing parts, as well as offering rolling road services, perfectly complementing the work of Aase Motors. Incidentally, Dennis had quite the career as a racing driver, competing at the 1977 24 Hours of Le Mans in a 911 Carrera RSR with teammates, Bob Kirby and John Hotchkis, the trio called into action by the Wynn's International race team. He also drove for All American Racers (founded by former Porsche works pilot, Dan Gurney, and Carroll Shelby in 1964) and has driven historic race cars at the Goodwood Festival of Speed.

When Dave passed away in 2011, Ron acquired Aase Sales and relocated the company to Galena, fulfilling a long-time dream of owning a Porsche parts supply business. He remembers being a "car guy my

Above Ron Thomas has collected an eye-popping selection of Porsches split between his home and his business, Aase Sales

Above Volkswagens and Porsche-designed military and agricultural vehicles feature in the collection

whole life, following in the footsteps of my father," who regularly visited Troy Township's Mid-Ohio Sports Car Course in the 1960s. "I liked Porsches in particular," Ron remembers. "My parents used to take me out to dinner on Friday nights and we would pass a fuel filling station with a Porsche workshop attached to it. I was amazed at the cars I'd see parked outside. My passion for the brand grew from there." Incidentally, Ron boasts German blood like many locals – his great-grandparents were among the first to settle in historic German Village, a neighbourhood established in downtown Columbus in the early-to-mid nineteenth century by a large contingent of German immigrants.

LOST LOVE

Ron's first car was an immaculate 1967 Volkswagen Beetle finished in Savannah Beige, bought brand-new and handed to him as a gift from his grandparents. Unfortunately, it was stolen from the Thomas family driveway before he got an opportunity to get behind the wheel, which is why, much later in life, he purchased and restored an identical model, now prominently displayed in his personal collection of cars alongside a variety of other historically interesting VWs. He bought a 1976 Toyota Celica in 1979 – coincidentally, Dennis Aase switched to a Celica when driving for Dan Gurney – and still owns the Japanese joy toy today, fully restored. In 1982, he finally acquired his first Porsche, "It was a 1971 911 T Targa painted Conda Green," he tells us. Many more air-cooled Porsches followed. "I bought, fixed up and sold a few 911s and 914s in the early 1980s," he recalls, "but I always wanted a Guards Red Carrera 3.2 with a whale tail. In 1989, I finally bought one, though it wasn't new. This was a three-year-old example."

Motorsport has also played a key role in his life, as he explains. "I bought a 1963 356 Cabriolet, which I

Below Rubystone Red 964 Turbo iis just one of the highlights in Ron's personal Porsche playground

restored. I wanted to race, and selling the drop-top helped me finance the purchase of a Formula Ford car in 1987. I began competing with it a year later. In the 1990s, I raced a Formula Super Vee single-seater, followed by another Formula Ford, a Formula Continental and a British Ford-powered Van Diemen."

Busy running an energy supply firm at the turn of the century, he competed less often than he would have liked as the 2000s got underway, though whenever he did get the chance to visit a circuit, he did so in one of his Porsches, a fleet which, by then, included a 996 GT3 R namechecking Le Mans, Sebring and Daytona on its history file. Ron hasn't raced much during the past three years, instead concentrating on completing the build of a new house.

The beautiful structure now houses his fantastic selection of vintage automobiles, though he began collecting them around twenty-five years ago. At the time, his home had enough space for a dozen cars, but as the collection grew, he longed for a larger property with enough storage space to keep the collection on permanent display. Consequently, he upped sticks and moved the Thomas clan to pastures new, their new house welcoming the same twelve vehicles, plus an additional sixteen in a second structure. As a hardcore collector, however, he echoes sentiment many of us can appreciate, regardless of how many cars we own. "No matter how much room you have at your disposal, it's never enough!" With this in mind, his recently finished house was built to bespoke specification, allowing for the museum-esque quota of cars you see on these pages. He explains the floorplan. "In my previous home, I kept cars in a detached garage, but I never seemed to visit, other than when I was working on one of the vehicles inside. That's when I came up with the idea of putting all of them on the lower level of a new house. Also, in the past, I had to move a car to access another. Now, nothing is ever trapped. I just wish I'd made the place twice as big!"

"Truth be told, I first designed the garage and then built the house on top of it," he laughs, highlighting the importance of having a car collection in his life. "I calculated how much room I needed for my cars, a sofa on one side, table and chairs on the other, and how wide the space had to be to reverse the vehicles to where I wanted them. I realize parking the cars at an angle isn't the most efficient use of space, but this is a forty-two-foot-wide area. I also collect miniature trains and tracks. They have their own room on another floor!"

KIT AND CABOODLE

The space he's created for his cars looks terrific, with an easy to maintain floor and close to forty separate cylindrical fire extinguishers just below the ceiling (a more affordable option than a complete Halon system unloading liquefied compressed gas at once). Pictures

Above A collection of Porsches this big would surely be incomplete without a Porsche-Diesel tractor?! Savannah Beige Beetle features far left, replacing the identical example stolen when Ron was a teenager

Below Ron's fleet includes race cars, some of which have battled at Le Mans

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and personal racing trophies cover the walls, along with artwork, including four pieces penned by artist, Bill Patterson, each depicting highlights of Ron's fleet. More race-oriented goodies, including various banners and a crew race suit worn by former Porsche works driver, Al Holbert, fill the room.

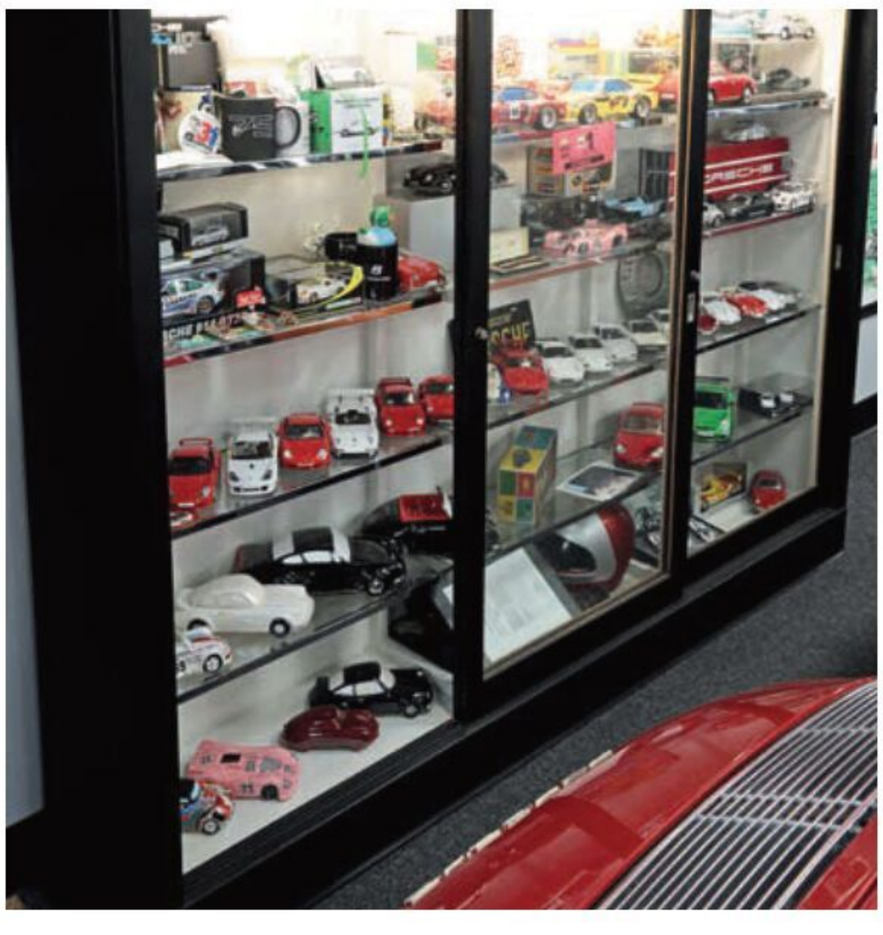
When asked about the theme of the collection, Ron obviously points out his love for the Porsche brand, but he's keen to stress he was lucky to buy these cars at the right price at the right time. The same goes for his several Nissan Z-series models, which are stored in a separate building. "These old Japanese road and race rockets are going to be the next big thing," he assures us.

How many cars does he currently own? He stops to think for a while, counting out loud. "There are thirty on my home's lower level, an area covering about six thousand square feet. I've got eight Nissans in the property's standalone storage structure, plus another fifteen Porsches inside the Aase Sales building a few miles away. At the office, I've kept an all-original 1965 911 coupé with only 37,000 miles on the clock," he announces, before telling us the low-mileage minter is joined by a 935 project car about to be restored by a Porsche motorsport specialist in Indianapolis.

Among the Porsches we're eyeballing, Ron's Pre-A 356 obviously stands out, being a rare 1953 model. He discovered the Light Ivory-coloured coupé back in 2009 during a visit to a Porsche meet named East Coast Holiday. He struck up a conversation with an attendee he knew (a gentleman who had sold him a 1956 356

Above Gulf-liveried LMK 917 replica is powered by a 450bhp 3.6-litre flat-six

Below Ron is no stranger to the track, having competed in Formula Ford and Formula Super Vee in his younger days



Above Brumos relics feature heavily in this midwestern Porsche paradise

Speedster a few years earlier) and was told the Pre-A was available for purchase, albeit partly dismantled. Five days later, it was in Ron's workshop. The restoration kicked off without delay, but the Aase crew discovered they needed assistance with metalwork, having noted floor pans incorrectly welded. Several local companies got involved, with most of the job being carried out by Redstone Performance in Indianapolis. As good as new, the car returned to the Thomas fold at the end of 2020, closely following the Certificate of Origin's details, as supplied by Reutter, the coachbuilder in charge of the body in 1953. "After the work was finished, I found out the headliner should have been green, not grey," Ron sighs.

A VW SCHWIMMWAGEN KEEPING COMPANY WITH THREE BEETLES, THE OLDEST EXAMPLE BUILT IN 1947

Among the other noteworthy vehicles before us, we should mention the blue 1973 911 Targa. Renowned Porsche race team owner, Roger Penske, bought the car new. This air-cooled gem has an interesting story, having been ordered with a costly Becker radio, full leather interior, RS flares, RS wheels, RS ducktail, hillclimb transaxle gears and Albert Blue paint. For reasons unknown, however, Porsche took a 911 already painted silver and had it resprayed in said blue, hence you can spot silver paint if you know where to look. Ron bought the car a few years ago, while on vacation in San Francisco.

We turn our attention to the right-side row of vehicles, led by a 15,000-mile 993 Carrera 4S (with a desirable factory-fit aero kit) and a Basalt Black 997, which Ron ordered new from Germany, choosing the red wheels and interior from Porsche's always tempting options list. This duo keeps company with a genuine 1973 Carrera RS 2.7 (chassis number 505, built as a Touring version and finished in white with green accents) flanked by 997 GT3 RS in matching livery, also ordered direct from Porsche in Germany.

Below Jaguar E-Type pokes out from behind 356 and joins a selection of classic Nissans alongside the Porsches in Ron's enviable armada

RACING ROYALTY

Ron has a deep interest in Brumos vehicles, as demonstrated by a group of four rides, starting with a 2003 Fabcar Daytona prototype (chassis number 06) motivated by a Porsche flat-six. The list of models continues with a Brumos-made 997 Carrera GTS B59 (one of only five built), followed by a Carrera RSR 3.0 evocation, both assembled to celebrate the fortieth anniversary of Hurley Haywood's first win at Daytona. A 997 Brumos GT3 Cup car (one of five again) completes the line-up. Elsewhere, we spy a handful of automotive antiques of the agricultural variety, including a Porsche-Diesel tractor and a Volkswagen Schwimmwagen (a Porsche-designed amphibious military vehicle) keeping company with three Beetles, the oldest built in 1947.

The aforementioned Light Ivory 356 starts the opposing line up, along with a 3.8-litre 1963 Jaguar XK-E (the E-Type's name in America) and an orange 991 GT3.

Older models continue the row: a Mocha Brown 1979 911 Turbo (930) which has covered just 6,800 miles, a 1991 964 Turbo dressed in Rubystone Red and the ex-Penske Targa mentioned earlier rank high. Ron has competed with several of the vehicles on display, most notably the aforementioned 996 GT3 R. To its right sits a white and heavily flared 911 wearing Aase Brothers livery and the number sixty-four on its doors. This car has a special place in the collection, having been driven by Dennis Aase in 1979 and 1980, and using various 935 components and a genuine Carrera RSR 3.0 engine.

In between the two rows of vehicles, we notice a green Outlaw-style 1958 356 Speedster. Ron explains how the car started life as a coupé, but an accident under previous ownership led to the decision of removing the tin-top. The car runs disc brakes and a Super Carrera flat-four. Further in the hall, a 917 replica in Gulf livery is certain to draw questions from visitors. LMK from Australia built this John Wyer tribute, which is powered by a 3.6-litre air-cooled flat-six developing 460bhp.

Fans of single seaters will appreciate the selection displayed in the back of the room, with the most interesting being the Quaker State-sponsored March 89P Indy Car. Teo Fabi finished the 1989 season in fourth place with the Porsche V8-powered racer. Quite an automobile, but then so is everything else we've seen during our visit to the Thomas residence and Aase Sales. And, before you ask, Ron doesn't show any sign of slowing down his passion for collecting Porsches. Perhaps it's time to build another house?! **CP**

Above Not a bad view to welcome you each time you head into the office!

Below The Aase Sales team is ready and waiting to ship out your classic Porsche parts

MODEL BEHAVIOUR

Porsche Club Great Britain's sixtieth anniversary has been commemorated by the creation of a highly detailed small-scale replica of the club's restored 1960 356 T5 B. In this article, we take a look at the history of the car and the challenges faced when undertaking such an ambitious project during extended periods of lockdown...

Words **Dan Furr** Photography **Chris Pruden, Dan Sherwood, Sparkmodel**

Above French-found 356 T5 B was used for the 3D scan to avoid delays in the project timeline brought about by the pandemic and lockdowns limiting free movement

Facing page Dan spends quality time with the Robin Hood 356 in the Cotswolds

Last month, in our round-up of recommended products, we presented Porsche Club Great Britain's exquisite small-scale 356 T5 B, a wonderfully detailed and handmade depiction of the full-size 1960 Heron Grey example owned by the club and affectionately known around the world as the Robin Hood 356, a moniker in recognition of the stage name adopted by the car's first and only other owner, a London-based magician. To mark sixty years since the club's inception, limited-run 1:43 and 1:18 versions of the restored Porsche have been produced by Spark, the French model maker with close ties to Porsche AG. We contacted Chris Pruden, Porsche Club Great Britain's Event Development Manager, to get the inside story on this exciting project, but before we delve into the process of taking his idea from concept to finished model, let's remind ourselves of this air-cooled classic's history and what makes the car so special.

What do you look for when you buy a classic Porsche? Good overall condition is usually the bare minimum, but what else floats your boat? Low miles? An interesting history? The near mythical one owner from new? If the answer to each of these suggestions is in the affirmative, you'll appreciate why Porsche Cars Great Britain decided to keep hold of the Heron Grey 356 B you see on these pages after it was traded in at Porsche Centre Reading on the 15th April 1987.

In the three decades preceding the pretty Porsche's arrival in Berkshire, the car had been used as a daily driver by the aforementioned entertainer, Robin Hood. In the context of today's Porsche modifying habits, there's something pleasing about the existence of a 356 owner who shared his name with a heroic *outlaw*, yet the magic man refrained from tweaking his trusty two-door, save for a trio of main dealer cost options: an electric cabin clock, Super 90 hub caps and an extended steering column. The final sale price? £2,077.5s.6d, as

invoiced by Archibald Frazer Nash (AFN), the UK's sole concessionaire of Porsche cars until 1965.

Even in 1987, a one-owner classic Porsche was something of a rarity, which is why the boys at Porsche Cars Great Britain decided to retain this 356, reasoning it would serve as a useful promotional tool at trade shows and exhibitions. It's worth noting, however, Hood had covered 87k miles in his pride and joy after signing on the dotted line at the end of April 1960. In other words, it's fair to say by the time the illusionist parted with his Porsche, it was rough around the edges as a consequence of use in all weather. That said, it was mechanically sound, meaning the 60bhp powerplant and four-speed manual transmission wanted little more than regular servicing during the sixteen-year spell at Porsche Cars Great Britain, after which the car was handed to Porsche Club Great Britain on permanent loan. "There weren't any conditions attached to our guardianship," recalls club archivist, Peter Cook. "We kept the car in good working order, enabling our members to hop in and take the controls during organised fun runs. Even so, as time went by, it was apparent restoration was required to ensure the vehicle's survival for the long term."

VALUABLE CONTRIBUTION

He cites the rapidly deteriorating condition of the Light Brown leather-trimmed interior as providing cause for concern, and hints at the welding needed to ensure a clean bill of health come every successive date with an MOT tester. "It was clear to all of us at club headquarters the car needed to be properly restored if it was expected to last long into the future," reiterates Peter. "After eight years of us taking care of this 356, however, it remained the property of Porsche Cars Great Britain. Despite our desire to be heavily involved in the required remedial work, logic dictated the cost of restoration would have to be met by the car's official owners." Sensibly, the guys at Porsche Cars Great Britain decided the time had come to pass title to the club. All parties recognised the Robin Hood 356's increasing value justified a full restoration, and though Porsche Cars Great Britain wasn't going to take care of the work, the company was nevertheless keen to contribute. It did so by transferring ownership to the club without charge, thereby kick-starting the car's transformation from vintage vehicle showing signs of wear and tear into the pristine Porsche the club is in charge of today.

Above Fully restored, the Heron Grey Porsche was gifted to the club by Porsche Cars Great Britain as the company's contribution to the restoration project

Above Magician, Robin Hood, collecting the 356 he'd drive from new in 1960 until parting with the car in 1987

Top right and below With the 3D scan taken care of in France, Spark was able to create CAD illustrations to send to Chris for approval

Roger Bray Restoration was called upon to provide many of the parts required for the build, while Prill Porsche Classic managed most of the work, from a complete overhaul of the car's flat-four engine to the expert re-trimming of its interior. Fresh leather replaced the distressed hide covering the original seat frames, while new carpets joined an expertly crafted headlining. As per the interior, all chassis equipment was exhaustively restored to factory specification, although Peter tells us the biggest challenge of the project concerned the car's bodywork. "There is a huge number of new parts available to buy for 356s built in the 1960s, which made the restoration far easier than if we'd found ourselves in possession of an earlier example of Porsche's first production model. Even so, you can't be too sure of the amount of corrosion you'll find on a classic car until you start stripping it. Thankfully, the many years of dry storage at Porsche Club Great Britain and, subsequently, at the clubhouse in Moreton-in-Marsh prevented rot from taking hold, although new door skins were required."

THE OWNER OF AN IDENTICAL 356 IN FRANCE WAS HAPPY TO ASSIST, ALLOWING THE PLAN OF ACTION TO RESUME

Resplendent in a flawless covering of its original colour, boasting factory glass and decorated with super-shiny brightwork, the 356 which Robin Hood bought all those years ago came to the end of its exhaustive restoration in 2015. Don't be fooled into thinking the car is kept as nothing more than an expensive ornament in the club's reception area, though. "This classic Porsche has covered many miles since completion of the work,"

Peter smiles. “It’s regularly exhibited at club events and motor shows all over the UK. Additionally, this 356 is often driven by club members keen to experience seat time behind the wheel of a restored example of the car responsible for putting Porsche on the automotive map,” he adds. Fast-forward to the present, and they can now have a permanent memento of their experience in the form a Spark model, though with demand high and only six hundred 1:43 examples and just sixty 1:18 variants available, they’ll have to act quick, especially now club-exclusive pre-orders are closed and these gorgeous models are on general sale through the club website.

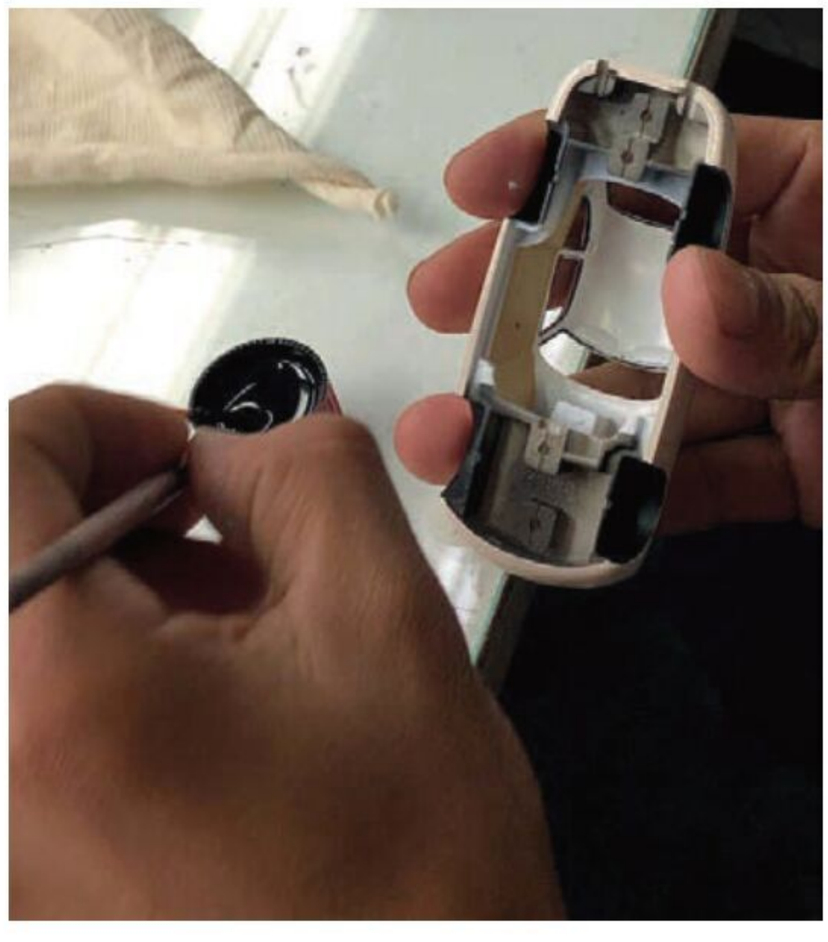
OUTSIDE THE BOX

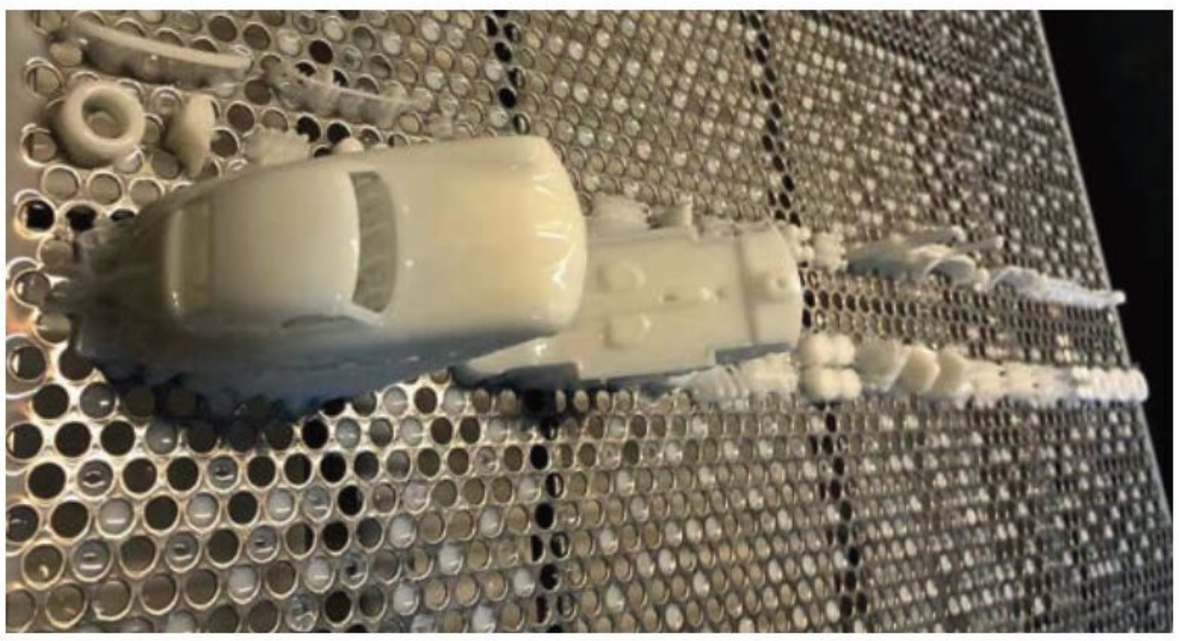
Chris picks up the tale of how the models came to be. “Back in late 2019, I was brainstorming ideas for various initiatives intended to mark the club’s sixtieth anniversary in 2021,” he recalls. “On a personal level, I’m a keen collector of model Porsches, a hobby many marque enthusiasts enjoy. With the Robin Hood 356 playing such an important role in the club’s history, and with this particular Porsche being recognised all over the world, the idea of immortalising it as a limited edition small-scale model struck me as the perfect way to give club members and the wider enthusiast community the chance to forge a stronger connection with the car, whilst helping to promote the club’s milestone of six decades around the sun.”

Choosing the right manufacturer was key, but even after Spark accepted the club’s invitation to get involved, there was a huge amount of work to be done. “We wanted to make sure the models were true to the 356 they were imitating, meaning attention to detail was of paramount importance,” Chris explains, referencing the Super 90 hub caps and other details optioned on the Robin Hood car. “Hugo Ripert, founder and Managing Director of Spark, told me the company hadn’t yet produced a model of a 356 T5 B, but I was reassured when he suggested creating a bespoke 3D scan of this very Porsche to use as the starting point.” Unfortunately, the project timeline was thrown into disarray when the pandemic hit and lockdown prevented movement of people in spring 2020 — there was no way Spark’s digital modellers in France would be able to visit the UK to conduct the necessary work. Through the joint efforts of the club and Hugo’s contacts, however, the owner of an identical 356 T5 B (save for a white paint job) in France was only too happy to assist, allowing the plan of action to resume without the kind of delay which would have derailed the club’s plan to launch the finished models before close of 2021.

Spark — the first model maker to specialise in resin bodies rather than die-cast metal — is well known for its

Below and facing page
Creating a 3D-printed prototype model to send to Chris for approval





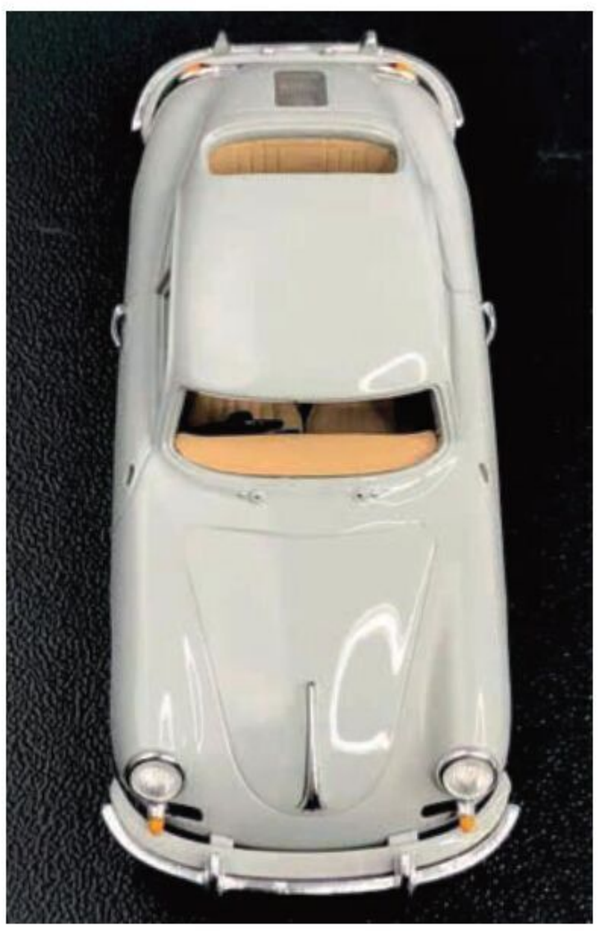
Bottom right With the prototype (above and below) complete and signed-off by the club, work begins hand-assembling the six-hundred 1:43 series models

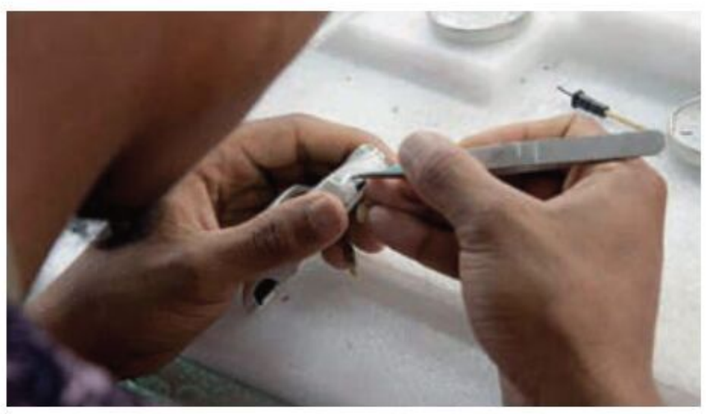
catalogue of diminutive Porsches, which are sold in official Porsche dealerships all over the world. Once Hugo's team completed the 3D scan of the stand-in 356 T5 B in France, the plot points were fed into computer-aided design software, with every step of the digital modelling process fed back to Chris for approval. "It was a thrilling experience," he remembers. "From the ground up, all work was taking place exclusively for the club, as opposed to an existing 356 model being modified to look like the Robin Hood Porsche. I was delighted with the Spark team's meticulousness."

THE FIRST IN THE SERIES HAS BEEN KEPT BY THE CLUB, WHEREAS THE EIGHTIETH WAS PRESENTED TO DEREK BELL

This care is confirmed by the Prill Porsche Classic and Porsche Club Great Britain stickers displayed in the windows of the finished models, as well as the Reutter badges on the lower wings, positioned exactly as they are on the real deal.

After Chris approved the digital designs, Spark moved to building a resin prototype at its factory in Madagascar. "I was sent a body sample to sign off, but the Madagascar plant's chroming equipment wasn't up to the same standard as that found in Spark's Chinese factory," Chris reveals. "Hugo insisted on pausing further development until he was satisfied we would be provided with an optimum finish. After all, as he was keen to observe, this is likely the only time the Robin Hood 356 will be made into a model. Furthermore, we'd agreed low-volume production. Everything had to be correct. I was really pleased with how committed he was to making sure the end result was perfect. He really did us proud."



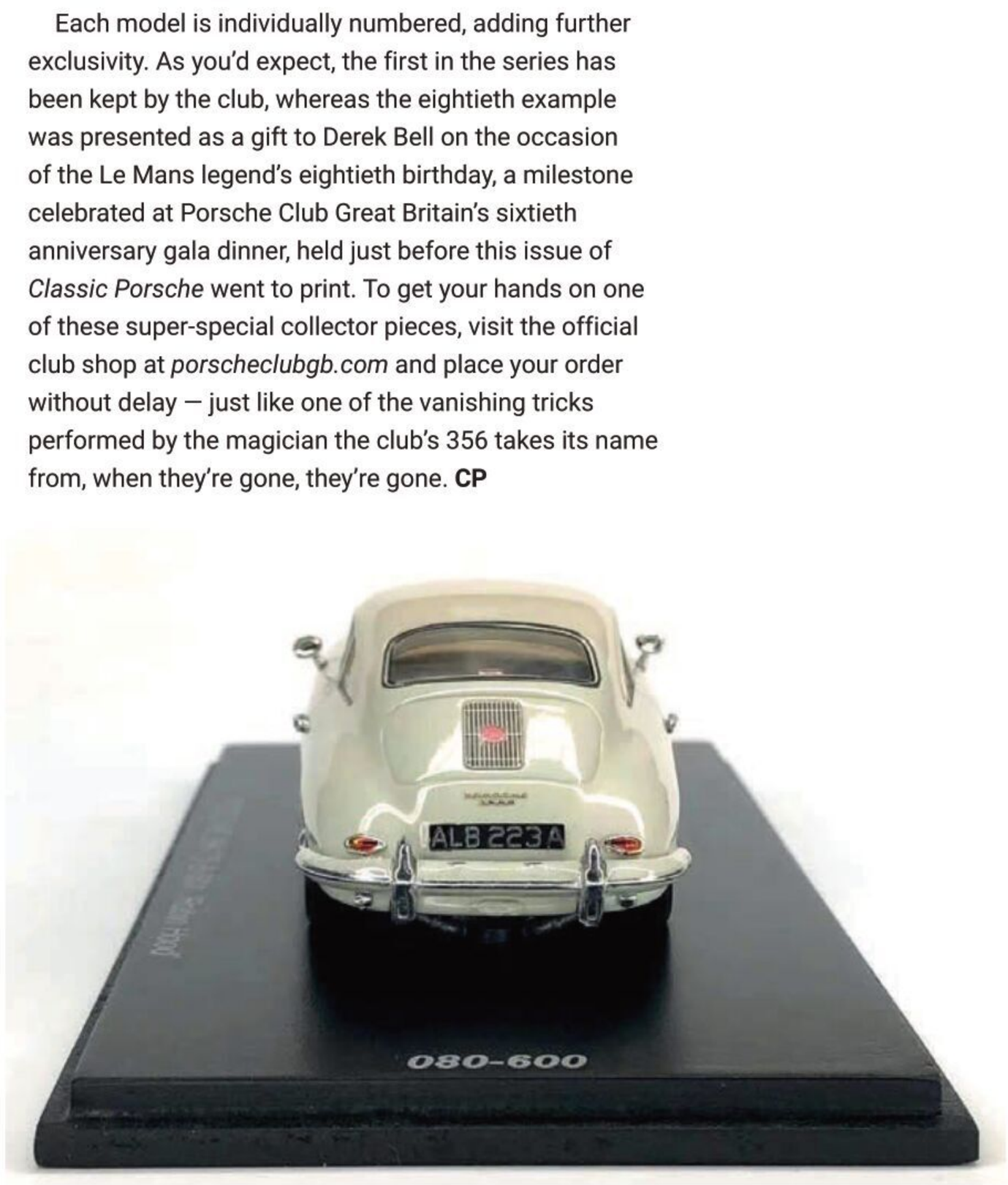


The colour of the interior and body proved another aspect of the project requiring careful consideration — Light Brown and Heron Grey are easy colours to get wrong. At first glance, the latter looks very much like Dolphin Grey, but put the two side by side and it quickly becomes apparent there's a big difference. Hugo was supplied with samples taken from the club car to ensure everything was just so. Needless to say, Chris was impressed by how involved the company boss was throughout — Spark is a big firm with large overseas operations in different territories. It would have been easy to delegate the work to local workshop managers, but Hugo's determination to serve the club with a first-class service resulting in high-quality models (perfectly mirroring the Porsche they're designed to replicate) helped ease the stress all involved felt when having to work on such an ambitious venture during periods of lockdown and with a rapidly approaching deadline.

MATTER OF TIME

Nathan Gooch, Spark's distribution manager in the UK, also helped the process along. "The level of care and commitment from these guys was nothing short of fantastic," Chris beams. "The chroming work was sorted to our satisfaction, the colours applied to the prototype were perfect and the level of detail was exactly what I'd hoped it would be." He also had to consider the packaging, which is specific to this model. The finished design includes photographs from key events in the club's history, such as cover art from the first issue of Porsche Post (the club's in-house magazine), pictures from early club events and images of the organisation's founders. "It all came together beautifully," Chris grins. "Obviously, repeated periods of lockdown threatened the project timeline, feeding fear we'd miss the club's sixtieth anniversary year, which I was acutely aware only comes around once. Thankfully, due to getting the ball rolling before the pandemic landed and owing to Spark's amazing customer service, the finished models are available to order in time for Christmas," he adds, a tone of relief in his voice.

Each model is individually numbered, adding further exclusivity. As you'd expect, the first in the series has been kept by the club, whereas the eightieth example was presented as a gift to Derek Bell on the occasion of the Le Mans legend's eightieth birthday, a milestone celebrated at Porsche Club Great Britain's sixtieth anniversary gala dinner, held just before this issue of *Classic Porsche* went to print. To get your hands on one of these super-special collector pieces, visit the official club shop at *porscheclubgb.com* and place your order without delay — just like one of the vanishing tricks performed by the magician the club's 356 takes its name from, when they're gone, they're gone. **CP**



Above and below The finished model is available in 1:43 (pictured) and 1:18 scale, limited to six-hundred and just sixty units respectively

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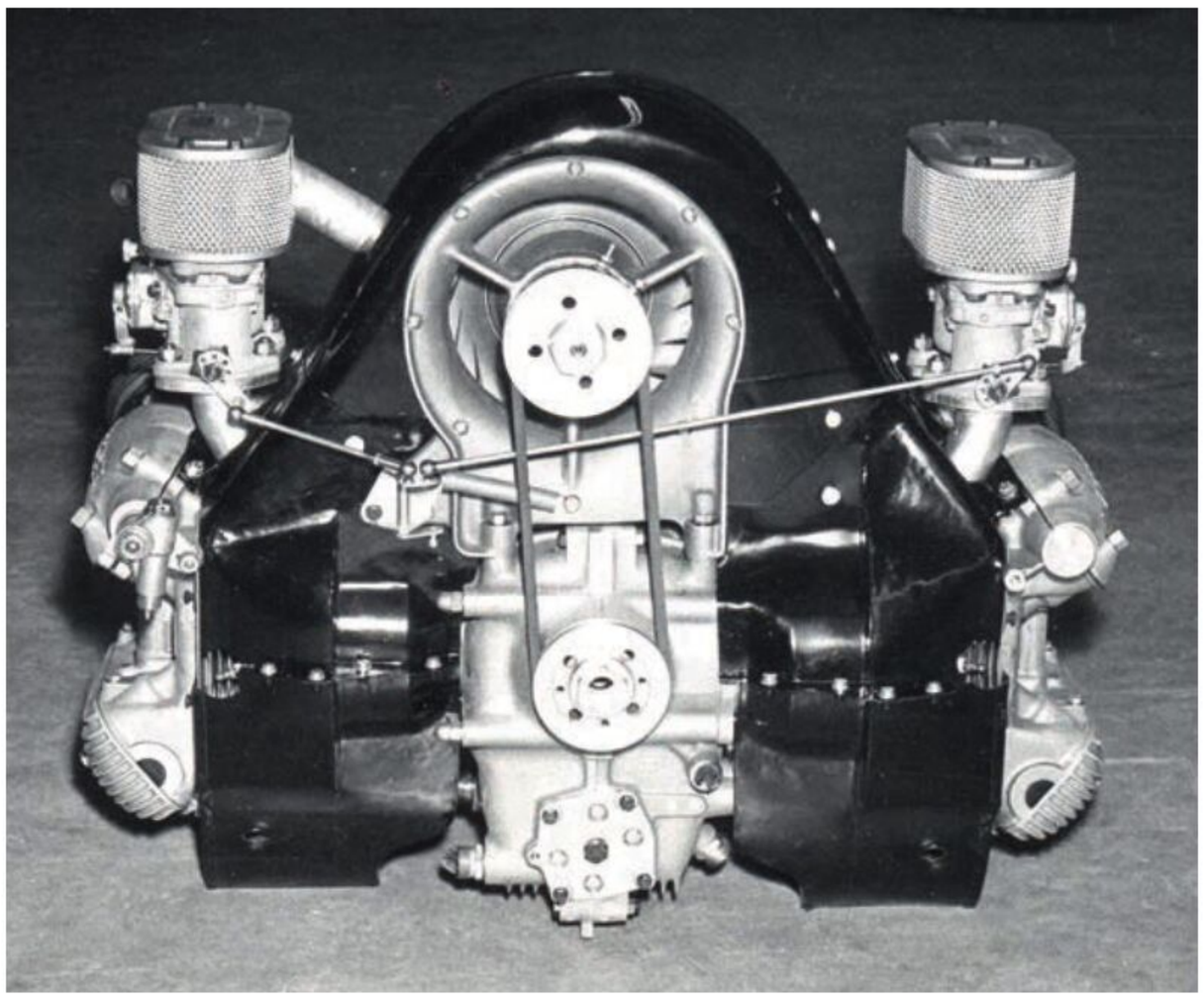
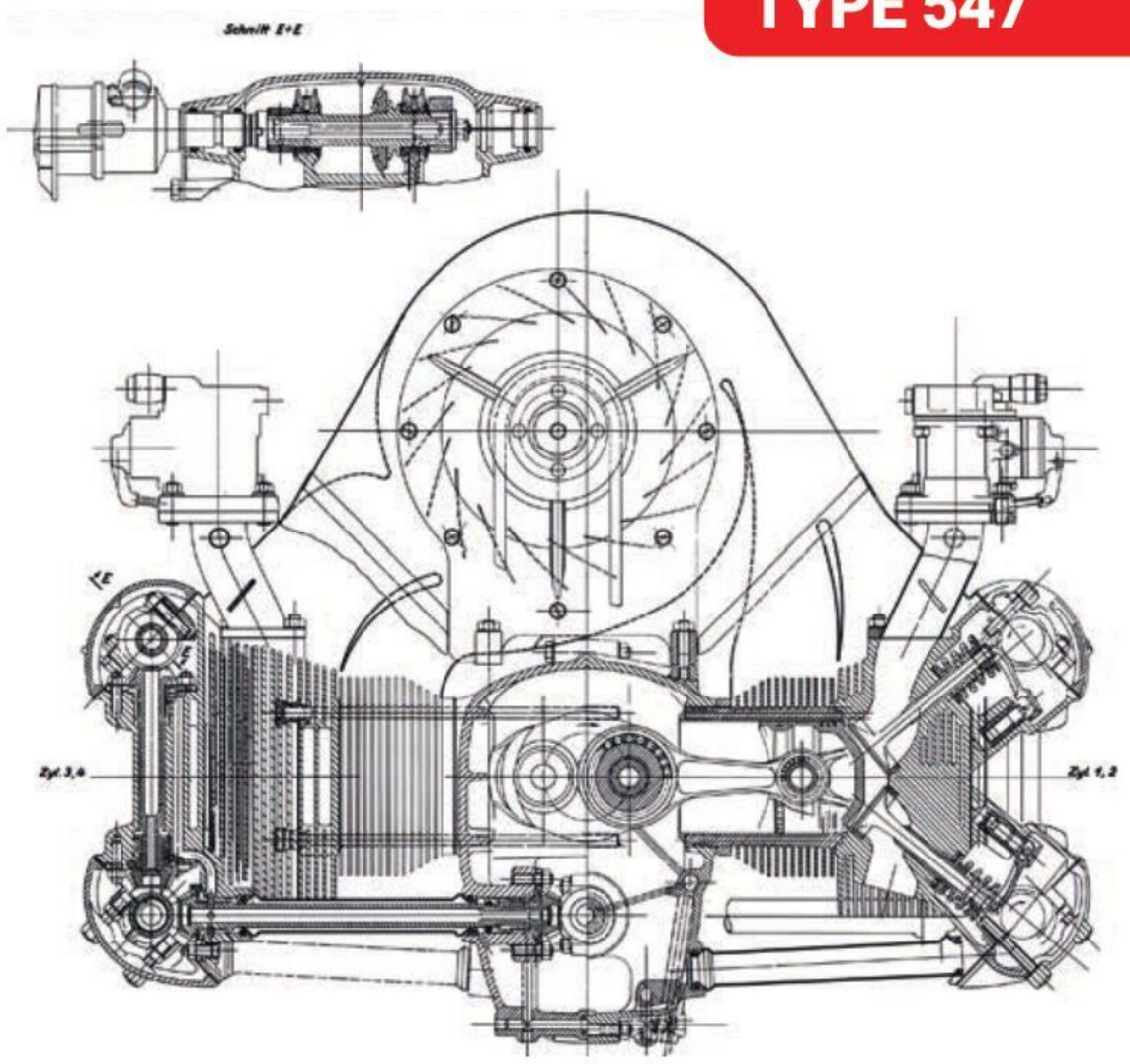
FOUR PLAY

Not long before we went to press with this issue of Classic Porsche, our esteemed contributor, Karl Ludvigsen, was awarded the 2021 Benz Award for Distinction by the Society of Automotive Historians for his work on this article, documenting the design and development of the famous Fuhrmann four-cam…

Words **Karl Ludvigsen** Photography **Porsche**





Facing page Ernst Fuhrmann (left) with German motoring journalist and many-times 24 Hours of Le Mans participant, Richard von Frankenberg

Above The finished Type 547 engine and its factory technical drawing

In the summer of 1952, Porsche's engineers began designing a new air-cooled engine with far more potential than the pushrod unit the company had so cleverly adapted from the Volkswagen pushrod four. The Stuttgart concern had done well with the latter, which produced 78bhp on gasoline (for long-distance racing) and 98bhp on alcohol and with a high compression ratio (for sprinting), but the engine had reached its limits at a time when the opposition was getting its act together.

The design engineer in charge of this new project was the talented Ernst Fuhrmann. Granted a doctorate in engineering by the Vienna Technical Academy, he survived after the war as a watchmaker and locksmith before joining the Porsche team at Gmünd in 1947. There, he demonstrated a knack for designing high-performance engines, as demonstrated by his work on the Type 360 Cisitalia Grand Prix car and his special camshaft profiles for competition Porsches. Fuhrmann had his own reason for wanting to design a complete engine: it was a chance for him to show what he could do. Backed by Porsche's racing and press chief, Fritz Huschke von Hanstein, who welcomed any project capable of giving race and rally Porsches more power, Fuhrmann created one of the most unusual engines in the annals of motoring and motor racing.

The project was granted Type number 547. Ground rules for the engine's design were simple enough: it had to be air-cooled (because Porsches had no provision for water cooling) and its displacement should be 1.5 litres to suit the corresponding international racing and record-breaking class. At 1,498cc, capacity edged close to the class limit and was arrived at with a larger bore and shorter stroke (85x66mm) than those used in the pushrod 1.5-litre engine. The resulting stroke/bore ratio of 0.78:1 was exceptionally low for the time. Indeed, only certain racing Ferrari engines were equally oversquare and it would take two decades for such a low stroke/bore ratio be considered conventional.

A short stroke was the personal decision of Fuhrmann, to whom 'short stroke = high speed' was self-evident. To make room for the larger bore, the distance between cylinder centres was increased to 122mm from the 102mm of the pushrod Porsche fours. Additionally, the Type 547's short stroke gave increased overlap between the main and rod bearing journals. This made the crankshaft stronger at a critical point. It also helped keep the width of the flat-four engine within reasonable bounds, which was no minor achievement in view of the engine's elaborate valve gear.

GET THE SHAFT

Fuhrmann chose a classic hemispherical combustion chamber to provide room for the large valves made possible by the engine's generous bore size. The valves were in a vertical plane in which each was inclined at an angle of thirty-nine degrees from the cylinder centreline. Head diameters were sharply disparate at 48mm for the inlet valves and 41mm for the exhausts. Few challenges in the design of this engine were more taxing than providing a light, simple and positive means of opening and closing four widely spaced pairs of valves. Fuhrmann's solution was inspired by the flat-twelve engine of the aforementioned Cisitalia. Like the last pre-war Auto Union, this engine used shafts instead of gears or chains to drive its overhead cams. Fuhrmann chose this system for the Type 547. The drive was taken to one camshaft on each bank – as it was in the Cisitalia engine – and was then carried to the adjoining camshaft.

OIL REACHED EACH CYLINDER HEAD THROUGH THE HOLLOW CENTRE OF THE DRIVESHAFT TO THAT HEAD

Above Fuhrmann (left) and Porsche PR and motorsport director, Fritz Huschke von Hanstein, testing the four-cylinder, double overhead camshaft engine at the Nürburgring in 1953

The drive to the cams was taken from a gear at the flywheel or output end of the crankshaft, a point considered by many designers to be a more stable take-off location than the more-often-used nose of the crank. There, a pair of helical gears drove a half-speed shaft in the sump, directly below the crankshaft. Below the engine's centre main bearing, the half-speed shaft – referred to as 'countershaft' by Porsche – carried back-to-back spiral-bevel gears. In turn, these rotated smaller gears on hollow shafts, which extended straight out to the left and right. At its respective side of the engine, each shaft turned a gear at the centre of the lower exhaust camshaft. From this point, another shaft rose vertically to turn spiral-bevel gears at the centre of the inlet camshaft.

Several aspects of this cam-drive system were especially ingenious. The spiral-bevel gears, for example, were sized to allow the four shafts into and inside the heads to spin at crankshaft speed, though the cams themselves turned at half this speed. By doubling speed, the shafts were made to transmit the same power with half the torque – a parameter determining how thick and heavy the shafts have to be. Hollow and remarkably thin, all the shafts ran in lubricated bushings, rather than heavier (and more costly) ball or roller bearings.

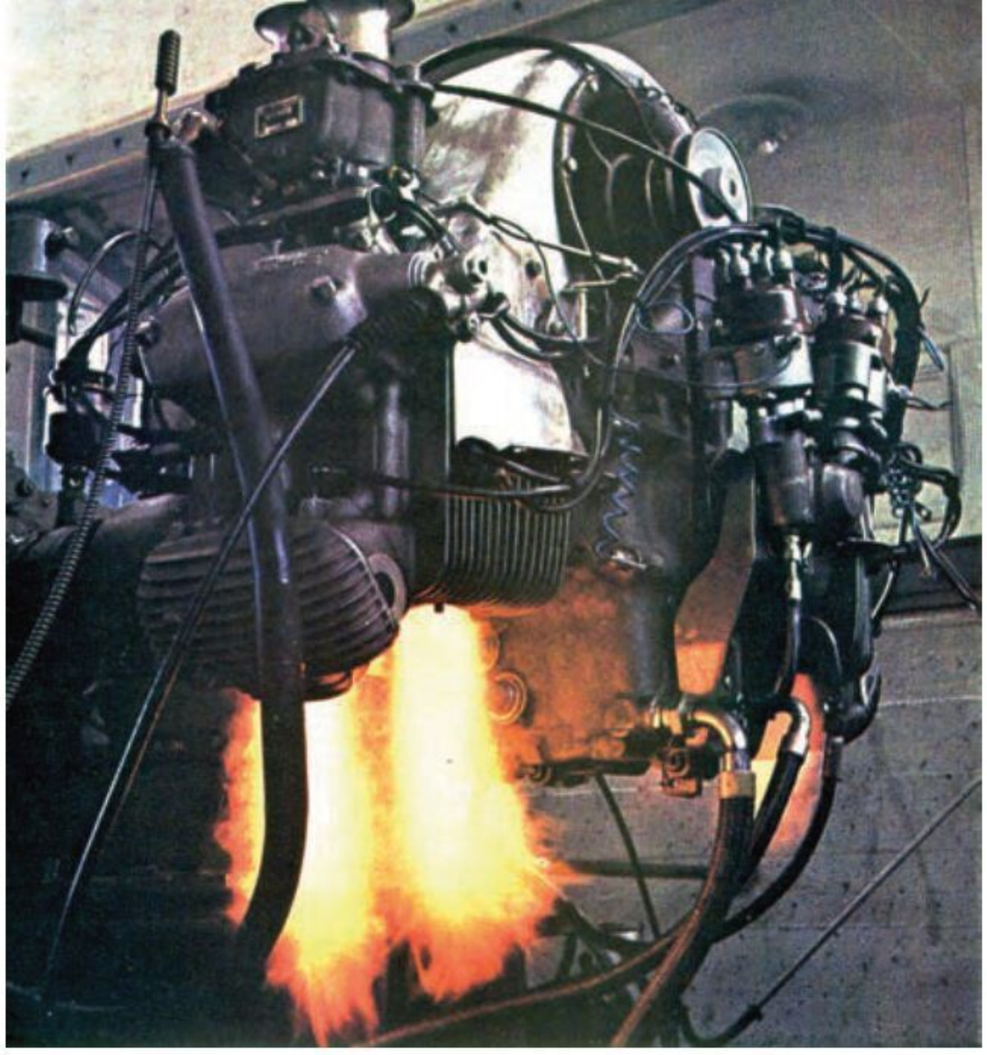
Also shrewdly calculated by Fuhrmann was his positioning of the long shafts beneath the engine. All previous Porsche-designed boxers using shafts to drive their camshafts placed them at the end. For Fuhrmann, however, a key criterion was keeping the engine short – short enough to be substituted for the pushrod four in the production cars. This was his own idea. "My interest was always to have this engine in my personal car," he said. Nobody, he asserted, had given him guidelines for the size of the racing engine. "This was the decision for the operation of the camshafts," he told journalist and author, Randy Leffingwell, "the shaft through the middle to enable the engine to become shorter." There was another reason, though. "If the engine becomes warm or cold, it was symmetric heating or cooling. This is why the engine was really stable against overheating." That the shaft positioning was not entirely his decision, however, is shown by the patent applied for on 6th November 1952 by Fuhrmann *and* Ferry Porsche.

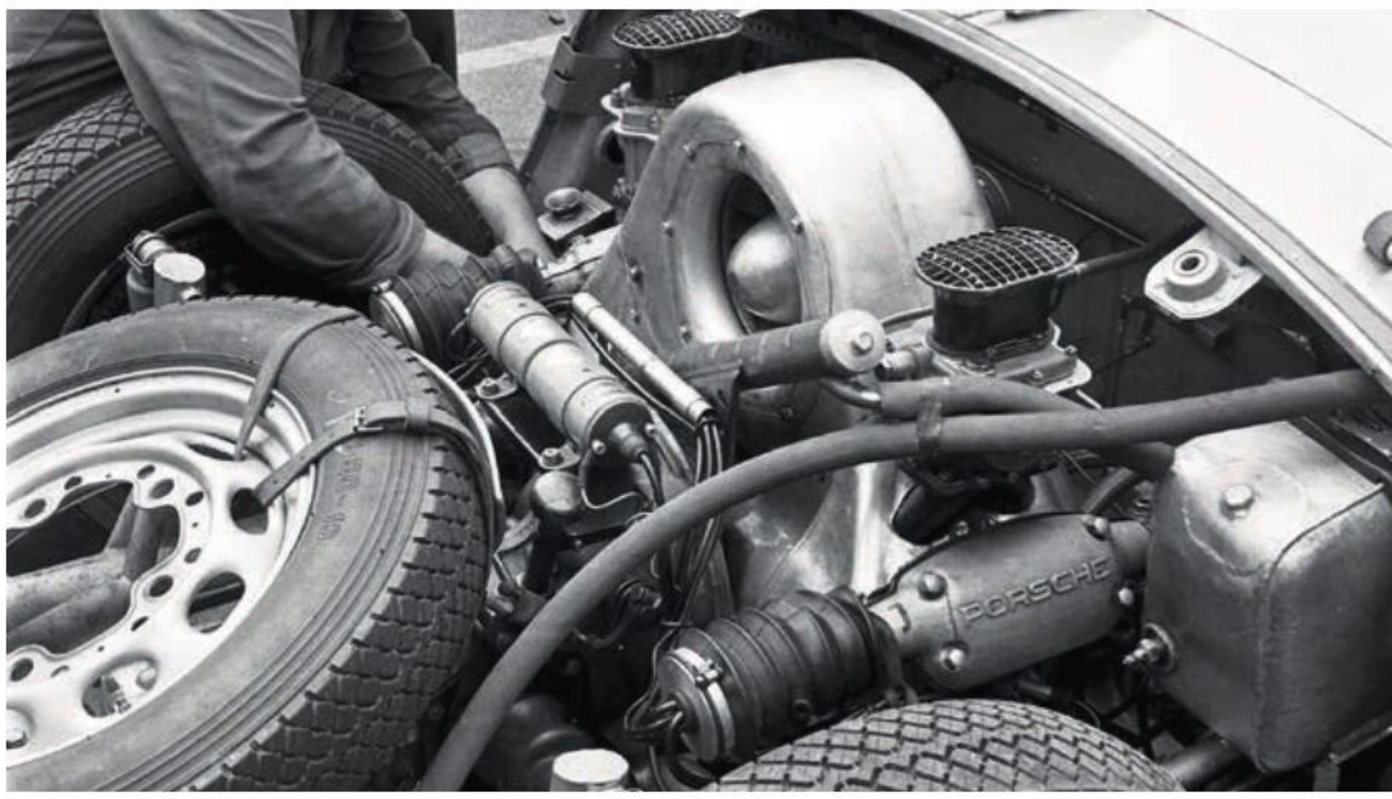
FLUID MOVEMENTS

Oil reached each cylinder head through the hollow centre of the driveshaft to that head. Once in the head, oil was carried to the bushings and cam lobes by drillings and the hollow core of each camshaft. The cam lobes proper were made individually and keyed to the shaft which carried them. This method, which resembled motorcycle-engine practice, made it easier to choose the right cam contour, as well as the best material for the lobe surface.

KARL SCHMIDT'S FIRM MADE THE INTRICATE HEADS, WITH DEEP FINNING FORMED IN ALUMINIUM BY PERMANENT-MOULD CASTING

To transmit the cam's action to the valve, Fuhrmann improved upon another technique which had been used in the flat-twelve designed for Cisitalia. This was a pivoted finger placed between the cam lobe and the end of the valve to absorb side thrust from the lobe. A single shaft could not be used as a hinge for pairs of side-by-side fingers because one of the cam-drive shafts passed between the fingers. Instead, Fuhrmann used a spherical pivot, with the end of the finger held against its pivot by a coil spring. Rather than being situated directly





Above The design of this fiercely competitive engine promised to set the racing world alight, as shown in this rare colour photograph taken during Type 547 testing

Top right Taking care of business at Le Mans in 1954

above the valve stem, the cam was offset 10mm toward the finger pivot. Valve clearance could thus be adjusted by raising or lowering the pivot by turning the threaded stud on which the pivot was mounted. This simple valve gear, novel at that time, was later put to use in many production overhead-cam engines.

Flats for clearance to the open valves were machined in the tops of the domed pistons, cast by Mahle from 124 aluminium alloy. Deep-skirted, each piston had one oil ring below its wrist pin and three compression rings above it. Wrist pins were free to float in both the piston and the small end of the connecting rod. Due to the fact the crankshaft was an assembled Hirth design with roller bearings, the connecting rod could have a one-piece big end. Although plain aluminium main bearings like those used in the 1500 Super engine were tried experimentally, the final Type 547 design specified rollers for the three main journals, as well as the big-end bearings.

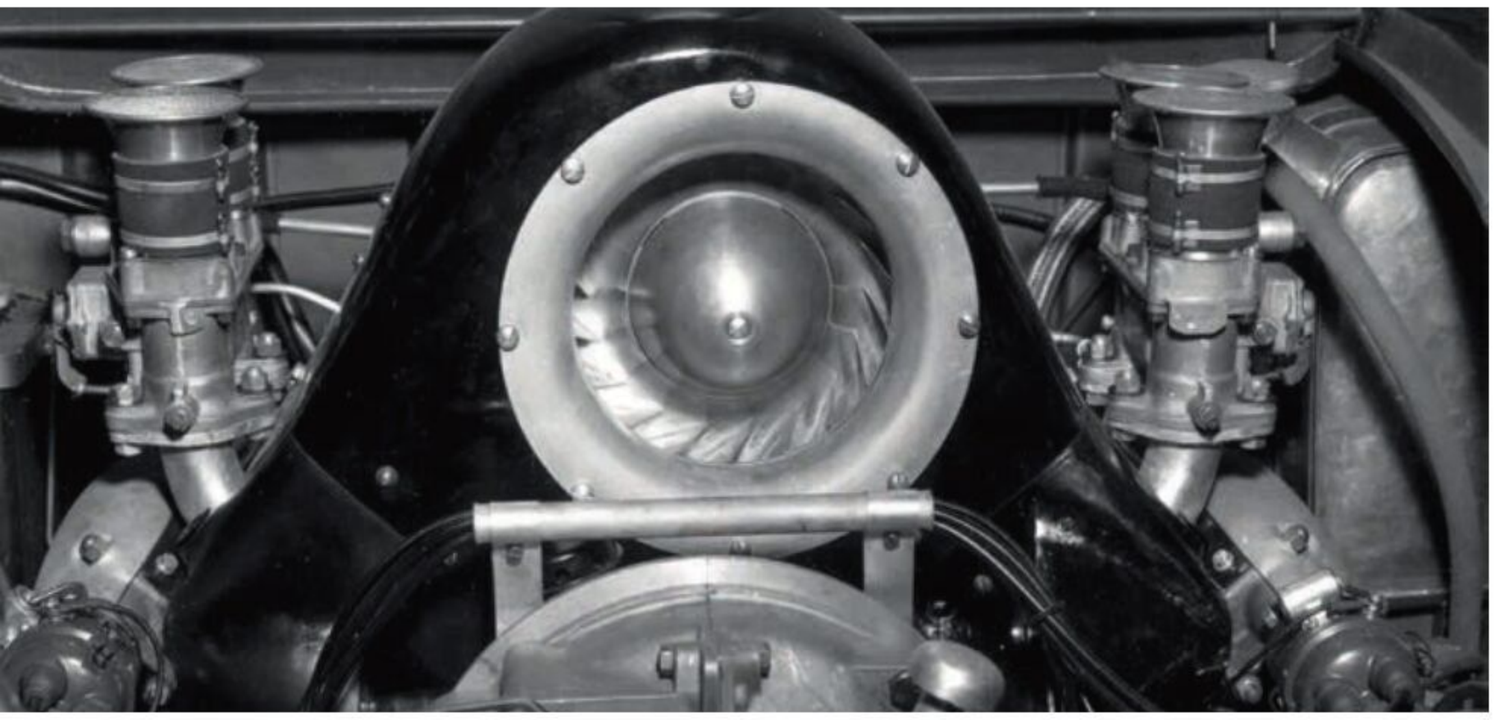
The crankshaft for the four-cam engine was completely assembled by Hirth from ten main pieces. Four of them were the rod-bearing journals, held together by five finely threaded hollow bolts. All parts were machined to such standards of precision they could be used interchangeably in a crank assembly with no need to machine or finish-grind the complete article. As in the Cisitalia Grand Prix engine, a serrated Hirth joint was chosen to attach the flywheel to the crankshaft.

Each throw of the crankshaft was as heavily counterweighted as the space between the opposed cylinders would permit. Because this space was not quite adequate, cylindrical slugs of high-density alloy were inserted into the cheeks of the four counterweights. Lubricant – SAE 30 oil – was pumped to the three main bearings through brass metering jets. As oil escaped, it was centrifuged outward and caught by slinger rings, from which it was carried by passages to the connecting-rod journals. Oil flowed to the various galleries from the pressure section of a pump driven by a gear at the tip of the half-speed countershaft. Together with a scavenging pump of more than twice the capacity, it was housed in a cylindrical casting which fitted into a matching cavity formed by the two halves of the crankcase. This ingenious design detail was transferred directly by Fuhrmann from the Cisitalia engine.

To keep the engine's profile low and to provide enough oil and oil-cooling capacity, the Type 547 was given an external oil reservoir and a dry-sump lubrication system. The narrow bottom-finned sump was cast as part of the aluminium-alloy crankcase, which was a two-part assembly split vertically down the middle. The individual cylinders, cast of aluminium with chrome-plated bores, were produced by Mahle. The Karl Schmidt firm made the intricate cylinder heads, with deep finning formed in aluminium by permanent-mould casting.

Arranging adequate air cooling for the heads of this high-performance engine posed a major problem. Air would not flow downward with equal force over the seats and ports of both inlet and exhaust valves as it did in the other Porsche engines. It would, instead, pick up heat from the upper, inlet side of the head before continuing downward to cool the even hotter exhaust-valve area. This situation was acceptable to Fuhrmann because he wanted the inlet side of the engine to be cool in order to maintain high volumetric efficiency for optimum power. Total cooling-fin area was increased from 2,600in2 (on the normal Porsche engines) to 3,600in2 on the Type 547, with most of the increase accounted for by the cylinder heads.

For a suitable cooling blower, Fuhrmann drew on the knowledge of Franz Xaver Reimspiess, an expert in the design of air-cooled engines. After 1945, Reimspiess had gone to work for Steyr in Austria before re-joining Porsche at Zuffenhausen in 1951. There, he developed and patented the type of dual-fan blower chosen for the Type 547, which needed efficient, low-drag cooling with



a large volume of airflow at high crankshaft speeds. The fan was of radial-outflow design with backward-curved blades (the most efficient blade design, although the most space-consuming). The fan was large enough to be double-sided, drawing air from both front and back of the engine. The generator acted as the fan-drive shaft and support. Front and back sections of the fan fed completely separate cooling ducts to the front and rear opposing cylinder pairs of the engine.

Instead of the square edges a production design would dictate, the aluminium fan shrouds were given smooth curves enhancing airflow both internally and at the equally important entries to the fans. By moderating fan speed, efficiency was also enhanced. Drive belts of the pushrod 1.5-litre engines turned the fan at 1.8 times crankshaft speed (9,000rpm when the engine was turning 5,000rpm). In contrast, the Type 547 was given a one-to-one pulley ratio, meaning its fan was spinning at only 7,000rpm when the engine was revving that high.

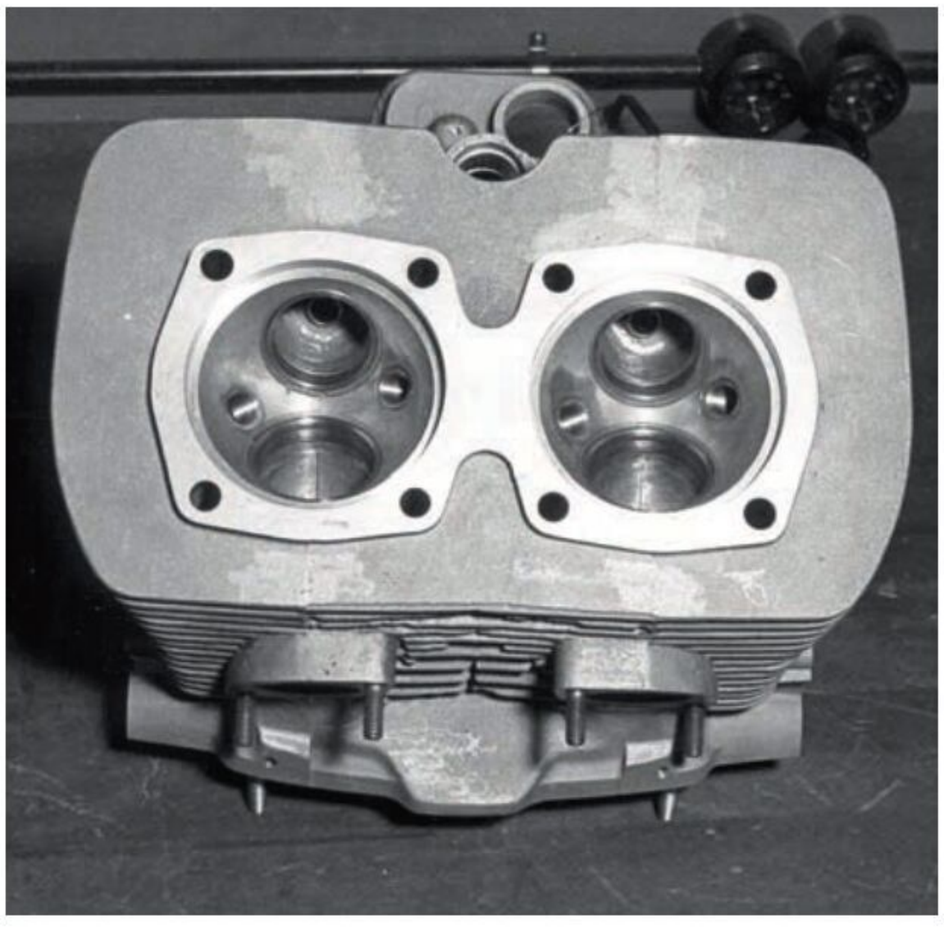
These subtle touches amounted to a fan and shroud system which could pump almost twice as much air as the Porsche 1500 blower, while demanding only slightly more power to do it. At 7,300rpm, for example, the Type 547 fan needed 8.8 horsepower to drive it and delivered 2,750 cubic feet of air per minute. Even at the lower speed of 6,200rpm, the Type 547 blower was still delivering 2,330 cubic feet per minute while absorbing 6.0 drive horsepower. The moderate power requirement meant this exotic engine's fan could still be driven by a simple vee-belt.

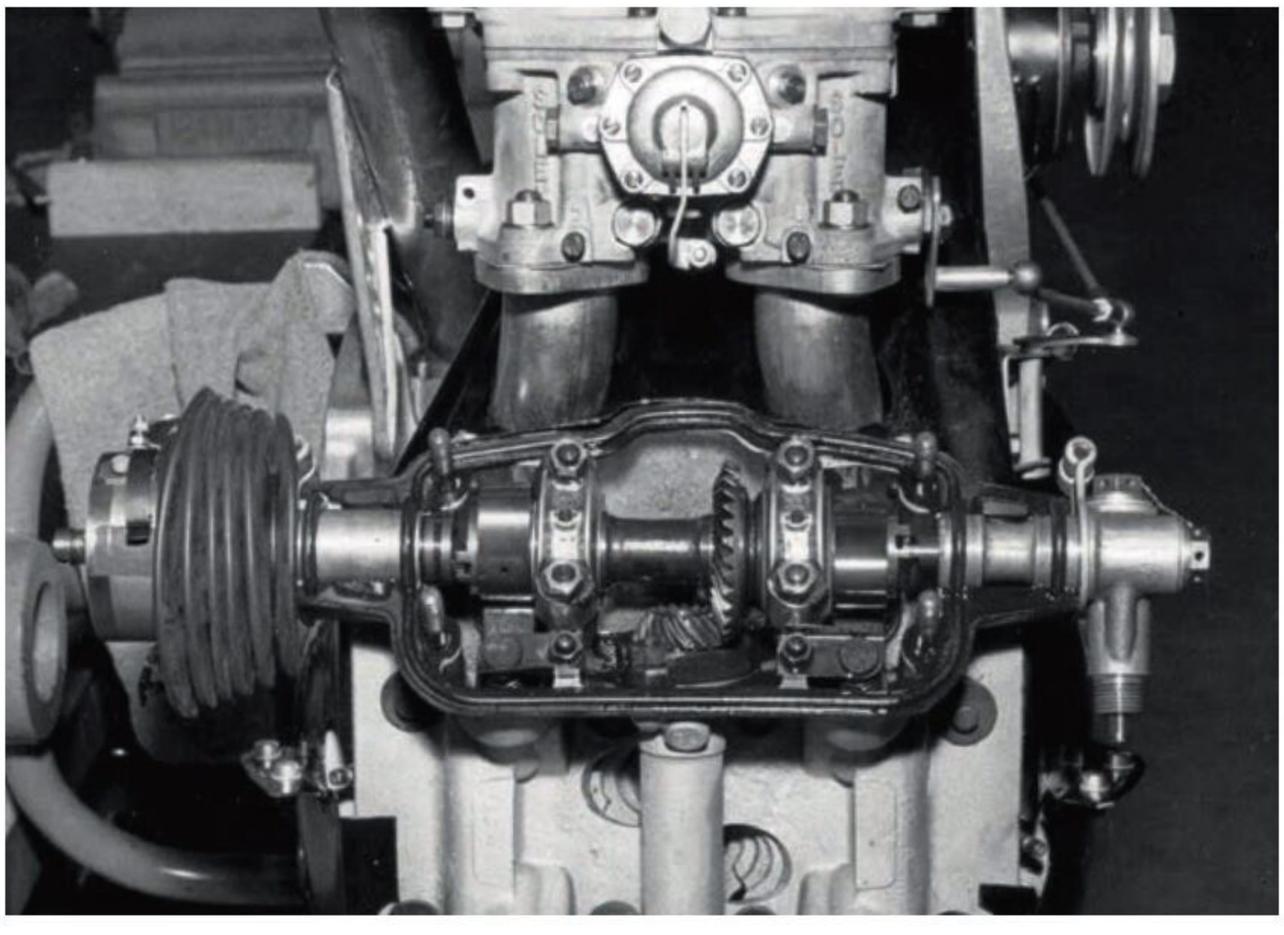
BRIGHT SPARK

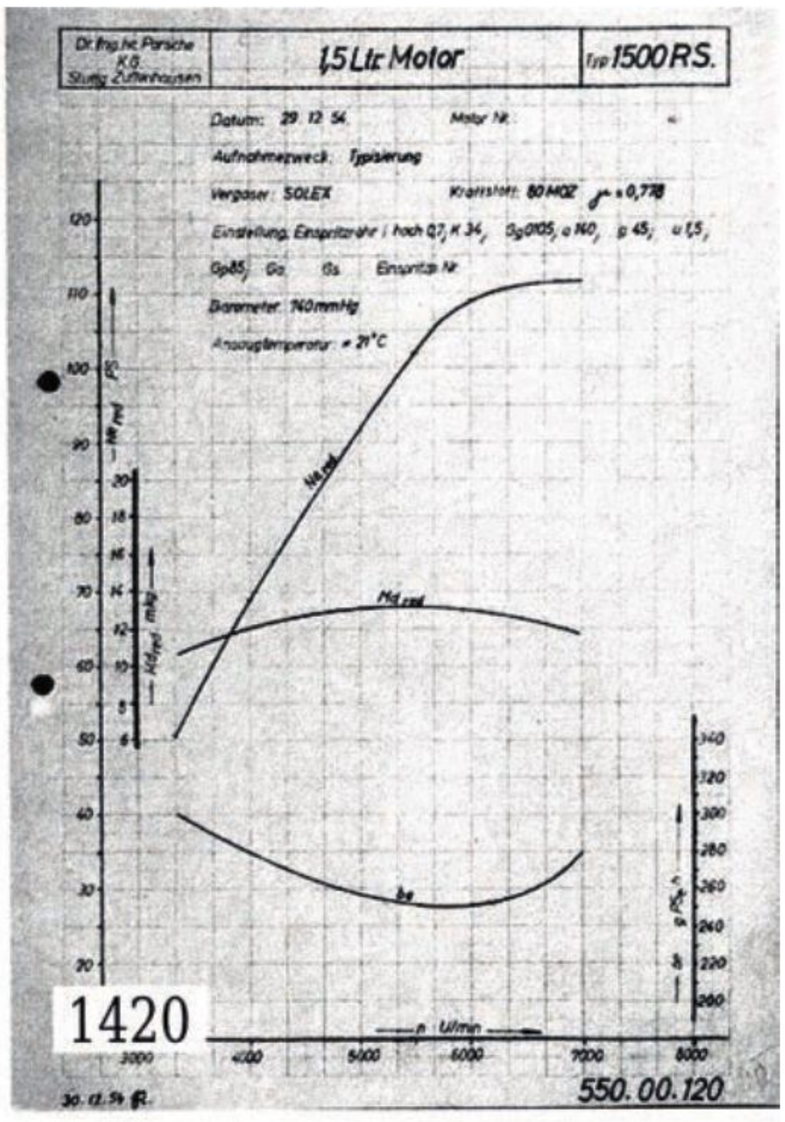
More reminiscent of contemporary Italian designs than of previous Porsche ideas was Fuhrmann's inclusion of two spark plugs in each combustion chamber. Having two plugs gave him a better chance to fit large valves while also igniting the compressed charge more effectively in the spread-out combustion chamber of

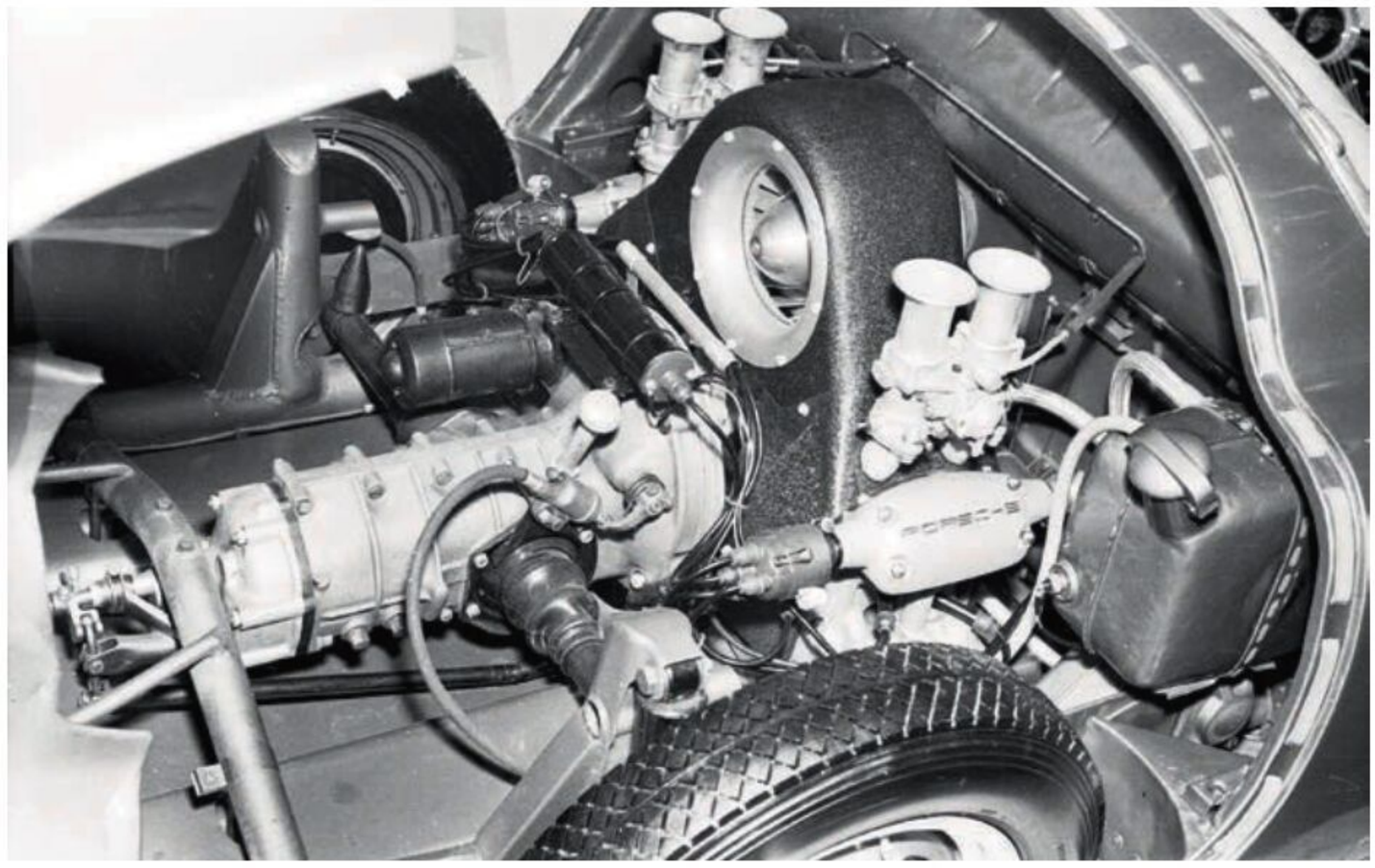
Above Prototyping the engine and 550 Spyder in late 1953

Below Camshaft and cylinder head views of the famous Fuhrmann four-cam









Above Type 547 power graph produced in Zuffenhausen on 30th December 1954

Below Clutch side of the 1,498cc powerplant

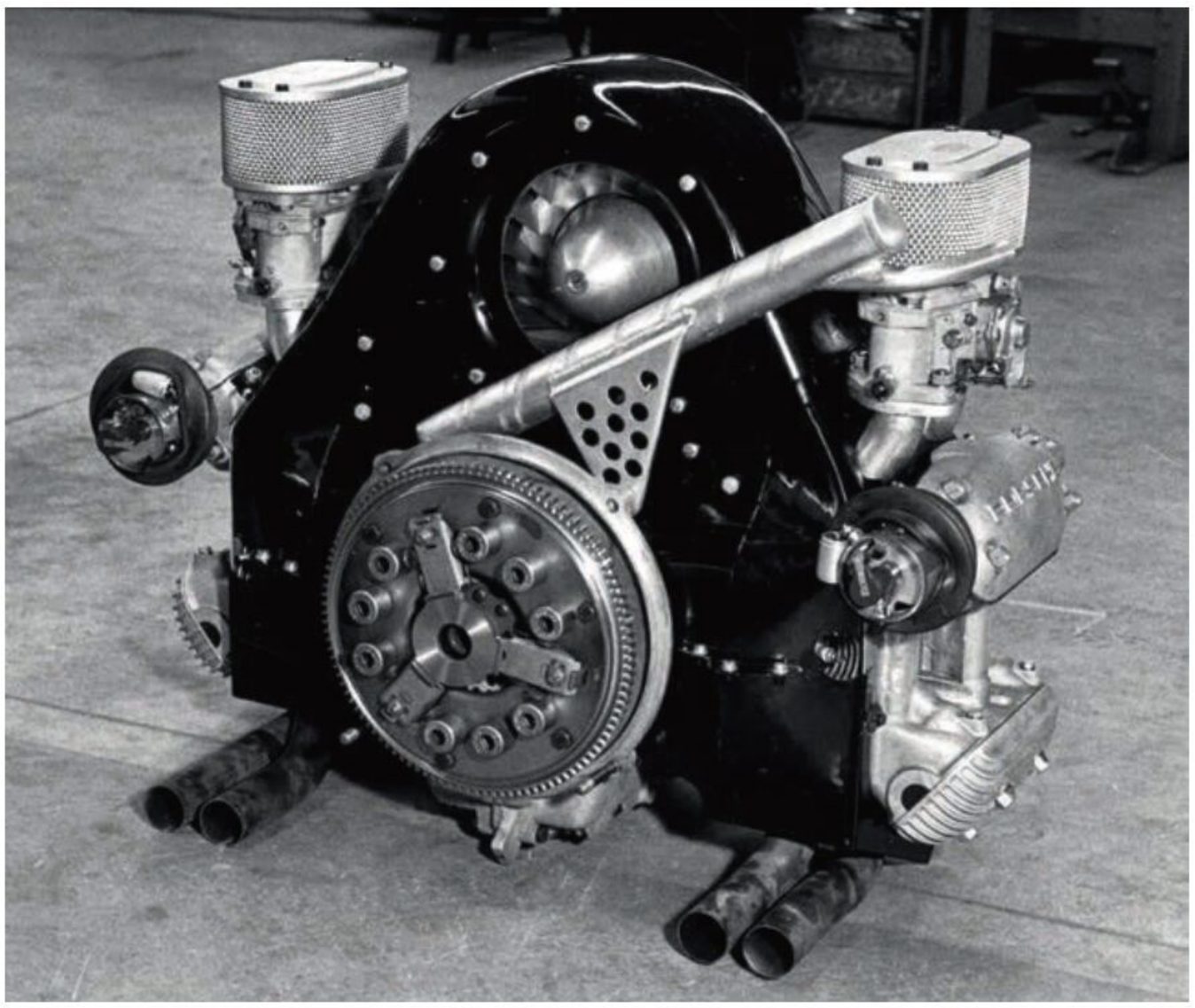
his big-bore engine. Dual ignition called for two Bosch distributors, one firing the inner pair of plugs on each head and the other the outer pair. The distributors were driven from the ends of the upper, inlet camshafts, which had fittings at both ends to ensure the distributors could be on either the front or the back of the engine to suit installation. This also allowed the same basic cylinder head casting to be used on both sides of the engine – an important economy. These were principal features of the new design taking shape on the Fuhrmann drawing board in the summer of 1952. By autumn, the engine was sufficiently detailed to be built and tested. Although work was interrupted by the move to a new factory that winter, components for at least three engines were completed and, pleasingly, the first such unit was assembled during March 1953.

On 2nd April 1953, in a test cell at Zuffenhausen, the Type 547 ran under its own power for the first time. "We had small troubles to overcome," recalled Fuhrmann. "We had a foaming of oil coming out of the housing. Minor things, but very important. Ultimately, however, there was no real problem forcing us to make changes to the design. It was very quickly done."

Developed in parallel with the new engine were new carburettors from Solex – the 40 PII units used on the modified 1500 Super engines in the first 550s. "At first," said Fuhrmann, "we were using Weber carburettors. In terms of racing, they were a little ahead of their time, but the owner of Solex was a personal friend. He complained to me how Porsche didn't use his carburettors on its cars. He designed a special carburettor for the Type 547, and so our business went back to him!" Nonetheless, the works racing Spyders made use of Weber carburettors.

The bespoke Solex products combined – in one French-made body – two 40mm downdraft throttle bores separated by a single central float bowl and sharing a single accelerator pump. For the Type 547, the bores were fitted with venturis measuring 34mm in diameter. This completely novel engine was first seen in public at the October 1953 Paris Salon, installed in the rear of a Type 550 prototype. Although Porsche said the engine produced 110bhp at 7,000rpm, it was already giving 117bhp in hill-climb tune. Proving the point, on 9th August 1953, Fuhrmann's engine powered a 550 at the Freiburg hill-climb in its first racing appearance. Hampered by a peaky power curve, however, works driver, Hans Stuck, had to settle for third-fastest time overall.

"While I was working on the engine, I thought about the needs of a production car, too," Fuhrmann admitted. "In fact, I put the first finished unit in my 356." Colleagues at the company tested Fuhrmann's potent Porsche. Impressed by what they experienced, the seeds were sown for the 356 Carrera production model, introduced at the Frankfurt Motor Show in September 1955. And, once into its stride in the 550 Spyder, the Fuhrmann four produced 125bhp at 6,500rpm. By 1961, for Formula One use, the engine was delivering 150bhp and could be revved to more than 8,000 rpm. A special development engine even registered 185bhp. Such was the evolution of what became known as the 'Carrera four-cam'. Looking back, Fuhrmann described it as "a folly of my youth". A formidable folly! **CP**



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CARRERA 3.2 TARGA

OPEN FOR BUSINESS

The Carrera 3.2 Targa remains an affordable entry point to ownership of an air-cooled 911 and, with a careful and considered approach to Porsche personalisation, can be transformed into the perfect everyday Porsche. What's more, this one can be yours…

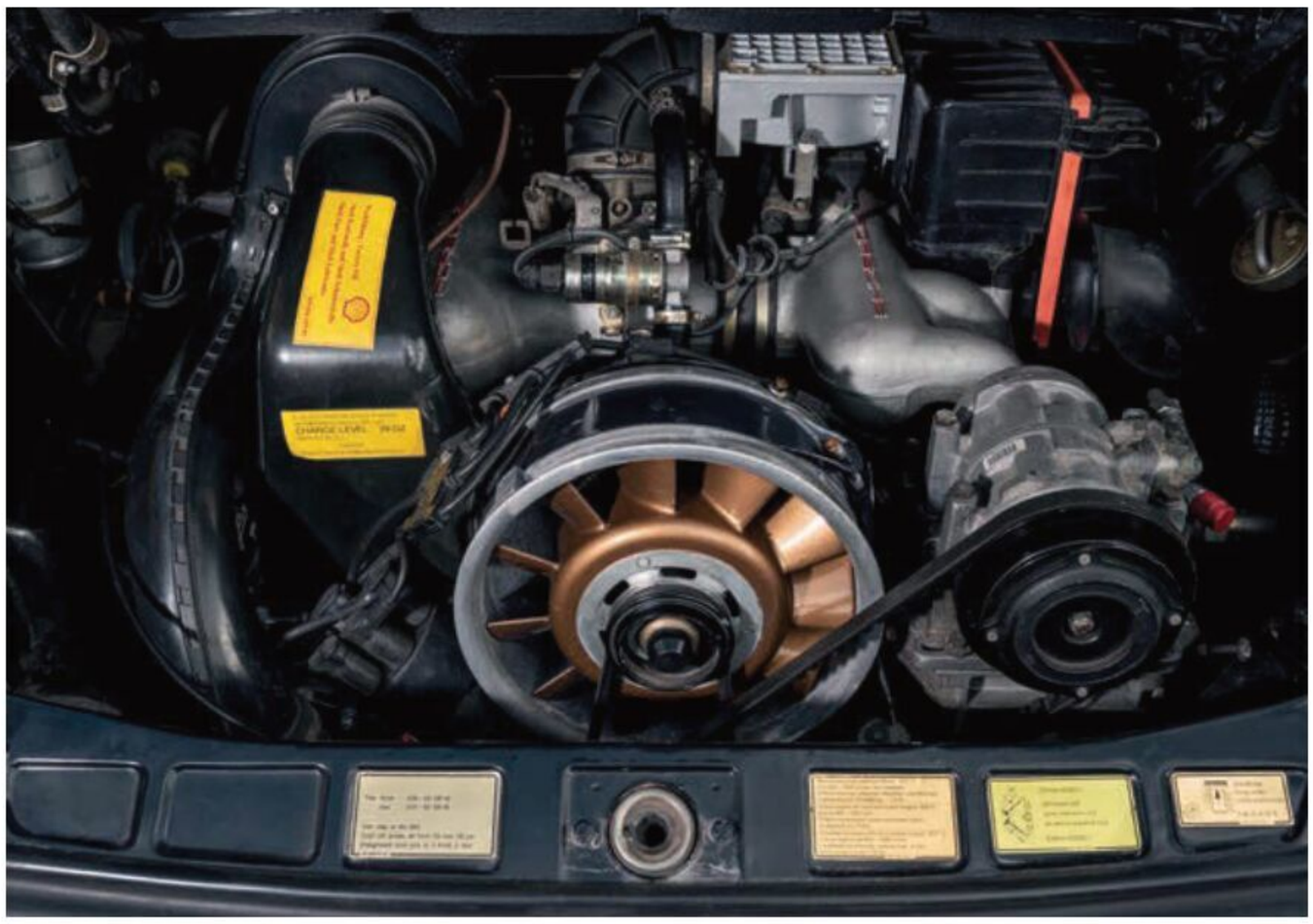
Words **Robert Smith** Photography **Dan Sherwood**

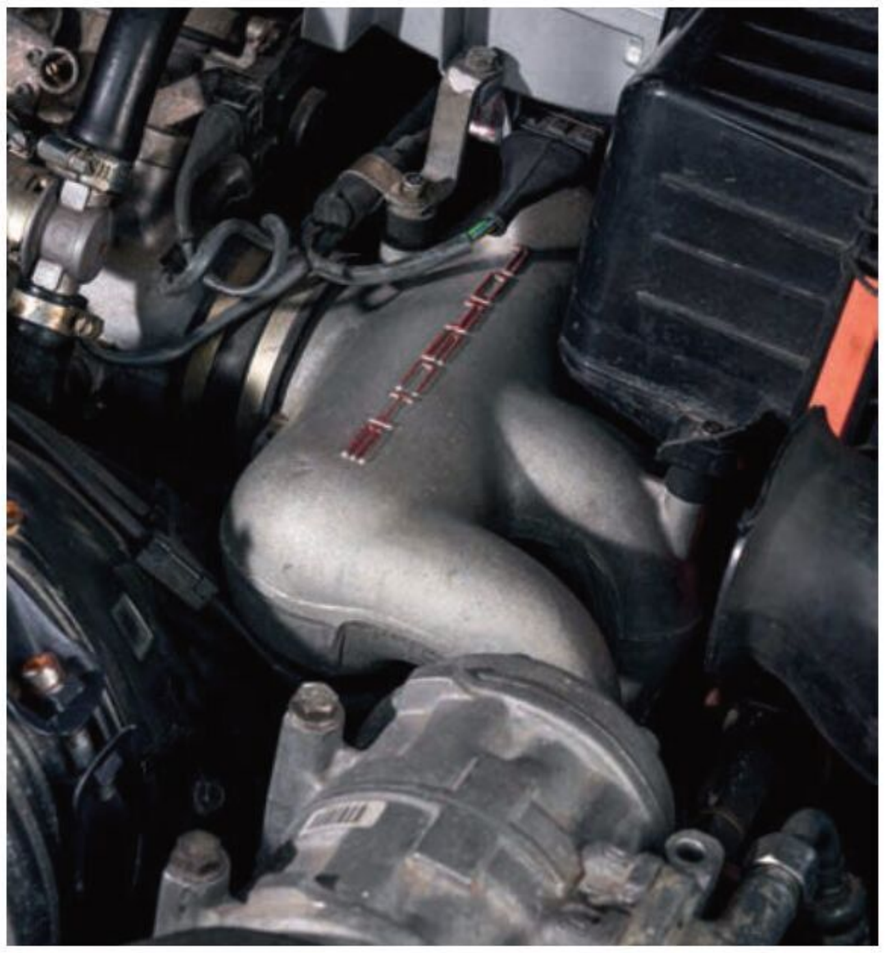
Above Black with gold accents is an age-old winning combination and looks fantastic on this Targa

Anyone who has stripped an old Porsche knows to expect the unexpected. For example, hidden corrosion waiting to be uncovered is hardly unusual when evaluating the condition of an air-cooled 911 in advance of restoration. And, as we find time and again, many metalwork repairs carried out back when the value of these cars hit rock bottom leave a lot to be desired. Plenty of owners simply couldn't justify spending big bucks on a car worth nowhere near what you'd need to budget to find your name on the logbook of an air-cooled 911 today, leaving today's custodians of these Porsches to deal with a legacy of bodges. Take the stunning 1984 Carrera 3.2 Targa on these pages. Imported from the USA in 2017 and bought by its owner from a UK-based 911 dealer advertising the black beauty as a tidy vehicle "needing a little work" in advance of a return to the road, subsequent strip-down at classic car restoration outfit, Workshop Seventy7, revealed an empty can of Sprite had been split open and used to patch an inner sill.

"We could more or less date the work to the mid-1990s by the logo and graphics printed on the can," laughs company boss, David Lane. As far as crude repair work is concerned, this is definitely one that'll stick in the mind for a long time to come, but it's important for us to state it wasn't indicative of the car's overall condition, which offered a great starting point for a full recommission, a fact made clear by the accompanying big box of paperwork outlining regular servicing and preventative maintenance carried out at the instruction of the original and previous owner. Finished in solid black, wearing a whale tail, staggered Fuchs five-leaves and optioned with Sports-specification 'tombstones' and a limited-slip differential, the semi-open-top 911 was the perfect foundation on which David and his team could

Below Retro-look head unit provides modern radio connectivity, though the sound of the blaring flat-six is all the soundtrack we'd need





Above 3.2-litre flat-six is original to the car and has been thoroughly rebuilt

build, resulting in the tip-top Targa we're enjoying at Workshop Seventy7's Northamptonshire base today.

As many of you will be able to relate to, the original plan of action was for the car to be treated to a refresh of its mechanical components, with repairs undertaken as required. From then on, the car's proud owner planned to simply drive and enjoy his new Porsche. As work began, however, it became obvious areas of the car previously uninspected were in need of attention. "It was counterproductive to spend time overhauling the engine and transmission and not do a proper job of cutting out the corrosion discovered along the way," David says, not unreasonably. Save for the surprise find of the drinks can, the car was in really good shape, with nothing out of the ordinary to report in terms of rust. "New kidney bowls and fresh inner and outer sills were required as is typical of a Porsche of this age, but otherwise, the body was in really good shape."

CIRCUITRY PERMITTING IT TO DETECT AND INDICATE THE PRESENCE OF X-BAND AND K-BAND POLICE RADAR SIGNALS

The mechanical work ended up including a full engine rebuild, involving strip, inspection and cleaning of all parts, the appointment of 993 head studs, a new OEM gasket and ring set, new oil lines, a Dansk middle silencer, new heat exchangers, a new alternator, crossmember, all ignition components, alternator, idle control valve and a Bisimoto pulse chamber, claimed to release up to seventeen ponies at the same time as delivering a more aggressive exhaust note. "The Bisimoto part sounds fantastic, especially under load," David reveals. "It's a real hoot on the motorway at full chat. The thing is, this is a left-hand-drive 911 now residing in the UK. The tailpipe is on the left and, when you're driving along narrow British streets, the boom from the pulse chamber bounces off brickwork and even hedgerow, making the sound even louder that it would be in the USA during

Below Tweed-style interior continues the aesthetic


Carrera
PORSCHE
A958 YEP

Above There are few classic 911 driving experiences as satisfying as a Targa on the open road with roof removed

normal driving conditions. We decided to take the unit apart and install different wadding and tubes to give the car a little more refinement. There's no noticeable drop in power and this Targa still sounds awesome, but the owner can now drive without drawing too much attention to himself."

Ben Lane (no relation) at Elite Motor Tune in Northampton took care of further mechanical work, while parts were supplied by Design 911, Roger Bray Restoration, Karmann Konnection and Type 911. The stockpile included new bumper seals and gaskets, new side skirt fasteners and rubbers, European-spec H4 headlamps, fresh rear lights, bumper overriders and a new windscreen, all installed after David received the car back from his trusted paint shop. Personalisation of this Porsche took place at the same time, with the whale tail replaced by a more subtle lightweight flat engine lid. "The changes made to the car took place in a very organic way," he recalls. "As we were working through each stage of the project, the owner would present ideas for updating and improving his 911 in tasteful fashion. The gold and black colour scheme, for instance, dictated the finish of the wheels, as well as a full retrim of the interior, including seats, door cards, handles and all new carpet, extending to the front luggage area. Obviously, we replaced window seals and the Targa hoop gaskets at the same time, ensuring the beautifully stitched Tweed-like fabric didn't suffer water damage as consequence of the kind of moisture ingress these cars are renowned for. I'm pleased to report this is a completely leak-free cabin!"

THIS "LITTLE ROCKET SHIP" CAN NOW TACKLE CORNERS AS CONFIDENTLY AS IT TAKES OFF FROM A STANDING START

FOCAL POINT

It's also one making use of a MOMO Heritage Prototipo steering wheel and modern entertainment equipment, including a Continental retro-look head unit and Focal speakers, installed at the point of full rewiring. What certainly isn't modern is the radar scanner mounted in the centre console. Situated above the oh-so-1980s cassette storage drawers, the unit features two settings: one for 'highway' mode, the other for 'city' driving. Launched in late 1983 by American electronics firm, Cincinnati Microwave, this compact "radar warning receiver" contains circuitry permitting it to detect and indicate the presence of both X-band and K-band police radar signals. Redundant today, it's a neat fit in the 911's cockpit and has been kept in place as a nod to this Porsche's Stateside past.

The suspension was upgraded with new Bilstein shock absorbers, rubbers and mounts, before the car was sent to esteemed chassis tuning specialist, Chris Franklin, at Warwickshire-based Center Gravity, a company celebrated for positively transforming Porsches of all ages to suit the driving style of their owners, as well

as to dial-in modifications, thereby optimising the host car's handling. Suffice to say, this "little rocket ship" (as Chris refers to it) can now tackle corners as confidently as it takes off from a standing start. Understandably, the brakes were overhauled in accordance with the enhanced performance.

"As time went on, this Targa became far more of a restoration than the recommissioning project it was intended to be," David reflects, looking back on the work his team presided over. "This is now a super-sorted air-cooled 911 afforded a huge amount of attention and, crucially, is both structurally and mechanically sound. Importantly, it retains its original 3.2-litre engine and Type 915 gearbox, both operating as new and propelling a Porsche treated to a full glass-out respray." The individual styling has been applied with sympathy to the age of the car and trends popular at the point of production, with the introduction of incidental modern-day electrical equipment assisting with navigating modern traffic. Speaking of which, the car's cruise control system works a treat.

"This is a really genuine Carrera 3.2, having had thousands upon thousands spent in all the right places and hundreds of man-hours invested at specialists dedicated to getting the condition of the car to where it is now," David adds, acknowledging the owner's determination to make his terrific Targa the best it can be. In fact, he found the process so involving and so hugely rewarding, he's lining up his next Porsche project already. "This car will have to make way for the new build," David reveals. "Interested parties should give me a call. This is a superb air-cooled Porsche, a wonderful modern-classic to add to any garage and, above all, it's ready to be used without any required remedial work." Better days are coming, so Jimmy Cliff sang, and enjoying them from behind the wheel of this restored and lightly modified Carrera 3.2 Targa is a very tempting proposition indeed. **CP**

Below Bisimoto pulse chamber has been quietened, while Escort radar detector is an early 1980s throwback

MODERN CLASSIC

Following decades spent in a state of suspended animation, the Defence Mondiale Carrera RSR 3.0 has enjoyed a series of thrilling European outings in the hands of one of America's most famous motorsport families…

Words and photography **Robb Pritchard**

We are an inherently competitive species. For this reason, it is of little surprise to learn there have been motorsport events for almost as long as there have been cars. Le Mans, Targa Florio, Mille Miglia, the Monte Carlo Rally… their beginnings stretch way back to earlier eras. Not *all* the way back, mind. The event laying claim to being the oldest of them all is, in fact, Tour Auto, which, incredibly, traces its history to the late nineteenth century. Now revived as a historic racing event, today's Tour Auto is widely regarded as one of the world's most prestigious motorsport competitions. Characterised by its exciting combination of rally stages and race circuits, the French enduro demands participating cars perform as excellent all-rounders, as it did from the beginning. Perfect for a 1974 Carrera RSR 3.0, then?!

The Grand Palace, just off the Champs-Elysees, is a jewel of Parisian architecture and has to be one of the most glamorous scrutineering halls ever established. It's a fitting venue for the array of 250 cars lined up for the start of each Tour Auto, accommodating some of the most astonishing competition machines to have ever graced a racetrack. Among them, you can expect to find Mercedes-Benz W198 300 SLs, classic Aston Martin Le Mans machines, Ligiers, bucketloads of Ferraris worth in excess of $10 million each and, of course, an array of air-cooled Porsches, from venerable 365s and 904s to a bevy of Carrera RSs, RSRs and SCs.

Even among such luminaries of the automotive world, when we attended, there was a Porsche which caught our attention more than any other. Gold on white with red trim works well on a 911, but the ex-Almeras Defence Mondiale RSR, complete with '911RSR' number plate, doesn't just look pretty, it's actually one of the most original of all surviving Carrera RSR 3.0. We tracked down its history, from its build in the mid-1970s to how the car was found blasting around the French countryside in the hands of a 25-year-old American more than forty years later.

In early 1974, chassis number 911 460 9087 was

Above Lower half of the car in gold and red keyline helps to accentuate the muscular lines of the Carrera RSR 3.0

delivered new to the Almeras brothers of southern France, and whatever stories you might have heard about these guys, they have been almost exclusively dedicated to Porsche for over forty years and are an established part of the marque's sporting success. Jean-Marie won a long list of events in this particular 911, as well as the Group 4 class of the French Hillclimb Championship in both 1974 and 1975. In the first of those two outings, he won an incredible fifteen of the tournament's seventeen races. The car wasn't used exclusively for hillclimbing, though. In autumn 1974, it was rented out to be entered into the Tour de France rally (now known as Tour Auto due to the world-famous cycle race commandeering rights to use the older name). Driven by Jean-Marie's brother, Jacques, with Serge Mas co-driving, the Porsche finished the event's more than 1,000 competitive kilometres in a credible sixth-place overall. Then, in 1976, the car took part in the year's 24 Hours of Le Mans. Presented in plain white paintwork and decorated with small Esso stickers and a big number fifty-five on each door, this air-cooled track attacker carried Christian Poirot, Jean-Claude Lagniez and Réne Boubet to twenty-third place overall.

Hillclimb cars need a serious amount of downforce. With this in mind, in 1977, the RSR's bodywork was upgraded from Group 4 specification to Group 5, with wide wheel arches, a Flachbau-style end and a huge rear wing. Jean-Marie entered selected rounds of the European Hillclimb Championship and, again, even in a class higher than it was originally intended for, the RSR won several races. Sadly, only a couple of grainy black and white photos of the car in this configuration exist. Neither are big enough to print in this magazine. Pity.

When the Almeras brothers upgraded to a 935, the RSR was put back into its original Group 4 guise and, in 1979, was sold to retired racer (turned sports car dealer), Marcel Balsa. The former Le Mans entrant kept the car until 1983. During this time, if he raced the Porsche or loaned it to someone else to drive, nothing was recorded. The next owner was Réne Mazzia, yet another Le Mans driver, who kept the RSR for nine years until 1992, when title passed to classic car collector, Gilles Bouchand.

HIS PRIMARY RIVALS WERE IN A MUCH FASTER FORD GT40, WHICH THE WEATHERTECH BOYS WEREN'T EXPECTING TO BEAT

Bouchand went on to own 9087 for twenty years, and although the car was kept as a static exhibit in a personal portfolio of Porsches never driven, it was treated to full restoration in 2001 to ensure it could be enjoyed in absolutely perfect condition, regardless of whether moving or stationary. It was at this time the classic gold-red-and-white Defense Mondiale livery was reinstated.

BIG-NAME BUYER

In 2013, Bouchand decided it was time to sell up. Prescott Kelly, a man with a solid reputation for being able to source rare and exotic classic Porsches, helped facilitate the sale to David MacNeil, founder and CEO of WeatherTech, an Illinois-based automotive accessories company and a well-known figure on the American motorsport scene, not least through his company being

Below In 1977, the car's bodywork was upgraded to Group 5 specification for extra downforce in hill climbing, before returning to Group 4 dress two years later

the title sponsor for the International Motor Sports Association (IMSA) SportsCar Championship since 2015 and title sponsor of Laguna Seca Raceway since 2018, replacing Mazda.

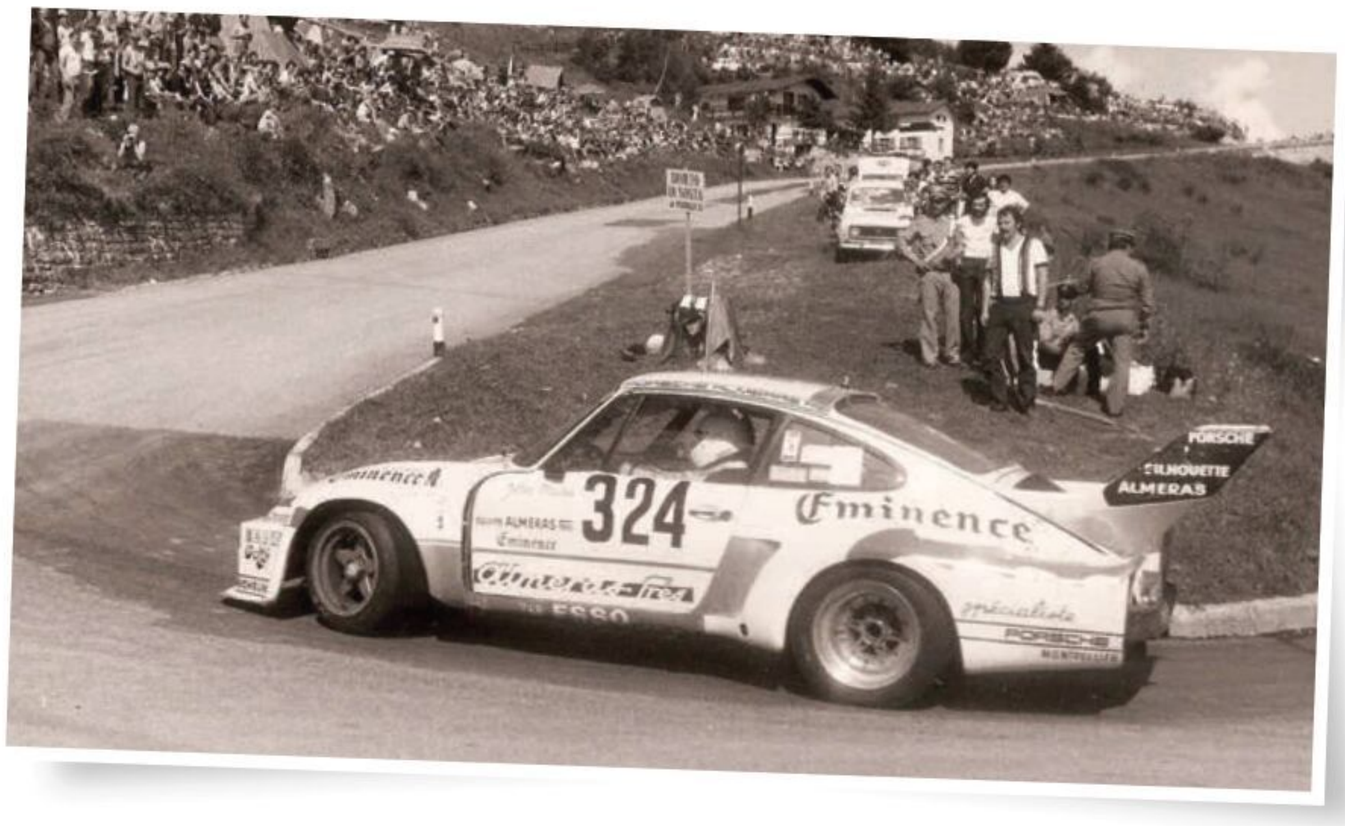
MacNeil's new Porsche was in fantastic condition, but he wasn't interested in having an RSR to look at. An active race car is, however, hugely different to one on display. The latter has to look perfect, but a race car needs to *be* perfect! Anything which degrades with age, such as rubber seals, bushes and belts, needs to be replaced as part of a comprehensive mechanical overhaul. MacNeil's son, Cooper, campaigned a Labre Competition Chevrolet Corvette C6.R in the LMGTE Am class at Le Mans in 2013 and enjoys a good friendship with team owner, Jack Laconte, himself a successful Porsche racer, primarily in Carrera Cup competitions. Laconte also ran one of the factory Aston Martin teams in the Le Mans Series, winning the 2006 GT1 Championship. Needless to say, the MacNeils were more than happy for Laconte to take care of refurbishing the RSR, work which was carried out at the Larbre workshop in Le Vigeant.

When it comes to historic competition cars, the FIA has strict rules about what can be upgraded, with everything needing to conform with the homologation rules set out when the car in question competed in period. Ordinarily, the only changes permitted are those relating to safety. In this regard, standards have improved significantly since the Carrera RSR 3.0 was originally raced which is why, considering the MacNeil 911 was going to be used in a serious competition environment, Laconte's technicians fitted a full, modern FIA-approved roll cage, as well as an impact-resistant fuel tank and modern fire prevention system. The main issue with getting the car ready to race again, however, wasn't how involved the recommissioning work was, but obtaining the necessary paperwork. For Tour Auto, the car had to be street legal, something it hadn't been since at least 1976. In France, there isn't much of a precedent for putting forty-year-old race cars on the road. Coupled with the recent proliferation of classic cars claiming to be something they're not, the French authorities didn't make it easy for Laconte to prove the RSR's originality. He had to spend weeks pouring through old photos and pre-internet race reports in an attempt to identify exactly where (and when) the car raced in the past. Imagine your worst experience dealing with the DVLA. Now imagine doing it in French.

RETURN TO THE FRONT LINE

Eventually, he succeeded, and the car's first public appearance since the late 1970s was at the 2014 Spa Classic, held (as you can probably guess) at the Spa-Francorchamps circuit in Belgium, where Cooper MacNeil shared driving duties with his friend and regular teammate, Leh Keen. Despite the eye-popping range of glorious machines which turned out for one of Europe's premier historic racing events, it was the Defense Mondiale RSR everyone was talking about. "When they checked the supporting documents and saw we had the original matching numbers engine and transmission, people were absolutely bowled over," recalls MacNeil. "They summoned their friends to come and have a look because they'd never seen a Porsche like it before!"

In hindsight, he admits running the RSR at Spa was something of an unnecessary risk. After all, low-mileage RSR engines aren't exactly stacked up in your local scrap yard. Supporting components for these cars are

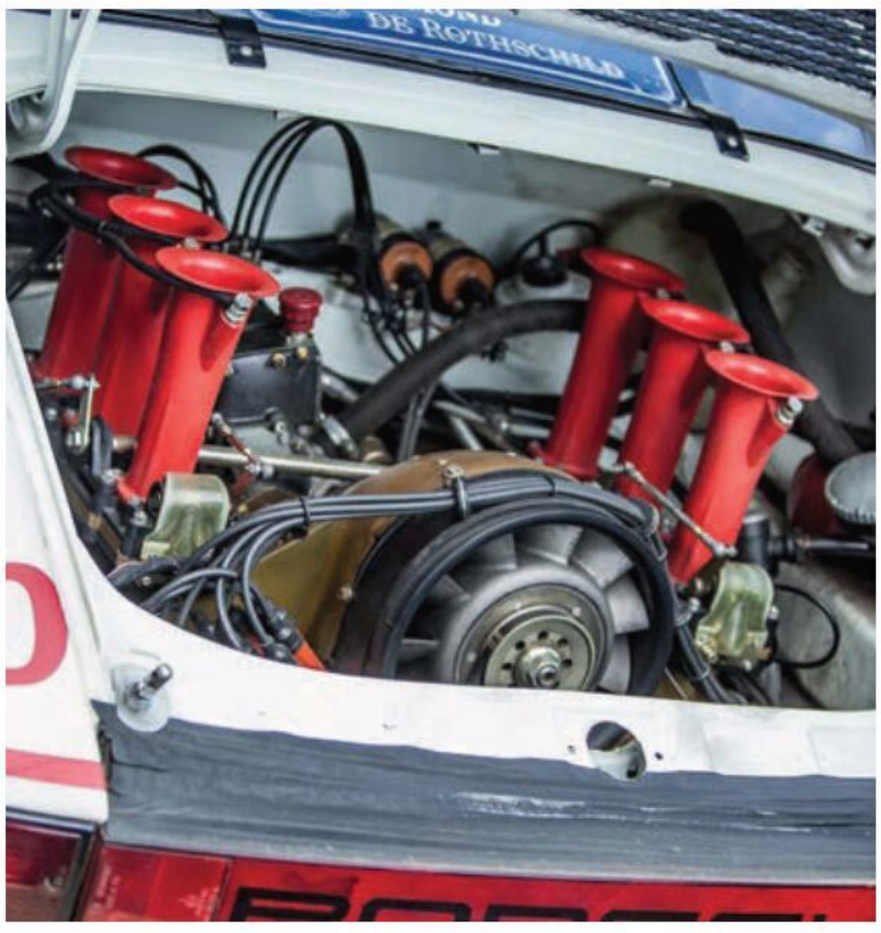


Above RSR manages to stand out against racing machines from Ferrari, BMW and Lotus in a tightly packed grid

also incredibly rare, meaning owners need to be well-connected in the scene and, more often than not, wait until something suitable comes up, rather than buy at the point of requirement. In other words, it pays to have a stockpile of spares. Understandably, Spa was the only race the MacNeils ran with this engine. As soon as a same-spec replacement was sourced, they bought and installed it, preserving the original. The car stayed in Europe for an appearance at the 2014 Le Mans Classic, before being shipped to the USA, where it was one of the star cars at the same year's Monterey Reunion. In 2016, it was back to France for Tour Auto, where MacNeil the Elder drove the RSR in the untimed regularity class and, in 2017, invited his son to join him.

Twenty-five years of age may seem a little young for someone to be driving an original RSR in one of Europe's most prominent and challenging classic events. Then again, most twenty-five-year-olds aren't double ALMS GTC champions (driving a Porsche, natch) or class winners in the 12 Hours of Sebring. MacNeil Jr also raced a 991 GT3 R in the 2017 American Sportscar Championship and presently drives a second-generation 991 RSR with Matt Campbell and Mathieu Jaminet in the sportscar series sponsored by WeatherTech. To date, he's competed at the 24 Hours of Le Mans no fewer than seven times, including driving a 997 RSR for Belgian outfit, Prospeed Competition, in 2014. All this puts the younger of the two MacNeils in the fairly unique position of being able to compare the Carrera RSR 3.0 with its modern equivalent.

"Although a modern RSR a lot more powerful than its classic counterpart, the newer car is much easier to drive," he reveals. "Recent RSRs are thoroughly modern racing Porsches full of electronic devices designed to assist the driver in all conditions. The Carrera RSR 3.0, on the other hand, is raw, pure and a true driver's car. There really is nothing to help you out of a tricky situation, other than the brake pedal, of course. It's just you, a 911 and the track." He recalls his favourite moment at the controls of the classic Porsche. "Driving the Carrera RSR



Above and below Cooper MacNeil and Gunnar Jeanette finished an impressive third overall in the 2017 Tour Auto, participating in the full competition class

3.0 through Eau Rouge flat-out at 130mph while counter-steering thirty degrees each way as weight shifted around the car was nothing short of phenomenal."

CLASS ACT

Tour Auto was supposed to form part of a father and son driving holiday in France for the MacNeils, but when David had to change his plans, his son, along with friend and sometime teammate, Gunnar Jeanette, decided to step up to the event's full competition class, mixing it with much more powerful machinery. To everyone's amazement, the pair finished a highly impressive third overall, a result encouraging them to participate in the 2018 event. "It was a huge road trip, a rally, and a circuit race every day," says the now twenty-nine-year-old. "After fifteen hours driving in this classic RSR every day, squeezed into tight Recaro buckets, we were shattered come nightfall, but we didn't lose sight of the fact this is a very serious event. Put it this way, because there were no pace notes, it wasn't uncommon to be on a stage, driving blind, only to find cars crashed on top of each other in ditches. It was as intense as any race with modern sports cars, perhaps more so, considering the history and provenance of this 911." At the circuits, too, nobody gave an inch. "With about thirty entrants on track at the same time, there were cars locking up around me, spinning, with backmarkers in little Alfas trying their best to weave through the carnage. Every day was a massive adrenaline rush." His primary rivals were in a much faster Ford GT40, which the WeatherTech boys weren't expecting to beat, especially as they had to nurse a slipping clutch near race end, but when the Blue Oval retired with mechanical issues, the Defence Mondiale 911 inherited a lead the event's other three-litre RSR – and a DeTomaso Pantera – simply couldn't catch. After 2,500km (approximately 1,553 miles) spread across five days, Jeanette and MacNeil Jr had won Tour Auto by just forty seconds.

There will always be Porsche fans who think these cars are too historically significant and too valuable to drive in anger. Others will think it's practically a crime to put old racing Porsches out to pasture. Seeing this RSR in action, we agree with folks who share the latter view. While nobody wants to lose a valuable piece of Porsche history, not seeing and hearing these machines running in anger is even tougher to stomach. At the end of the day, Porsches were born to race, especially those carrying an RSR badge. **CP**

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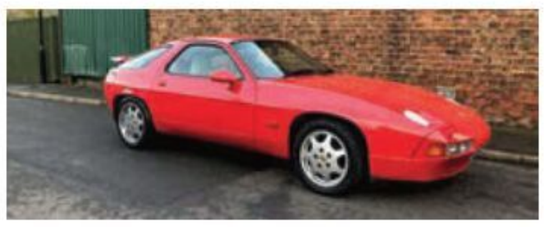

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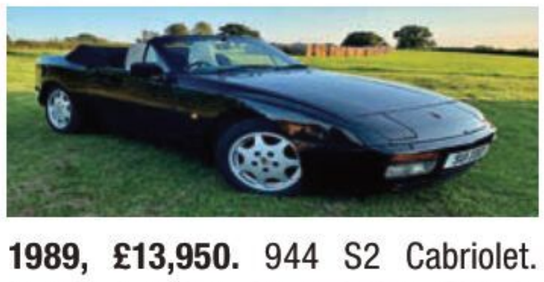

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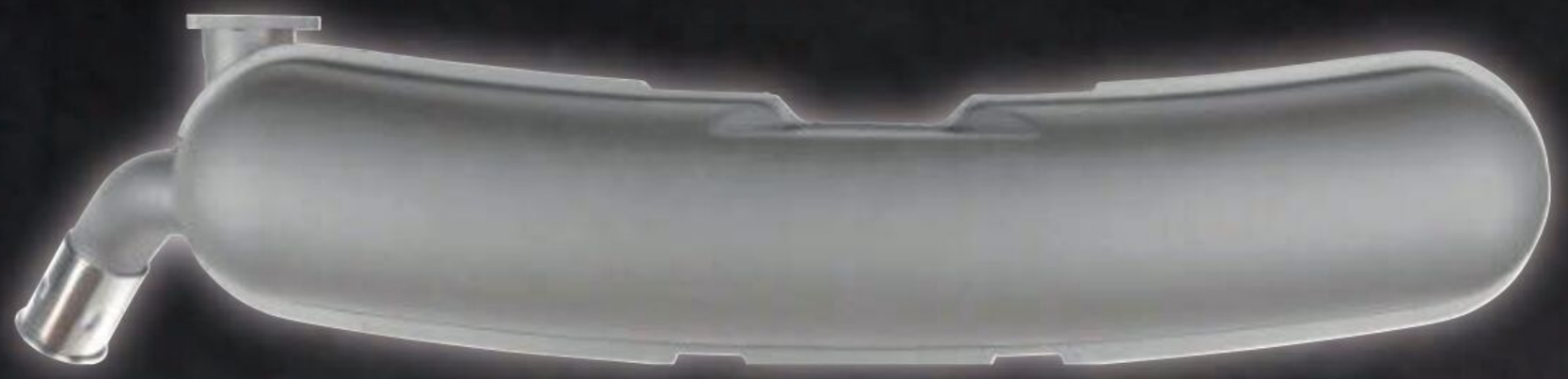

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