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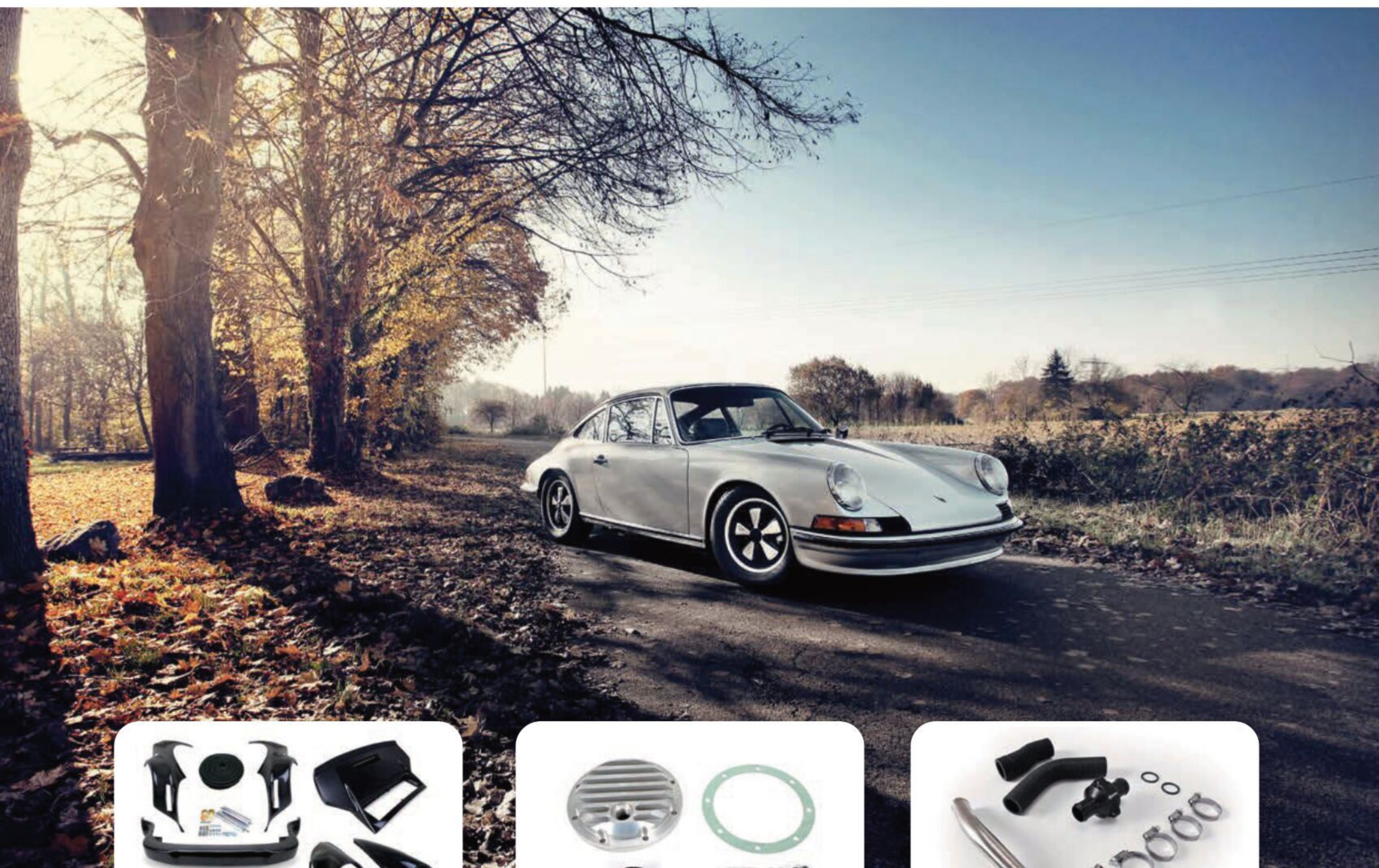
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# TRUE COLOURS



How time flies. If there's one thing to make an automotive enthusiast feel old, it's a significant anniversary of a car or event, the launch of which sticks firmly in the mind as a recent occurrence. The twenty-fifth birthday of the Boxster in 2021 is a prime example of what I'm getting at, as is this year's two-decade anniversary for the Le Mans Classic. 2022 also marks another significant milestone for Porsche fans — forty-five years of 928.

Now, this is *Classic Porsche* magazine, and as such, we usually only point our cameras at air-cooled cars carrying the Stuttgart crest (if kettles are your thing, subscribe to our sister title, *911 & Porsche World*, the world's best-selling monthly Porsche magazine). That said, with renewed interest in the Zuffenhausen 'land shark' as a consequence of its forty-fifth trip around the sun — done in the lap of luxury, what

with it being a super-opulent V8 grand tourer — we reasoned comparable cost between the last-of-line 928 GTS and the earlier Carrera 3.2 may well present something of a conundrum to prospective purchasers wanting to experience Porsche ownership with a set budget in mind. Air or water? Classic 911 or something entirely different from the Porsche stable?

In this issue, we've brought together same-coloured examples of both models in the interests of 'compare and contrast'. Talking of colour, the vibrant shades Porsche applied to its products in decades past — as opposed to the popularity of grey, black, silver and white in more recent times — is one of the hallmarks of the classic Porsche scene, but eye-popping paintwork isn't exclusive to our favourite manufacturer's historic road cars. Indeed, the Porsche motorsport department turned out some extraordinary-looking racing machines in years gone by, with some of the liveries worn going on to become more famous than the drivers parading them around the world's best-loved circuits. Across the following pages, we've examined ten brilliant examples of Porsche battle dress. Let us know which is your favourite. On your marks. Get set. Go!

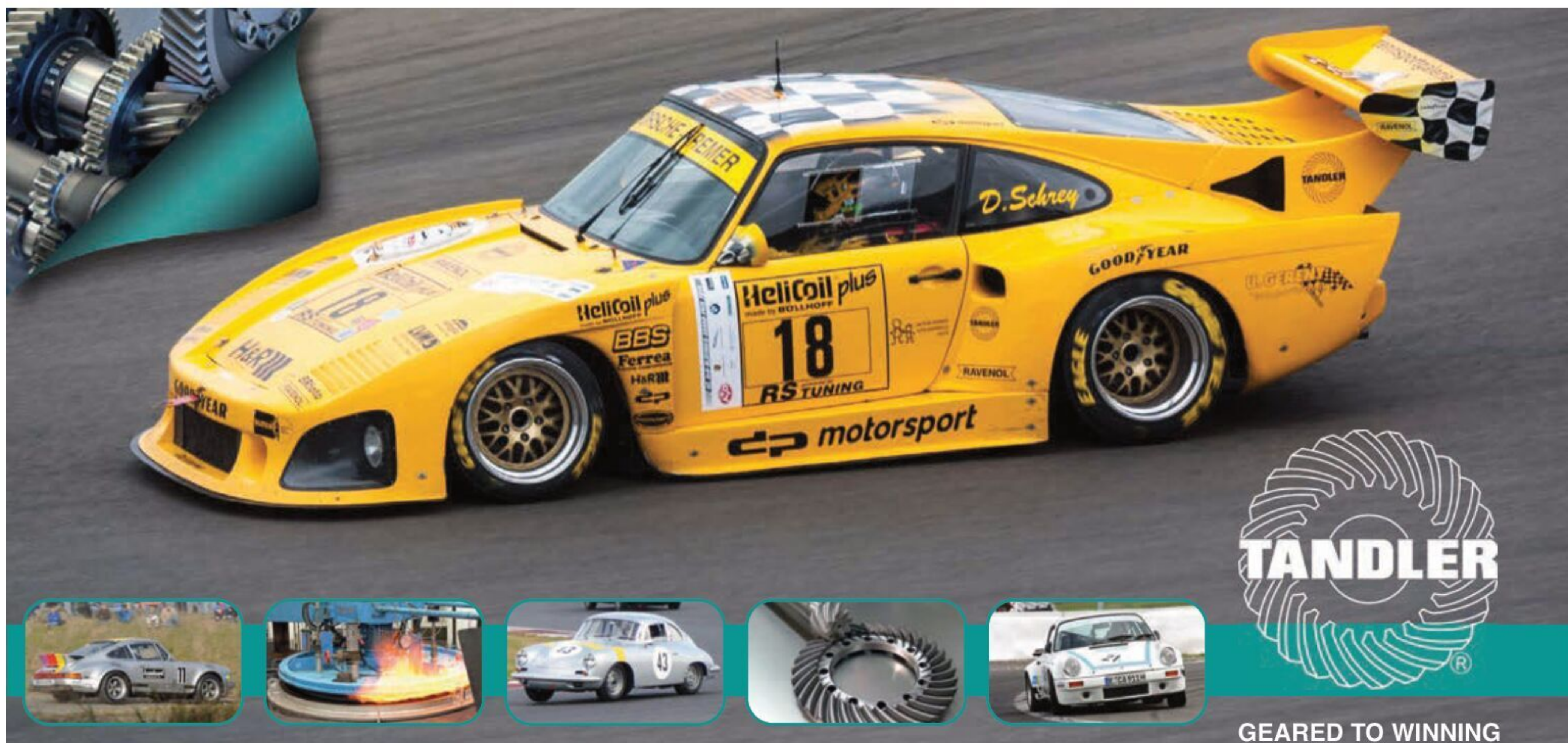


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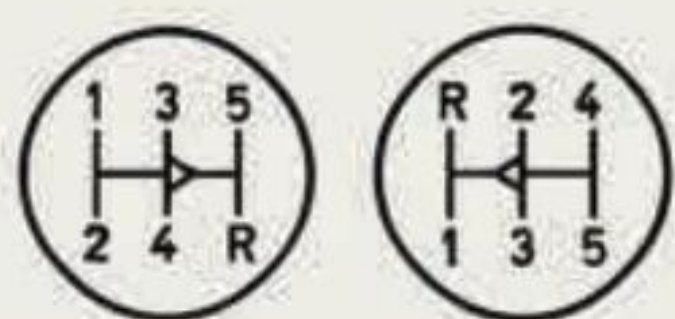


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# FEATURES

**08** **PORK PIE**  
Francis Castelli's personalised 964 C4.

**36** **DOUBLE TAKE**  
A Chamonix 550 featuring 356 parts.

**46** **PAST MASTER**  
Roland Kussmaul's career at Porsche.

**54** **HIT PARADE**  
A right-hand drive 1955 356 Pre-A Cabriolet.

**62** **DUE SOUTH**  
We pay a visit to Canford Classics.

**70** **HEDGING YOUR BETS**  
The Carrera 3.2 takes on the 928 GTS.

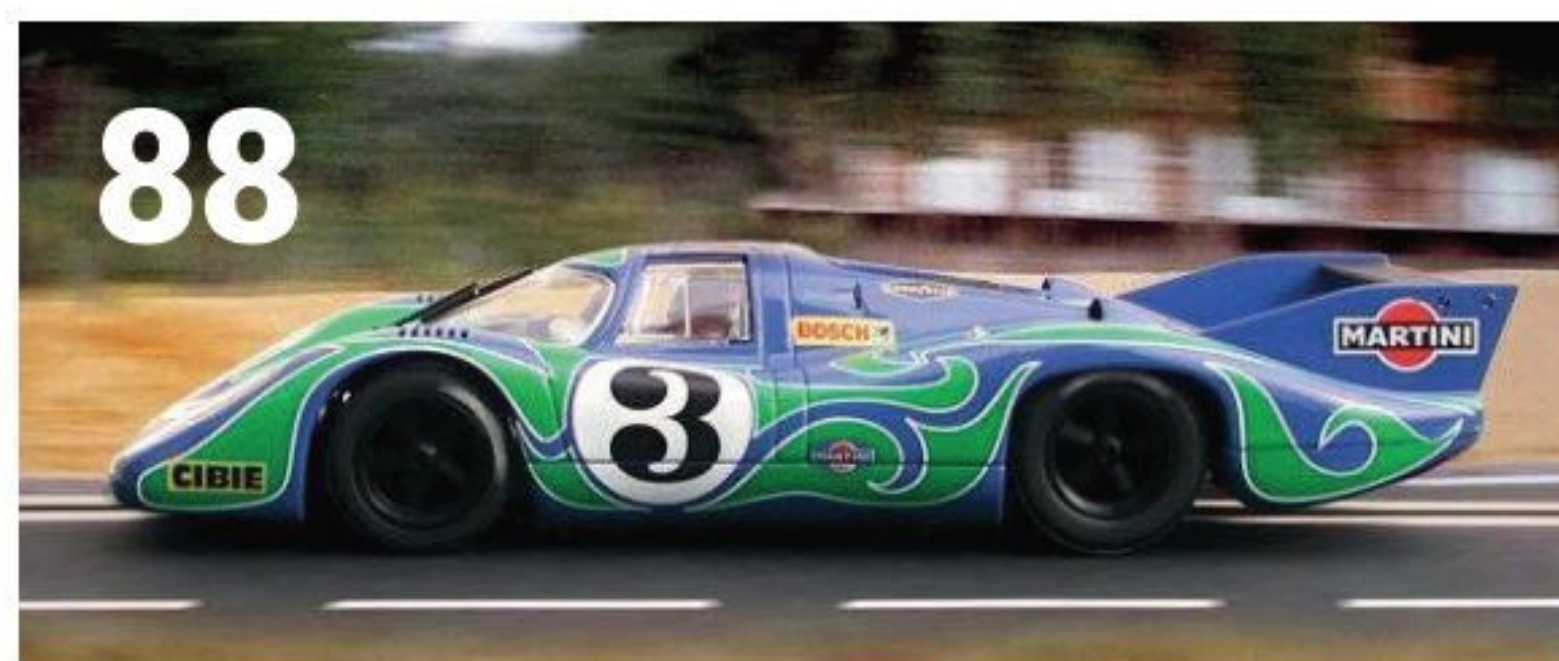
**82** **FOR THE DURATION**  
What camshafts are and what they do.

**88** **BATTLE DRESS**  
Stories behind ten Porsche racing liveries.

**100** **FULL THROTTLE**  
The different types of throttle body.

**108** **SUBSCRIPTION DEALS**  
Get *Classic Porsche* delivered to your door.

**110** **CLASSIFIEDS**  
Shop for your next air-cooled classic.





## REGULARS

- 18** **LIVEWIRE**  
News from the world of historic Porsches.
- 24** **PORSCHE PRODUCTS**  
New gear for you and your classic Porsche.
- 32** **GUEST SPEAKERS**  
Andy Prill and Jonathan Sage wax lyrical.
- 114** **NEXT ISSUE PREVIEW**  
A superbly restored 912 catches our eye.



54



46



36



24



08



62



# PORK PIE

**Long-term ownership has seen this 964 morph from standard to top mod, but how far and fancy should conversions go? We check out the customisation...**

Words **Johnny Tipler** Photography **Dan Sherwood**

**N**ailed! Nearly, anyway. It's almost there — a hair's breadth from being the perfect 964. Owner, Francis Castelli, is still scratching his chin, and we'll get to future possibilities shortly. Sure, purists will grimace and heave a heavy sigh, but, don't turn the page just yet.

I have always viewed my cars as objects ripe for personalisation, chasing some elusive race car oriented goal, motivated by purposeful imagery, restrained or otherwise. Customising, if you will. Porsches in particular lend themselves to this frivolous activity. What's wrong with specification the manufacturer served up in the first place? Fair question regarding products often honed to perfection by Walter Röhrl on the Nordschleife. What's good enough for a two-time World Rally Championship victor ought to be good enough for you and me, right?

Well, yes, but we all know stock specification means a level acceptable to the widest range of buyers. As marque die-hards, we can do better. Indeed, we can make a Porsche move faster, handle more sharply and achieve a look more distinctive, thereby making our ride stand out from the rest in a louche line-up. Does this justify muddling the appearance and capabilities of a perfectly usable and competent standard 911? I see no problem, providing the car in question can be returned to showroom specification if so desired. Francis feels the same way. Let's see what he's brought to show us, then.

It's clearly black... or is it? Actually, it's metallic dark grey — in the sunshine, we note a sparkle. The aggressive stance is obvious thanks to the thirty millimetre drop in ride height. Much of the work has been carried out by the team at PIE Performance, porker-tuners *par excellence*, based in the countryside near









Lavenham, Suffolk. Although Francis has owned his 964 for fifteen years, he was obliged to rescue it “in boxes” from an unsuccessful engine rebuild, which he asked the PIE crew to remedy. “I bought the car from a now defunct Porsche specialist in the north of England,” he says. “In due course, I asked the company to service the car and, with mileage getting high, they told me it could do with a full engine rebuild. In December 2018, as a kind of fiftieth birthday present to myself, and much to the car’s benefit, I reasoned a rebuild presented the perfect opportunity to increase displacement to 3.8 litres.” Disaster loomed large. “The work proved to be beyond the firm’s skillset. Consequently, in February 2020, I had the car and its component parts collected and shipped to PIE Performance.”

Where the previous specialist failed, PIE excelled — Francis collected his finished car in November 2021 and immediately drove to the French Riviera. “It felt like pulling on your favourite old leather jacket!” he laughs. That particular razz took him through five different countries, providing the perfect opportunity to run-in the oversized flat-six and give it a decent shakedown.

### LEAVE AN IMPRESSION

Francis and 911s go back a long way. His stepfather, Stanley Palmer, was an amateur rally driver, competing in a two-litre 911 in the 1968 Monte Carlo Rally. By coincidence, the event was won by the late Vic Elford in a similar car. Mr Palmer collected a Carrera RS 2.7 from the factory in 1973, and young Francis enjoyed several continental adventures in it. As an affectionate souvenir, Palmer’s rally stopwatch and his original British Racing Drivers’ Club (BRDC) badge are mounted on the glovebox lid of his stepson’s 964.

Francis owned a 2.2-litre 911 in the 1990s and acquired his 964 in 2007, immediately putting it to use

as his daily driver. “The prices of pre-impact bumper cars had skyrocketed. With the 964, I opted to for what was, back then, a relatively unloved model.” He gradually turned an ‘okay’ car into a party piece, driving it to his French hideaway every summer.

As far as the external appearance of the car was concerned, the prospect of a backdate was rejected. Likewise, an RS replica. Neither seemed the right way to go. Rather, he would endeavour to bring to reality his vision of the ultimate 964, making his car look purposeful but not garish, as if it could have rolled out of Zuffenhausen like this. Aesthetics aside, he wanted a true driver’s car as happy going to the supermarket for the weekly shop as to the Côte d’Azur, with a potential detour to a race track thrown in en route.

To chronicle the list of modifications PIE Performance has applied to this spectacular 964, let’s begin with the

**Above** Bilstein coilovers, Powerflex polybushes, Eibach springs, staggered replica Fuchs and sticky Michelin rubber ensures this personalised 964 handles just as good as it looks







**Right** Francis' stepfather's rally stopwatch and BRDC badge are mounted on the dashboard of this Carrera 4

colour. The car started life dressed in Marine Blue, but had been an assortment of hues by the time Francis took ownership. Today, his Porsche's personality is defined by the sultry dark grey seen here. "It's a colour from the palette of South Korean manufacturer, Kia, which is a subsidiary of Hyundai. I like the way it flips from black to bluey-grey, depending on the light. Chris Lansbury, head of PIE Performance, treated the car to a respray when the front panel was reconfigured and the splitter added." We'll pick up on that little excrescence later.

We speculate about obtaining a more subtle RUF front panel or even a ducktail from the Pfaffenhausen concern, but Francis is wedded to the 964's standard electronic rear spoiler, both in terms of function and looks. "I like the fact it automatically extends and retracts – there's something to be said for it being retracted, when you've got the original unadorned arching 911 back end to look at."

When contemplating an engine rebuild, owners often think about enlarged capacity and wonder 'what if?'. Although maintaining standard specification is

frequently the most pragmatic option, Francis decided to go the whole hog and take his Porsche's air-cooled boxer from 3.6 litres up to 3.8. After all, Porsche led the way by building a hundred 3.8-litre 964 homologation specials at Weissach for the 1993 GT racing season, each car featuring bi-plane rear wing and horizontal front splitter. "I figured an increase in displacement would give my car more low-down torque, which it has." He's spot on – the way his 964 pulled on empty straights between Holt and Fakenham while heading for our photoshoot was phenomenal, delivering the assertive performance of a healthy 964, and then some. "The car is pretty impressive in those situations. I'm sure top end power isn't hugely different, but this air-cooled Porsche is now much more usable in all types of driving."

### GETTING IN TUNE

Specialising in Porsches – and 911s in particular – PIE Performance Tuning (PPT, the PIE Performance sub-brand) offers products and services ranging from bespoke mapping of ECUs to ignition kits, exhausts and suspension systems. Chris waved his PPT tuning wand at Francis' 964, and it shows. To this end, the engine's specification now includes a reground crankshaft, Mahle pistons, RS camshafts, a PPT ECU, wideband sensors and ignition kit. An oxygen sensor was inserted into the Hayward & Scott stainless steel exhaust system. Power is transformed.

The engine bay makes continued use of a standard airbox and filter, which Chris reckons breathes better than an aftermarket cone filter, a conclusion reached after dyno tests with and without. There's an RS clutch and lightened flywheel, too. Francis admits to having reservations on this front. "Many owners told me 964 Carrera 4s can be notoriously bad to drive when equipped with an RS clutch and flywheel, a problem associated the Carrera 4's standard ECU software not keeping pace with sudden drops in rpm and when additional load is at play, such as active air-conditioning. Stalling is a common complaint, but the PPT ignition kit







eliminates the problem, meaning the engine never cuts out, much to my relief.”

The suspension was completely overhauled and now incorporates Powerflex polyurethane bushes, Bilstein B16 coilovers and Eibach springs. With a grounding in sporting 911s, Francis was always destined to pursue the lowered look. “When I bought the car, the ride height was quite high, though lower than standard. When the car reached Chris and the team at PIE Performance, I asked them to fit lowering springs, which they did, but as part of a Bilstein B16 makeover. The car looks so much better now.”

Adding to the enhanced handling, a beefy Wiechers strut-brace resides up front. Beside the neighbouring battery is a master switch by Autolec, a company founded by the aforementioned Stanley Palmer. The RS-style carpet in the luggage compartment, which also features a Powder fire extinguisher, was sourced by PIE, while the wheels are oversized Fuchs replicas from Group 4 Wheels, sprayed black and shod with Michelin Pilot Sport Cup tyres (225/40 ZR18 at the front and 265/35 ZR18s at the back). Standard 964 Carrera 4 calipers and discs are bolstered by Pagid RS pads and fluid with a high-boiling point.

#### GROUP EFFORT

There’s no doubt the faux Fuchs set things off splendidly, and the wide external offsets allow the wheels to fill the arches completely. A succession of other styles preceded the Group 4 Wheels design, though. “I was

in two minds about fitting Fuchs-style wheels,” Francis admits. “I thought they might be too much of a reference to Porsche’s past. I’ve already had the car rolling on a set of Cups, as well as Speedline split-rims, but when the Group 4 Wheels products went on, it was clear they were the perfect match to my Porsche.” He’s also thought about converting his Carrera 4 to rear-wheel drive, ditching a hundred kilograms in the process, but is perfectly happy with how the car currently performs. A job for later down the line, perhaps?

**Above** Tipler isn’t sold on the front lip spoiler, but he’s super-impressed with the PIE-built 3.8-litre flat-six powering this all-pawed 964







**Above** Hayward & Scott peeks out from the rear bumper, while grille badge lets other road users know there's something unusual beneath the engine lid of this personalised Porsche

Viewed from the front, one of the standout details is the headlights. Recognising standard 964 headlights are little brighter than a pair of candles, the intriguing lamps now in place are LED Techlight units. Sourced from independent Porsche parts retailer, Design 911, they feature prominent individual lenses for dip and main-beam and positively transform night into day. The car's front bumper panel houses 993 fog lamps, indicators and the sidelights, as well as RS-style brake cooling ducts.

The cabin features seats lifted out of a 964 Turbo and has been reupholstered, front to back, in grey leather with blue stitching. A flat leather-rim MOMO Prototipo wheel

gets the same treatment. From the driving seat, this feels like a brand-new car. Talking of which, there's a plethora of great driving roads in North Norfolk. We hook up with them. Power delivery is instantaneous, especially if I drop a cog, rushing for the Big Skies vanishing point. This

964 is impressively fast —you can sense the greater torque and depths of power surging from the vaults of the 3.8-litre engine. It feels as if it would go on dishing up grunt for

some considerable time, if only it wasn't for the mobile chicanery of the holiday traffic, requiring me to back off.

What really stands out is the smoothness and lightness of this 964's steering around bends. This, for me, is a paradox. By common consent, prevailing

## ALTHOUGH THE CARRERA 4 CARRIES MORE WEIGHT, IT ISN'T NOTICEABLE IN ACCELERATION, TOP SPEED OR FUEL ECONOMY







wisdom is that the lack of a front driveline means the Carrera 2 is lighter than the Carrera 4, which should make it slightly quicker. In reality, there is likely to be more difference between the performance of individual 964s than between Carrera 2 and Carrera 4 variants, just because of wear and tear and the unique traits of each car. In terms of handling, though, the standard Carrera 2 has a sharper and nimbler feel, which appeals to purists who believe the security of the Carrera 4's all-wheel grip and traction takes the edge off the thrill element of motoring in a 911.

### TURN A CORNER

Exiting tight bends, the steering of the stock Carrera 4 weights up as torque is applied to the front axle, giving ever such a slightly ponderous impression, and the

brakes have a different feel because the Carrera 4 runs a high-pressure system. Naturally, if the roads are damp and if push comes to shove, the all-pawed Porsche is a safer and more secure proposition. In short, the Carrera 2 has a slightly more agile feel and its steering is a bit more sensitive, while initial turn-in is sharper. By comparison, the Carrera 4 has slightly less sensitivity due to the extra weight in the front and, as speed increases, will understeer at turn-in and through the corner, though it generally feels very planted. The Carrera 2 turns in more precisely and can be balanced on the throttle through the corner, making it marginally – theoretically – quicker on a dry track, but wet conditions favour the Carrera 4, making it easier to drive overall.

Although the Carrera 4 carries slightly more weight, it isn't noticeable in acceleration, top speed or fuel

**Above** Bluey-grey paint is a shade lifted from the colour catalogue of South Korean manufacturer, Kia







**Above** Flat-six benefits from a PIE Performance Tuning ignition kit, as well as a raft of other upgrades contributing to better acceleration and increased reliability

economy. That's what the text books say. The reality check comes when I'm behind the wheel of Francis' 964. It may be a Carrera 4, but the ease and smoothness with which it negotiates cambered esses is awe-inspiring. The lightness of touch to the steering belies the commonly held belief Carrera 4s lack feel and feedback.

Lowered as it is, this example boasts simply sublime steering and brilliant road handling. Judge the braking, get the gear and it's so beautifully balanced as it dives into every bend, with the nose-lightness you'd expect of a Carrera 2, which you're aware of through hands on the wheel. The ride is spot on, too. Not over-firm, nor intrusive, just flowing over the surfaces, plenty of which are indifferent around here, the more rustic we get.

This is certainly one of the best 964s I've had the pleasure of driving. There are, however, two or three aspects I'd change or improve upon, starting with the brakes. I know we're spoiled by ceramic discs these

days, but this 911's anchors need sharpening up a bit. Less largo to the ralentando. Then there's the noise. It just ain't loud enough! More of the guttural flat-six, please — if you're gonna do it, do it! The passenger seat is compromised in going to-and-fro by a subwoofer and, though I don't want to dwell on the front splitter, here's the thing: fashions in car-looks move on, sometimes in circles. Retro is now passé, and tweaking wot-u-got into a Mad Max simulacrum is the new backdate.

Once upon a time, in the mid-1980s, long-bonnet classic 911s were 'modernised' as much as possible. Truly, anything goes, as long as it looks right. This wing-ended splitter might suit an aspirant 996 GT3, but it says something else about the 964 which doesn't belong, certainly not the roadgoing side of a 993 GT2.

Francis and Chris will conspire to switch it for something more subtle. And then I think they will really have served up — no gristle — one tasty PIE porker. **CP**





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## CLASSIC PORSCHEs LEAD THE CHARGE AT £5M HISTORICS ASCOT AUCTION

An eclectic line-up of two hundred fine and varied classic cars were consigned to the Historics Auctioneers sale at Ascot not long before this magazine went to print. More than eight hundred attendees marvelled at the wide variety of vintage vehicles up for grabs, with in-the-room bidders battling interested parties registering their bids online and by telephone. At the close of play, seventy-five percent of the entry list had passed to new owners, with gross sale reaching £5m, a result suggesting the auction market remains robust. Strong sales were recorded across all categories.

Proving restomod culture is alive and kicking in the classic Porsche camp, the successful sale of a highly personalised Carrera 3.2 at Historics' November auction – when the car attracted a winning bid of £133,280 – was repeated at Ascot by an exquisitely presented 1983 911 SC taking influence from the legendary 911 ST, as well as the Carrera RS 2.7, a model currently enjoying its fiftieth birthday.

When presented at auction, the reimagined SC, which is painted in a custom shade of Mulberry Red and trimmed in bespoke black Nappa leather, had only covered 956 miles since completion of the build by Wallingford-based Porsche bodywork and restoration specialist, Riviera Autobody. Final specification is far too wide in scope to list here, but highlights include Öhlins suspension, a Quaife limited-slip differential, steel ST arches, a Wevo short-shifter and rear joint, a double bubble roof, custom billet aluminium fuel and oil filler caps, Group 4 Wheels Campagnola-style wheels, Reap Automotive Design gauges and clocks, custom drilled door handles, a JBL GTR Bluetooth amplifier, Rockford Fosgate speakers, a Cat 6 tracker, a Thatcham-approved Cat 1 alarm, a plumbed-in fire extinguisher and much more.

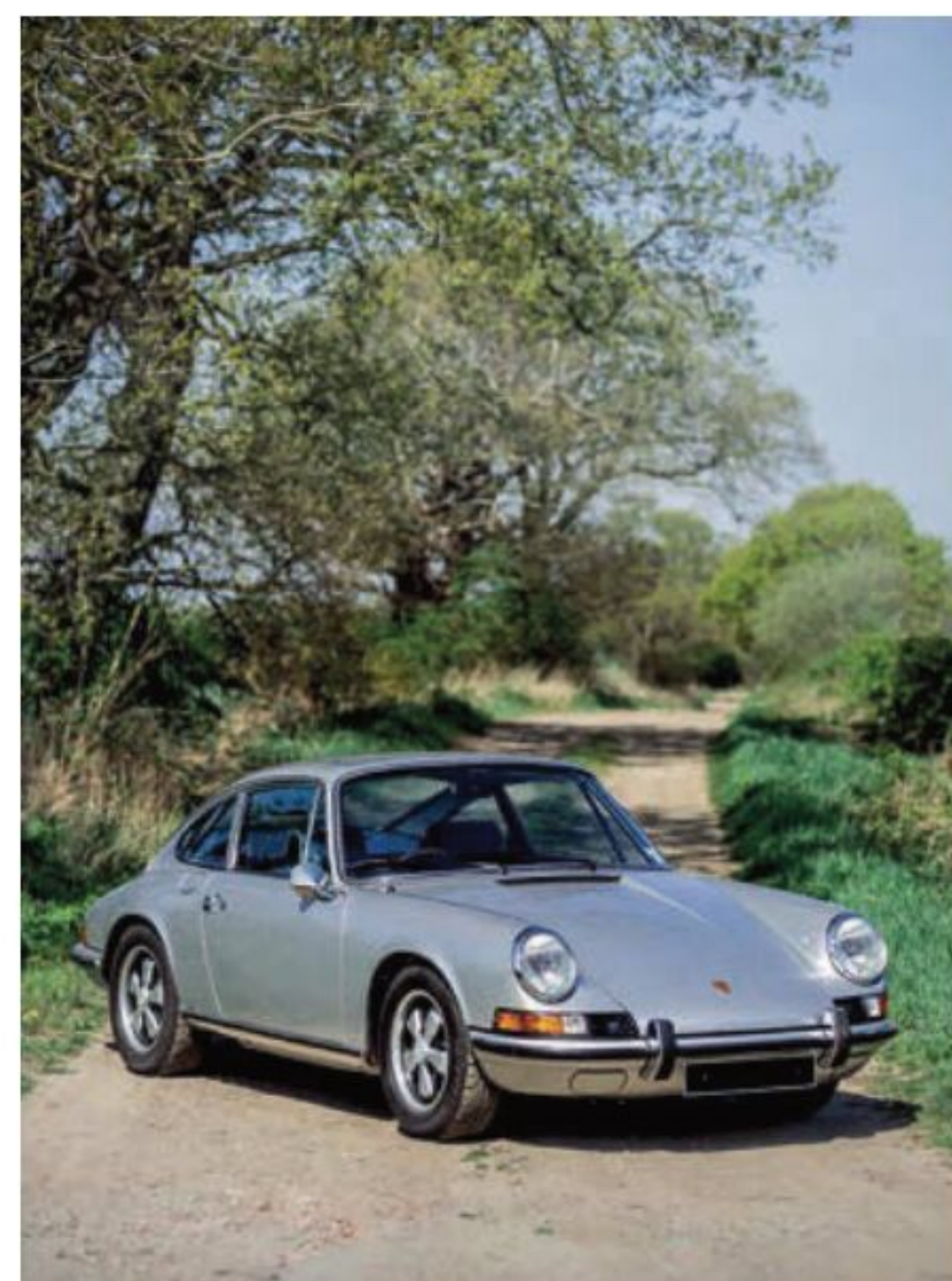
### THE PRICE IS RIGHT

Having had a full mechanical strip and rebuild, including reworked heads, uprated valves and guides, all new bearings, 964 camshafts, a gearbox overhaul, SSI heat exchangers and a new fuel pump, plus calipers, discs,



pads and a custom-made exhaust, this awesome air-cooled 911 proved irresistible to bidders, who pushed the final sale price to £102,500. In the same auction, a 1972 911 T, complete with rear quarter oil filler flap and restored by Porsche Centre Swindon (one of the UK's official Porsche Classic Partner Centres), attracted a winning bid of £140,000. Invoices from Porsche for the fanatical restoration work total more than £150,000.

Rolling in at a much lower price point was the 1965 356 C pictured above. Sold for £55,468, this attractive Porsche was supplied new by AFN in 1965. DVLA records show the car has had only two owners in its near six-decade history. In recent years, the body colour was changed from blue to the silver we see here and the original matching-numbers engine has made way for a replacement flat-four, but with a hefty folder of paperwork from marque specialists to bolster claims of excellent maintenance, it's easy to see why the car had no trouble selling. Historics is now inviting entries to its summer sale at Windsorview Lakes on 16th July. Visit [historics.co.uk](http://historics.co.uk) to register your interest and to view lots.





## PORSCHE CLUBS AROUND THE WORLD CELEBRATE SEVENTIETH ANNIVERSARY

Move over, Queenie — there's another Platty Joobs being celebrated this year. Yep, 2022 marks the seventieth anniversary of the first official Porsche club. Seven decades on, there are more than seven hundred Porsche clubs worldwide, accounting for more than 240,000 members spread across eighty-six countries. In terms of both form and size, this venerable global ecosystem of marque-specific enthusiast clubs is unparalleled in the automotive industry. Needless to say, many commemorative events have been lined up across the year.

"Porsche would not be the company it is without the global community of friends and fans who come together to share their passion for the brand," says Detlev von Platen, Member of the Executive Board for the company's Sales and Marketing division. "The established enthusiast clubs preserve the legend of Porsche. At the same time, each club's members are involved in social, sporting and community activities, and in this way are also representing Porsche company values. This makes the clubs attractive to enthusiasts young and old. We are delighted to be able to celebrate this special anniversary."

On 26th May 1952, Porsche customers joined forces to form what is now Porsche Club Westfalen (its original name was Westfälischer Porsche Club Hohensyburg). The first international Porsche club outside of Germany was established in Belgium in 1953. Two years later, Porsche Club of America was born, going on to become the world's largest Porsche club, boasting 145,000 members. The second-biggest is Porsche Club Great Britain.

Around the globe, roughly five new Porsche clubs are established every year. These are autonomous, independent, registered associations or comparable legal forms and are organised jointly and on a voluntary basis by each club's members, who offer a unique programme and range of services, from drives and motorsport events to social gatherings and technical lectures. Many clubs also enjoy hosting road trips, Concours d'Élégance competitions and multi-day Porsche parades in their respective towns and cities.

## MORE THAN SIX HUNDRED PORSCHE VEHICLES AND OWNERS GATHER AT MERANO EACH YEAR

Back in the early years of the first "circles of friends", Ferry Porsche and Fritz Huschke von Hanstein (then Porsche's press relations and motorsport manager) decided to bring brand enthusiasts together in an official capacity for the first time. As the earliest Porsche groups emerged from the motor racing community, Huschke von Hanstein formed the link between circuit and boardroom, becoming active in the founding of the first Porsche club. In 1956, he and Ferry Porsche brought European and Stateside Porsche customers together for an organised road rally. It was the first Porsche meeting in Merano, Italy. Regular readers might recall how the event included the 356 Pre-A coupe (pictured top right) owned by Bernard Moix, proud pilot of the restored 356 Speedster featured in the May 2022 issue of *Classic Porsche*. Wind the clocks forward and more than six hundred Porsche vehicles and owners gather at Merano each year. It's a tradition Ferry's sons, Wolfgang and Hans-Peter, have carried on to this day. In the meantime, management of the clubs has been taken over by Porsche's Global Community Management team, as well as by approved importers and Porsche dealers in various territories.

To mark the seventieth anniversary in 2022, Porsche is planning a worldwide campaign of events under the banner of 'Enduring Passion'. In addition to traditional Porsche-branded media materials, assets will include a central content hub, on which Porsche club members can publish their personal ownership stories. The company is also supporting Porsche club events, such as the recent 356 meet in the Netherlands, the highly anticipated Porsche Parade USA and turnout for the tenth running of the Le Mans Classic. Contact your local club representative for information about region-specific events.







## TICKETS NOW AVAILABLE FOR SCANDINAVIA'S BIGGEST PORSCHE DRIVE

Every year, Porsche Servicecenter Vejle celebrates another twelve months in business by inviting marque enthusiasts to bring their cars from all over Denmark to participate in the largest Porsche event in Scandinavia. From the very oldest models to the newest, Porsches gather at Vejle for a celebration of the brand like no other, including a spirited drive through the neighbouring countryside. A static display of Stuttgart-crested machinery is presented at MyGarage, the purpose-built automotive hub Porsche Servicecenter Vejle — and its Classic Partner Centre operation — calls home.

"We are excited to be hosting the biggest Porsche drive in Scandinavia once again," says Lars Paugan, Aftersales Manager at Porsche Servicecenter Vejle. "During previous years, we have welcomed more than two hundred participating Porsches, but this year, we are expecting more than three hundred cars to attend, many from countries outside our borders." In addition to Porsche owners in Denmark, registered attendees include guests and cars travelling from Germany, Sweden, Norway and the United Kingdom.

"2022 marks our first five years of existence at MyGarage. We have amplified our ambitions in order to create the biggest Porsche meet



in our history. We can't wait to share it with everyone planning to attend," Paugan adds.

Of the currently confirmed cars registered to make an appearance, the oldest is a 1958 Speedster. Other jaw-dropping air-cooled classics set to join the open-top 356 include a 904 Carrera GTS, a genuine 911 RSR 3.0 and MyGarage's own 964-based Kalmar 7-97, a bespoke 911 powered by a 4.1-litre flat-six developing 400bhp. In fact, pretty much every flavour of Porsche will be in attendance,

regardless of whether standard, modified, air-cooled or water-cooled. To this end, we're looking forward to seeing some of the very latest Porsche products sharing the limelight with the oldtimers mentioned here.

For 2021's event, 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,

contributing to a tally of 222 cars descending upon Vejle, located in the southeast of the Jutland Peninsula at the head of Vejle Fjord, where the spectacular Vejle River and Grejs River valleys converge.

"Tickets for this event sell out every year," says Sanne Saaby, Marketing Manager for MyGarage. "We sold a third of the available

tickets for 2022's event as soon as they went on sale," she adds, acknowledging the success of the annual

get-together of like-minded Porsche fans. "We recognise the growing popularity of what we consider will become Europe's largest Porsche gathering, which is why we've installed more parking space for this year's meet."

2022's event takes place on 4th September. You can find general information online by visiting [pscv.dk/events](https://pscv.dk/events). Saaby kindly invites *Classic Porsche* readers to email the team directly at [info@pscv.dk](mailto:info@pscv.dk) for advice on how to get tickets and register a car for attendance.

## A 904 CARRERA GTS, A GENUINE 911 RSR 3.0 AND MYGARAGE'S OWN 964-BASED KALMAR 7-97





### 911 Carrera Speedster

Silver Metallic • Velvet Red Leather Seats  
16" Fuchs Wheels • One of 64 UK Cars  
Porsche Certificate of Authenticity  
Previously Sold & Serviced by Paragon  
29,896 miles • 1989 (G)

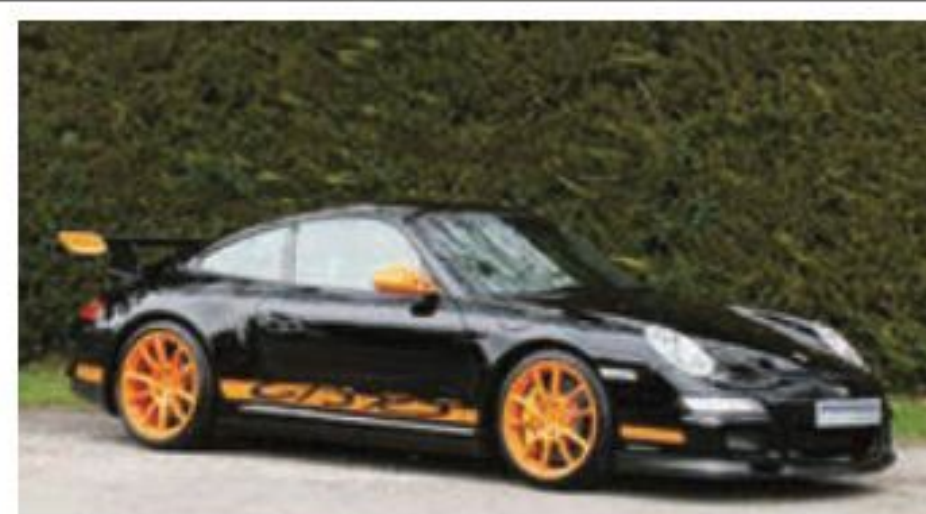
**£184,995**



### 911 Turbo (993)

Arena Red • Black Leather Sports Seats  
18" Turbo Wheels • Electric Sunroof  
Full Leather Interior • Air Conditioning  
Previously Sold & Serviced by Paragon  
62,139 miles • 1996 (P)

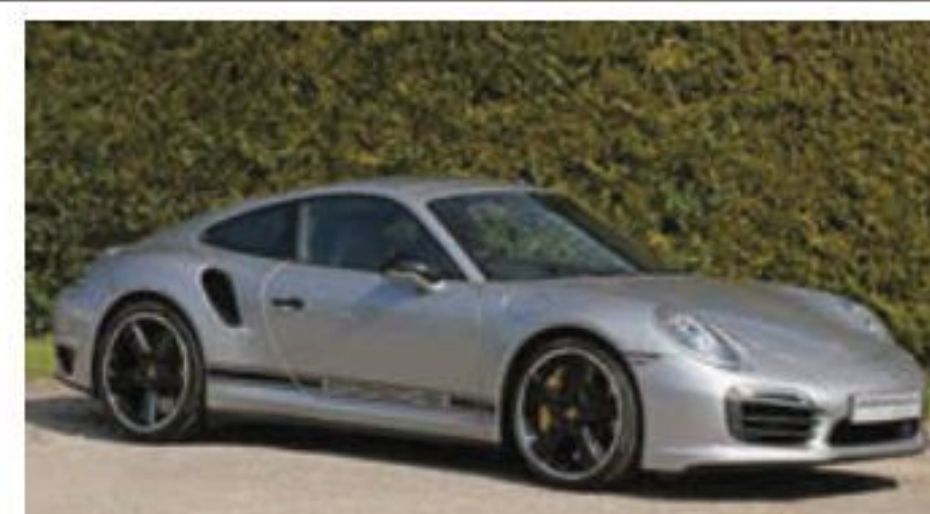
**£154,995**



### 911 GT3RS (997)

Jet Black • Black Nomex Bucket Seats  
19" Orange GT3 Wheels • Porsche  
Ceramic Composite Brakes • Satellite  
Navigation • Rear Roll Cage • 15,441  
miles • 2007 (07)

**£149,995**



### 911 Turbo S GB Edition (991)

GT Silver • Black Leather Sports Seats  
PDK Gearbox • 20" Sport Classic Wheels  
One of just 40 UK Cars • Sport Chrono  
Burmester Premium Sound System  
16,357 miles • 2015 (64)

**£117,995**



### 911 Carrera 2 S (992)

Guards Red • Black Leather Sports Seats  
PDK Gearbox • 20/21" Carrera S Wheels  
Touchscreen Satellite Navigation  
Switchable Sports Exhaust • Sport  
Chrono • 7,605 miles • 2019 (69)

**£102,995**



### Boxster GTS 4.0 (718)

Guards Red • Black Half-Leather Sports  
Seats • Manual Gearbox • 20" Satin  
Platinum Carrera S Wheels • Switchable  
Sports Exhaust • Sport Chrono  
1,501 miles • 2021 (71)

**£82,995**



### 911 Turbo S (997)

Carrera White • Black Leather Adaptive  
Sports Seats • PDK Gearbox • 19" Centre  
Lock Wheels • Porsche Ceramic  
Composite Brakes • Sport Chrono  
29,893 miles • 2010 (60)

**£82,995**



### 911 Turbo S (997)

Carrera White • Black Leather Sports  
Seats • PDK Gearbox • 19" Centre Lock  
Wheels • Porsche Ceramic Composite  
Brakes • Previously Sold & Serviced by  
Paragon • 39,721 miles • 2011 (11)

**£79,995**



### Macan GTS

Volcano Grey • Black Leather Sports  
Seats • 20" RS Spyder-Design Wheels  
Glass Panoramic Roof • Switchable  
Sports Exhaust • 20,870 miles  
2020 (20)

**£68,995**



### 911 Carrera 2 S (991)

Agate Grey • Black Leather Sports Seats  
PDK Gearbox • 20" Carrera Classic  
Wheels • Touchscreen Satellite  
Navigation • Switchable Sports Exhaust  
Sport Chrono • 49,234 miles • 2013 (13)

**£59,995**



### Boxster GTS (981)

Guards Red • Black Half-Leather Sports  
Seats • PDK Gearbox • 20" Turbo Design  
Wheels • Switchable Sports Exhaust  
Touchscreen Satellite Navigation  
Sport Chrono • 41,498 miles • 2014 (64)

**£52,995**



### 911 Carrera 4 S (997)

Arctic Silver • Black Leather Sports Seats  
Manual Gearbox • 19" Carrera Sport  
Wheels • Sports Steering Wheel  
Previously Sold & Serviced by Paragon  
60,231 miles • 2009 (58)

**£49,995**

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## PORSCHE TAKE CENTRE STAGE AT THIS YEAR'S MILAN DESIGN WEEK

The world's most important design fair, which takes place in the northern Italian city of Milan each year and is supported by the Salone del Mobile furniture fair, features displays and events exhibiting exciting design of all disciplines across hundreds of venues. Milan Design Week usually takes place in April, but for 2022, the event was pushed back to June for the second year in a row due to the impact of the ongoing coronavirus pandemic.

This year marks the sixtieth anniversary of the fair, which saw it showcase more than two thousand exhibitors, a return to pre-pandemic size after the event was cancelled in 2020 and organisers were forced to run a pared-down version of proceedings in 2021.

For 2022, Porsche presented a work of art by Ruby Barber (Studio Mary Lennox, Berlin), which the company says "connects nature with modern technology" by way of a labyrinth of wild roses "encouraging the viewer to question their own sense of reality and to follow their dreams in the labyrinth of life, no matter how surreal they might seem."

Of particular interest to Porsche enthusiasts was the restored 1972 911 S 2.4 Targa featured alongside the artist's botanic installation. This air-cooled classic was first presented to mark



the fiftieth anniversary of Porsche Design. The one-of-a-kind 911 was inspired by the legendary Chronograph I wristwatch designed by Ferdinand Alexander 'Butzi' Porsche back in 1972 — black dominates both the exterior and the interior of the car, while Porsche Design script appears on its flanks.

"Our vision was to build a historic counterpart for the 992 Porsche Design 50th Anniversary Edition model," explains Ulrike Lutz, Director of Porsche Classic. "Our new Sonderwunsch programme gave us an opportunity to implement this idea for a unique 911 pairing. As a nod to Porsche Design, the year of manufacture was the only specific requirement for the donor vehicle. Our in-house designers and members of the factory restoration team were tasked with carefully transferring specification from the limited-run 992 to the classic 911."

The Targa restoration required Porsche Design and Porsche Classic to work closely

together, though much of the design input came from Roland Heiler, Managing Director of Studio F.A. Porsche in Zell am See.

"When it comes to factory restoration projects, our general philosophy is to restore vehicles to be as faithful to original specification as possible," explains Uwe Makrutzki, Head of Porsche Classic Factory

Restoration at Porsche AG. "We deliberately took a different approach with this project, creating a unique 911

## YEAR OF MANUFACTURE WAS THE ONLY SPECIFIC REQUIREMENT FOR THE DONOR VEHICLE

which blends tradition with Porsche design language of the present day, thereby mirroring the attitude of Ferdinand Alexander Porsche."

While the semi-open-top 911 sat pretty as part of Barber's installation, French design house, Nardone Automotive, unveiled its reimagined 928. Based on an S4 and powered by a 400bhp V8, the car will be displayed at Goodwood following its debut in Milan. Launch edition cars will be available at the somewhat ambitious price of €480k (excluding donor S4).





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## 1997 Porsche 993 Turbo stock #15255

Presenting this beautiful 1997 Porsche 993 Turbo featured with 21,588 miles on the odometer and available in its factory color code #39C Midnight Blue Metallic with a blue interior. The vehicle comes with a clean Carfax and is equipped with a 6-speed manual transmission, Flat 6 cylinder 3.6-liter engine, air conditioning, sport seats, automatic speed control, power mirrors, power windows, power steering, power sunroof, 4-wheel disc brakes, Porsche Twist wheels, tool kit, air compressor, jack, and a spare tire. Also includes paint meter reading photos. Both the color code and options sticker are still in place under the hood. An extremely desirable low mileage air-cooled Porsche Turbo that is also mechanically sound. **For \$295,000**



### 1973 Porsche 911E Targa #12666

Here is a recently discovered 1973 Porsche 911E Targa featured here with matching numbers is available in its factory color code #117 Light Yellow with a black interior. It comes equipped with a 5-speed manual transmission, 4-wheel disc brakes, G26 Group option: S trim, heated rear glass, sway bars, S instrument, air conditioning, and Fuchs wheels. This is an extremely original Porsche 911E (please review paint meter reading photos). A very sought-after original blue plate California car that is an excellent addition to any Porsche enthusiast. Don't miss your chance to acquire this original 911 that is mechanically sound.

**For \$98,500**



### 1970 Porsche 911T Coupe #14792

Presenting this striking 1970 Porsche 911T Coupe that is available in Grand Prix White with a black interior. The 911T comes equipped with a 5-speed manual transmission, a Flat 6 Cylinder engine, Zenith carburetors, a wood steering wheel, luggage rack, 4-wheel disc brakes, steel wheels, Porsche hub caps. Also includes the matching numbers bare engine case, service documents, and receipts copies totaling over \$20,000 invested in the vehicle. A highly desirable air-cooled Porsche that is mechanically sound.

**For \$67,500**



### 1979 Porsche 930 Turbo Coupe #14909

Presenting this amazing color combination 1979 Porsche 930 Turbo Coupe featured with matching numbers and 73,614 miles on the odometer. Available in Petrol Blue Metallic with a black interior. The 930 Turbo comes equipped with a 4-speed manual transmission, Flat 6 Cylinder 3.3-liter engine, air conditioning, sports seats, power windows, sunroof, 4-wheel disc brakes, Fuchs wheels, and spare tire. Also includes service documents and receipts copies totaling over \$6,000. An extremely sought-after air-cooled Porsche Turbo that is mechanically sound.

**For \$139,950**



### 1990 Porsche 964 Carrera 4 Targa #14910

Presenting this exciting 1990 Porsche 964 Carrera 4 Targa featured with 73,428 miles on the odometer and is available in its factory color code #700 black with a black interior. The vehicle comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power windows, power steering, sports seats, Porsche D90 wheels, 4-wheel disc brakes, spare tire, and jack. Also includes paint meter reading photos. A very presentable and well-equipped sports car that is mechanically sound.

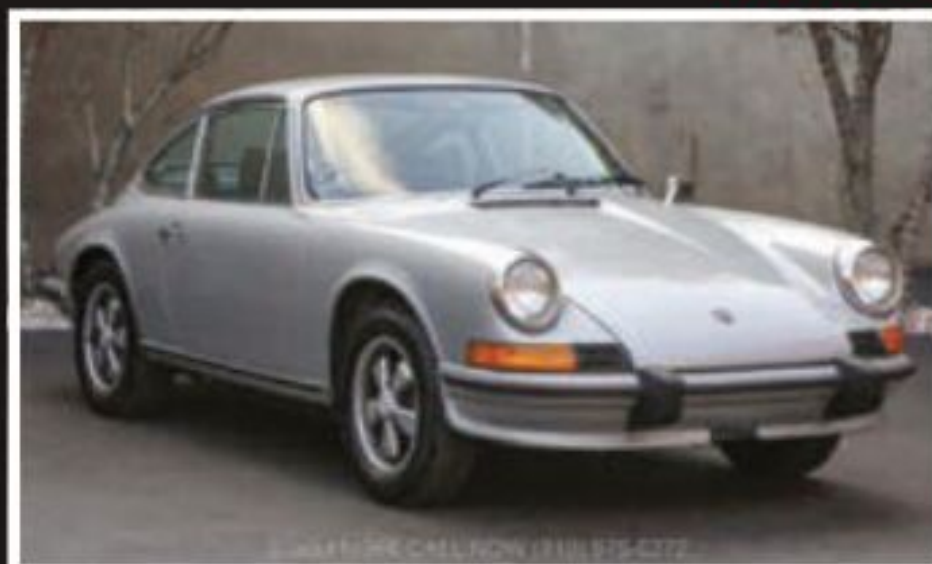
**For \$98,500**



### 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, 1600cc engine, dual carburetors, sunroof, matching numbers hood/decklid, chrome wheels, and 4-wheel disc brakes. An excellent 356C Coupe, ready to be driven and enjoyed. This extremely sought-after Porsche had the same owner since 2000 and is mechanically sound.

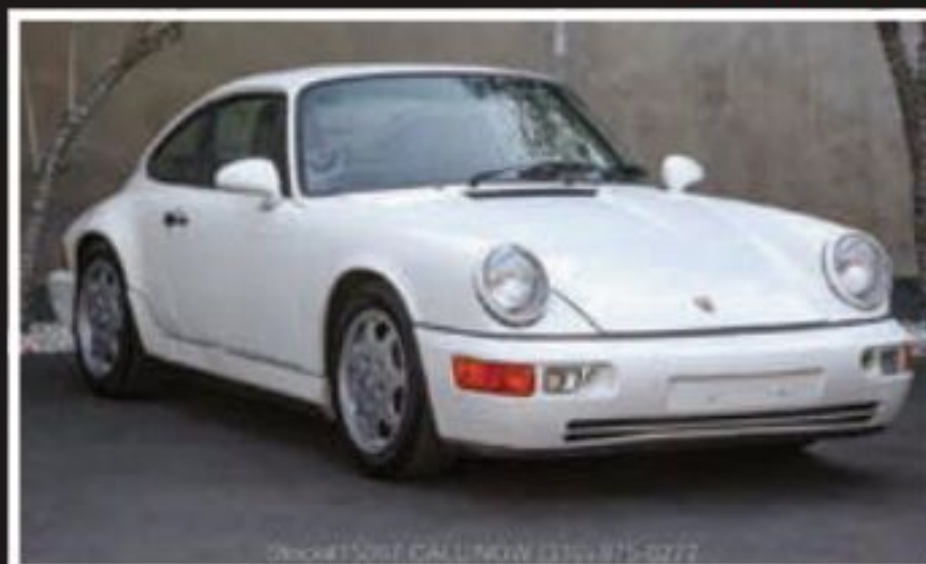
**For \$98,500**



### 1973 Porsche 911T Coupe #14966

Presenting this highly collectible 1973.5 Porsche 911T Coupe featured with matching numbers and is available in its factory color code #936 Silver Metallic with a black interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 2.4-liter engine, 4-wheel disc brakes, Fuchs wheels, and spare tire. An excellent original long hood California sports car that is mechanically sound.

**For \$89,950**



### 1990 Porsche 964 Carrera 4 Coupe #15067

Presenting this 1990 Porsche Carrera 4 Coupe that is available in its factory color code #908 Grand Prix White with a black interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, air conditioning, automatic speed control, power windows, power steering, sunroof, 4-wheel disc brakes, Porsche D90 wheels, spare tire, jack, and tool kit. 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 copies totaling over \$4,000. A well-equipped air-cooled Porsche that had the same owner since 1994 and is mechanically sound.

**For \$89,950**



### 1994 Porsche 911 Speedster #14999

Presenting this limited production 1994 Porsche 911 Speedster (one of less than 469 produced for the US market). Featured with only 6,710 miles on the odometer and is available in its factory color code #80K Guards Red with a black interior. The vehicle comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, RS door panels, power windows, power steering, soft top, 4-wheel disc brakes, jack, and spare tire. Both the color code and options sticker are still in place under the hood. Also includes the original owner's manual and maintenance booklet with service stamps. An extremely low mileage, highly collectible, and well-taken care of third-generation Porsche 964 Carrera C2 Speedster that is mechanically sound.

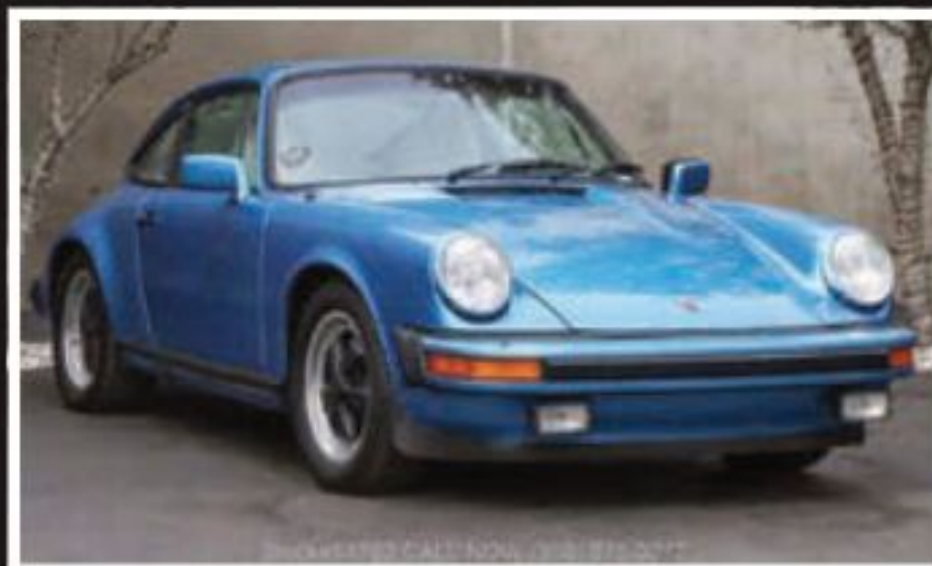
**For \$235,000**



### 1981 Porsche 911SC Coupe Euro-Spec #14614

Presenting this Euro-Spec 1981 Porsche 911SC Coupe featured with matching numbers is available in its factory color code #655 Platinum Metallic with a brown interior. The 911SC comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.0-liter engine, power windows, sunroof, 4-wheel disc brakes, Fuchs wheels, and spare tire. Also includes service documents and receipts copies totaling over \$31,000. A well-maintained air-cooled Porsche that is mechanically sound.

**For \$54,500**



### 1983 Porsche 911SC Coupe #14700

Presenting this 1983 Porsche 911SC Coupe featured with matching numbers and is available in its factory color code #304 Minerva Blue with a white interior. The 911SC comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.0-liter engine, air conditioning, automatic speed control, power windows, sunroof, 4-wheel disc brakes, Fuchs wheels, and spare tire. A well-priced and equipped air-cooled Porsche that is mechanically sound.

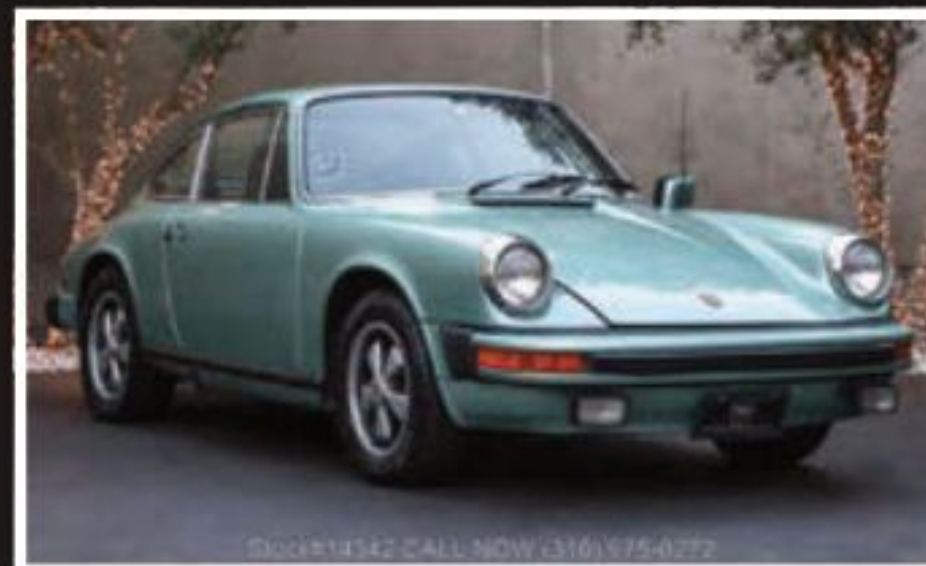
**For \$54,500**



### 2004 Porsche 911 Turbo Cabriolet X50 6-Speed #14746

Presenting this well-equipped 2004 Porsche 911 Turbo Cabriolet X50 6-Speed that is available in Silver Metallic with a black interior. The 911 Turbo comes equipped with a 6-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, X50 Turbo Power Kit, automatic speed control, air conditioning, power mirrors, power windows, power steering, power seats (driver/passenger), roll bar, soft top, 4-wheel disc brakes, Porsche Twist wheels, and spare tire. An excellent and desirable convertible sports car that is mechanically sound.

**For \$49,950**



### 1977 Porsche 911S Coupe #14342

Presenting this matching numbers 1977 Porsche 911S Coupe that is available in its factory color code #266 Ice Green Metallic with a black interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 2.7-liter engine, air conditioning, power windows, sunroof, 4-wheel disc brakes, Fuchs wheels, and spare tire. An extremely desirable and beautiful color combination 911S Coupe that is mechanically sound.

**For \$56,500**

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# PRODUCTS

Hot new products for you and the precious Porsche in your life...



## CARBONE CUSTOM FRUNK LINER FOR 911/964/993/CARRERA 3.2

Classic Porsche accessories maker, CarBone, has added this plush custom frunk mat to its wide portfolio of interior parts for air-cooled 911s. Suitable for F-series two-litre cars through to the 993, this attractive liner is made from high-quality, durable materials with vinyl edging. Pleasingly, you can choose from CarBone's wide selection of fabrics to match the colour and texture best suited to your 911's interior. 964 and 993 liners feature a Velcro backing to ensure the liner stays in place, while F- and G-series liners have sturdy snaps in place for no-nonsense anchoring. All liners cover the inner wings, frunk floor and bulkhead, the latter panel featuring a storage pocket for your car's portable jack. Due to high demand, CarBone lists production time as being four weeks, but a ten percent discount should soften the blow. Quote coupon code MATS10 when placing your order at the company's website.

**Price: €620**

**carbone.pl or call +48 429 422 115**



## LN ENGINEERING BILLET VALVE COVERS FOR 993

These model-specific valve covers from LN Engineering are manufactured from billet 6061 aluminium and are a direct replacement for your 993's leak-prone factory valve covers. Featuring a design paying homage to the original Porsche parts – duplicating their appearance as closely as possible – but adding much needed rigidity to the gasket area, each cover is machined to fit the standard factory valve cover seal. Strong but very light, these cool covers feature a black anodised finish and are compatible with all Porsche supporting hardware and fasteners. To this end, the lower covers require twelve wire clips (99310590200) and twelve clip screws (99991909600). Sold as a set of four covers (two upper and two lower) and made at LN Engineering's in-house manufacturing facility, the parts are available finished in a colour of your choosing for a small upcharge.

**Price: \$1,499**

**lnengineering.com or call +1 815 472 2939**



## STODDARD LEATHER LUGGAGE CASE FOR 356

The luggage area of a rear-engined Porsche is notorious for being an unwieldy space prone to throwing loose belongings around. In particular, the 356's under-bonnet area, which shares space with the spare wheel and fuel tank, can make your carefully packed possessions resembled a bomb site by the time you've reached your destination. Celebrated Porsche parts specialist, Stoddard, has offered a fix in the form of this gorgeous tan leather luggage case, suitable for 356 Pre-A, A and B models. Custom-designed to fit between the spare wheel and fuel cell, covered in premium leather, hard-cased, twin-stitched and fastened with suitcase-style lockable spring clamps, as well as a leather strap to hold the part firmly in place, the beautifully presented storage solution is lined in tartan fabric and features tough leather carry handles, allowing you to quickly and conveniently lift the entire case and carry it indoors with the minimum of fuss. A black leather finish is also available.

**Price: \$1,647**

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A veritable wolf in sheep's clothing, Stomski Racing's new Paradigm Shifter Stealth Edition is everything the Maryland company's carbon-fibre (CF) shifter is, and less. Yes, you read that sentence correctly – without the carbon-fibre and titanium of the CF shifter, the Stealth Edition rolls in at almost half the cost. Plus, you can continue to make use of your Porsche's factory-fit shift boot and gear knob, though Stomski Racing includes new parts to replace tired originals. Combining the dark, moody, stealth look with the ultimate in precision shifting, this excellent Paradigm shifter is suitable for all 914s and 911s equipped with a 901 or 915 gearbox. Engineered and manufactured for both race and fast-road use, the Stealth Edition comes complete with base, housing, internal components, boot, shift knob, a stock shift rod, plus an adapter to enable a full two-inch extension. The Stealth Edition joins Stomski Racing's new 917-styled Paradigm shifter, complete with layered wooden gear knob finished in a choice of matte or gloss lacquer.

**Price: \$725 (\$830 for 917 shifter)**

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**Price: \$14,130**

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**Design:** OE look steel - colour: silver  
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## Steel wheel

**Design:** OE look steel - colour: silver  
**Dealer enquiries are welcome**

### 16"- Steel rim

5,5 x 16   ET 15	259,00 €
------------------	----------

all steel wheels with ECE number





## NEW CHRISTOPHER WARD C65 AQUITAINE COLLECTION

Meet Christopher Ward's new, improved take on the retro dive watch theme. More sophisticated, more alluring and more capable than before, this new generation of the brand's hit C65 range is no longer as closely associated with the C60 Trident Pro series of professional diving watches and has instead earned itself a new, distinct identity: Aquitaine.

Named after the historic French coastal region home to celebrated undersea explorer, Jacques Cousteau, Aquitaine takes design influence from the first modern dive watches of the 1950s, launching with a confident three-model collection: a steel automatic, a steel GMT and a bronze-cased wristwatch complete with certification from COSC (Contrôle officiel suisse des Chronomètres, the official Swiss chronometer testing institute, responsible for certifying the accuracy and precision of Swiss watches).

Virtually every aspect of the new C65 is significantly improved. Water resistance is up, from 150m to 200m, there's a new sapphire exhibition caseback, and the date display has moved from three o'clock position to the more symmetrical, less obtrusive six. On the dial, an applied version of the company's well-known twin-flags logo sits just below the twelve, with the Christopher Ward wordmark now relocated to the caseback.

Perhaps most noticeably, the new bezel has a curved and highly polished sapphire insert, reminiscent of that used by the Blancpain Fifty Fathoms. It brings an unexpected level of soft, curvaceous

## BRONZE ISN'T JUST HOROLOGY'S HOTTEST METAL, IT'S ALSO SUITED TO A RETRO DIVE WATCH

luxury to what's still, at heart, a sports watch. It's also remarkably tough – because sapphire is fifty percent harder than even ceramic, this is actually the most difficult-to-scratch bezel Christopher Ward has ever offered. Other improvements include a new glass box crystal reminiscent of those seen on classic 1950s and 1960s dive watches, plus a sleek new steel bracelet utilising screwed links. An updated quick-change mechanism makes tool-free swapping between straps and bracelets easier than ever. There's also the new 'Dry Marshal' safety feature, designed to remind you when Aquitaine's screw-down crown isn't fully secure.

Though it combines brushed and polished elements throughout, this is a shinier, glossier wristwatch than Christopher Ward is known for. The blue and green dials feature a sunray finish, while the applied indices are specifically designed to reflect light. Additionally, Christopher Ward's highly regarded Light Catcher case has been modified, not least with lugs now a millimetre shorter than before. This might sound insignificant, but makes the 41mm comfortable on all wrists, big or small.

At launch, the C65 Aquitaine is offered in three versions. The automatic uses Sellita's SW 200-1 movement and comes in Marine Blue, White Sand or Seamoss (dark green), while the bracelet is complemented by a range of straps, including blue tropical rubber and a new line of vintage oak leather in assorted shades.

The Aquitaine GMT makes use of Sellita's SW 330-2 movement to keep track of two time zones simultaneously. Its White Sand dial comes paired with a striking Marine Blue bezel and an eye-catching

GMT hand in the same colour. This is available on the bracelet, tropical rubber or vintage oak leather options. Power reserve is rated at fifty hours. Finally, the bronze Aquitaine pairs a Marine Blue dial and bezel with this richest, most charismatic of case materials. Bronze isn't just horology's hottest metal, it's also well-suited to a retro dive watch, considering its historical associations with maritime exploration. This version is supplied with rubber, canvas webbing or vintage oak straps, and uses Sellita's SW 200-1 COSC movement, the only one of the trio to be an official certified chronometer.

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These ready-to-install door panels from Design 911 have been created specifically for all 356 Cabriolet models of the A, B and C series variety. Available with original pleated map pockets and finished in Nappa leather or classic vinyl, these beautifully presented interior panels are among the best you can buy for originality and fit – Design 911 matches factory specifications step by step, from the finest Scottish hides and colour coded vinyl to the vibration deadening foam and water-resistant backing board. All panels are precision cut, stitched, pressure glued and stapled to guarantee a factory authentic fit. Due to fading of the original material and colour differences between dye lots, Design 911 offers these door panels in black only, but for complete full leather interior kits, the company can match most original Porsche colours. Door cap retrim, panel clips, handles and other hardware can be ordered separately.

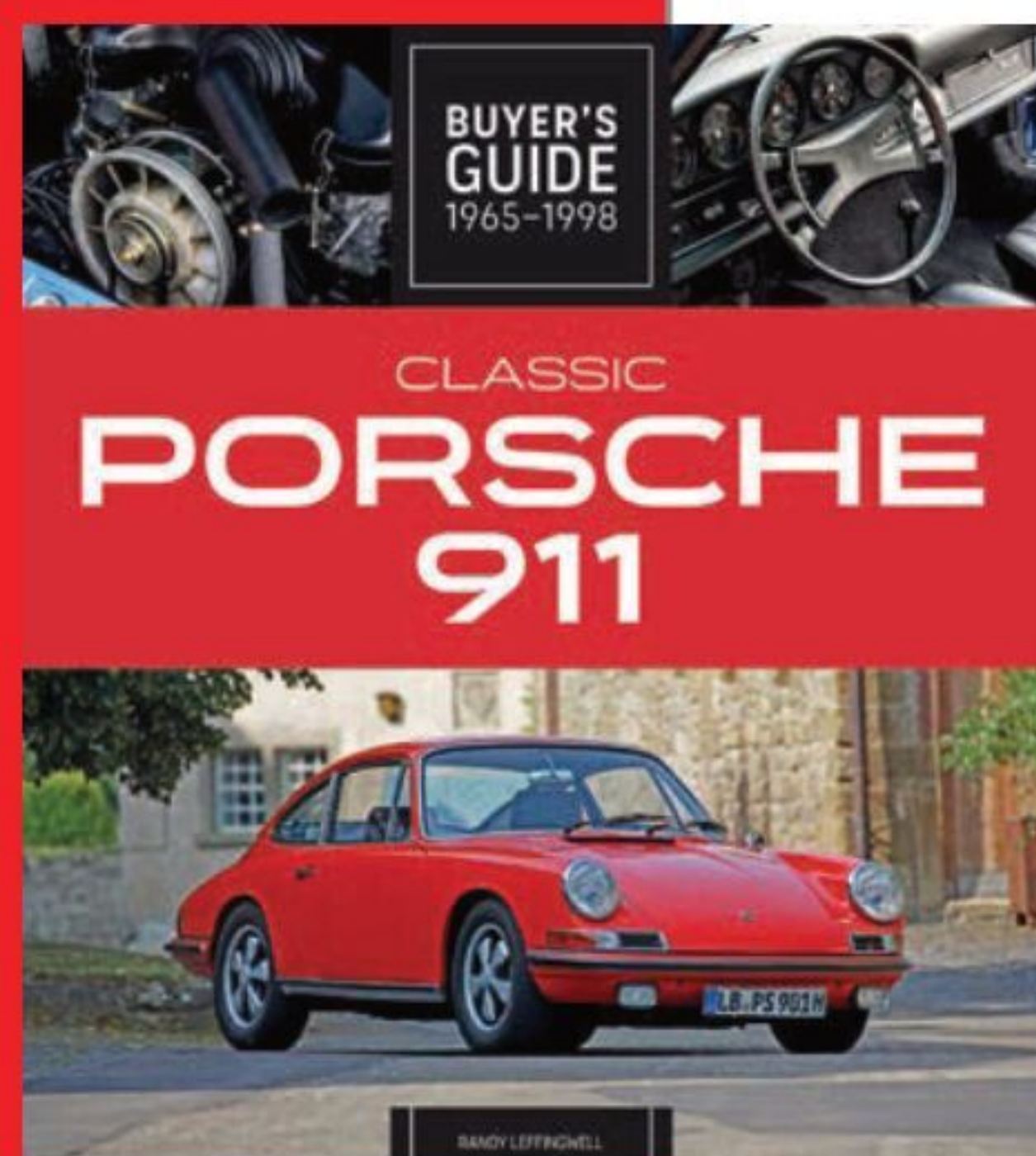
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## CLASSIC PORSCHE 911 BUYER'S GUIDE

The 911 is one of the finest and most important sport cars ever made. These fantastic machines have become top-level collectibles, making it more important than ever to fully understand the air-cooled classic you're considering buying. Authored by serial Porsche book creator, Randy Leffingwell, *Classic Porsche 911 Buyer's Guide 1965-1998* is a hugely comprehensive resource, covering every air-cooled variation of Stuttgart's famed sports car and spanning the relatively straightforward first-generation model through the complexities of the 993, complete with modern electronics, all-wheel drive and turbocharging. This year-by-year guide will help you select the model and year of 911 best aligning with your ownership goals. You'll learn about different trim options, which features to avoid and the known flaws from all generations of air-cooled 911. Model years are covered in detail and include overview, technical specification, parts costs, rankings and a unique 'Garage Watch' feature calling out common problem areas. An invaluable resource in finding the perfect classic 911 to call your own.

**Price: £22**  
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## DANSK 911 ST WHEEL ARCH FLARE PANELS

As recent issues of *Classic Porsche* have demonstrated, where once many owners of air-cooled 911s opted to replicate the look of the Carrera RS 2.7, ST evocations have become commonplace. Recognising the fact, Porsche parts manufacturer, JP Group (under its Dansk brand banner), has released a complete set of ST quarters for the classic 911. Available to order as individual items, the collection includes both front wings and the rear quarters. This is bound to please those of you ready to begin an ST build, though the fun doesn't stop there – these parts, complete with their flared arches, form part of a wider release of new Dansk Porsche parts, from vintage Blaupunkt radio control buttons to Heuer-style vintage rally stopwatches. Visit the JP Group website to view all currently available items, which can be ordered through FVD Brombacher, Design 911 and all good independent Porsche parts retailers.

**Price: TBC**  
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The screenshot shows the Elephant Racing website's Package Builder interface. At the top, there's a navigation bar with links for Car Builds, Tech, Instructions, Newsletter, and Shopping Cart. A banner indicates 'ORDERS OVER \$250 SHIP FREE WORLDWIDE'. The main header features the Elephant Racing logo and a series of dropdown menus for selecting a car model (911, 964, 993, 996/997, 991, Boxster/Cayman, 914, 944, 356) and a search bar. Below this, the 'Package Builder' title is prominently displayed. The interface is divided into three main sections: 1. Select Year & Model, where the year is set to 2004 and the model dropdown is open, showing options from 911 to 944. 2. Select Your Package, where 'Street Performance 2' is selected. 3. Customize Package, with instructions to add, update, or remove parts. A yellow 'Add To Cart' button is located at the bottom of this section. To the right of the customization steps, there are two grids of images representing different suspension and brake components. A 'PACKAGE CHARACTERISTICS' sidebar on the far right shows 'RIDE COMFORT' at 41 and 'PERFORMANCE' at 63.

**Package Builder**

ONLINE TOOLS  
Brake Builder  
Suspension Builder  
Suspension Navigator

**1 Select Year & Model**  
Year: 2004  
Model: 911, 996/997/986/987, 991, 993, 914, 964, 944

**2 Select Your Package**  
Street Performance 2

**3 Customize Package**  
Add, update, or remove parts using the tables below

**Add To Cart**

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# ANDY PRILL

The Le Mans Classic brings together nearly eight hundred historically significant motorsport machines covering almost a century of action at Circuit de la Sarthe. Heavily populated by air-cooled Porsches, it's a weekend every marque enthusiast should put in their diary. This year, Prill Porsche Classics will be fielding five cars...

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](http://prillporscheclassics.com)



**B**ack in 2001, I heard rumour of an audacious plan to hold a daylong race for classic cars on the full Circuit de la Sarthe, home to the 24 Hours of Le Mans. Many on the classic car scene said such an event would never happen, but in September 2002, it did. My personal involvement with Le Mans started long beforehand, but the opportunity to campaign a classic racing Porsche at arguably the world's most famous motorsport venue was not to be missed.

Organising the race was a massive undertaking, as well as a huge leap of faith, for Patrick Peter and his Peter Auto organisation. He partnered

It's a weekend like no other, where you can catch up on almost a century of the world's oldest active endurance race and meet most of the surviving Le Mans legends (cars and drivers) in one place. You'll find historically significant Porsche race cars in five of the six race groups, making this a must-attend event for marque enthusiasts and owners clubs.

Porsches have become a victim of their own success at the Le Mans Classic — there is obviously a limit to how many can be accepted for their respective group. At one point, the event became hugely oversubscribed. Consequently, with so many cars not making selection for the main event, a separate Porsche race was established to run as support to the main act.



with the ACO and garnered support from a legion of other stakeholders to make the idea of Le Mans Classic a reality. If you know Patrick, you'll know he is indefatigable and, when he decides to do something, he does it well, however big the challenge. When you consider the cost of closing the public roads, his was a considerable gamble, and one which could only ever pay off if the Le Mans Classic became an established regular event.

Running in September that first year was a baptism of fire, with a 50/50 split between day and night, unlike in June, when darkness only lasts six hours. Add in rain and longer races (because there were less race groups) and the event proved itself to be a serious challenge for participating cars and teams.

Since then, the Le Mans Classic has become a central pillar of historic racing and a 'bucket list' event for racing drivers and motorsport fans alike.

The Le Mans Classic is biannual. Fast-forward two decades from the inaugural gathering and, as you read this column, my team will be on its way to the event's tenth running. It has been a blessing to have participated in every one of these weekends to date and, on a distinctly personal level,

I have been lucky enough to bring home a fair amount of Le Mans Classic silverware over the years.

For 2022's event, we will prepare and support five cars: a 904, a 718 RS 60, a 956, a 911 RSR 3.0 and a classic Alfa.

## A SEPARATE PORSCHE RACE WAS ESTABLISHED TO RUN AS SUPPORT TO THE MAIN ACT

I will again be driving and undoubtedly pinching myself as I move around Tertre Rouge and view the start of the Mulsanne Straight on the first lap of practice. Of course, next year is the hundredth anniversary of the 24 Hours of Le Mans. Breaking with tradition, the Le Mans Classic will be back earlier than usual — I'm sure 2023's event will be the biggest yet. See you there!

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**ROSEPASSION**



# JONATHAN SAGE

**Porsche's historic competition cars rolled on wheels featuring fantastic designs, but few were carried over to the manufacturer's range of road cars. Since establishing Group 4 Wheels thirteen years ago, I've made it my mission to reimagine and retail classic Porsche motorsport wheels for modern road and race use...**

Jonathan Sage is the man behind Group 4 Wheels, supplying modern interpretations of classic motorsport wheels for historic road and race cars. View the available range at [group4wheels.com](http://group4wheels.com) and find him on Instagram at [@group\\_4\\_wheels](https://www.instagram.com/group_4_wheels).



**W**heels. I'm always thinking about them. I started my business, Group 4 Wheels, in 2009. I wanted to bring new and exciting wheels to market for air-cooled Porsches and Volkswagens, taking influence from the designs of yesteryear by reimagining them as modern products using today's methods of manufacture, as well as current coatings. I also wanted to ensure my wheels could be bought in a range of sizes and fitments far beyond the scope of what the original manufacturer offered in period.

Group 4 Wheels products are manufactured using AlSi7 primary alloy

back as the 1960s and as recent as today, from an early short-wheelbase 911 to a modern Boxster. To this end, variations on an original design might include different widths, diameters, PCDs or offsets to suit present-day vehicles or bespoke chassis configuration.

As a case in point, recent to market is the Group 4 Wheels LMZ, an aluminium version of Porsche's classic steel wheel, boasting all the looks of the original, but carrying a fraction of the weight. Offered in satin silver, satin black, bare aluminium or a combination of satin silver with a cut dish, LMZ can be ordered as a fifteen-inch wheel, but with widths ranging from five inches to seven inches, with offsets of ET23 through ET36. With the



before being heat treated, a process improving each wheel's mechanical properties, as is the norm in motorsport. Furthermore, the alloy undergoes a degassing pre-treatment limiting the presence of oxygen, which, in turn, minimises cavities in each casting. As you'd expect, all Group 4 Wheels products are subject to strict quality controls, including X-ray inspection and pressure testing to verify the quality of each casting.

Group 4 Wheels products are reimagined classics — it's about understanding what worked in the past and then remastering the design to suit classic and contemporary vehicles in the present. Ferrari, DeTomaso and Fiat styles form a large part of my company's portfolio, but it's a modern take on classic Porsche wheels which has forged Group 4 Wheels a reputation for providing a safe and stylish solution to equipping treasured classic sports cars with wheels evoking memories of the golden era of motorsport. Put it this way, it should come as no surprise to learn many of the air-cooled classics you'll encounter at shows are rolling on Group 4 Wheels products.

Driven by a desire to re-imagine some of the world's finest motorsport-inspired wheels, but with exacting modern specification, Group 4 Wheels has supplied products to enthusiasts in charge of some of today's finest historic road and race cars. My desire to succeed in providing high-quality wheels enhancing both the look and performance of the host vehicle sees me continually striving to develop products suitable for cars dating as far

overall diameter of the wheel remaining the same throughout the range, the look doesn't detract from Porsche's stock offering, but the additional width affords drivers greater road-holding and, of course, the opportunity to experiment with staggered fitments. Incidentally, PCD is Porsche's popular

5x130, with each wheel weighing as little as 6.5kg. And I'm delighted to report a sixteen-inch LMZ is also now available to buy direct from the Group 4 Wheels website.

The process of bringing a wheel from my initial thought

process to a retail proposition involves discussing my ideas with the trusted mechanical engineer I regularly work with. He's got thirty years experience and knows a thing or two about custom wheel manufacture. For example, when planning the LMZ, I explained how I wanted widths far beyond Porsche's specification for the standard fifteen-inch steelie. Subsequently, he prepared drawings, which we swapped to and fro, ironing out the detail, such as ensuring the 'window' slots on the outer edge of the wheel didn't look too thick. There are also considerations regarding available tyres, as well what control rubber is used in historic Porsche motorsport competitions, where the finished product might be put to use. Plus, we needed to consider how the behaviour of tyre blocks might be affected by the unique characteristics of the wheels we were developing.

There's a huge amount of research and development invested in every Group 4 Wheels product, but you'll be pleased to know, it's a labour of love.

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# DOUBLE TAKE

Extensively upgraded with genuine Porsche parts, new reproductions of original 550 components and a 130bhp two-litre flat-four, this wonderfully presented Beck Chamonix Spyder offers all the fun of the real deal at a fraction of the cost...

Words Dan Furr Photography Rich Pearce







**R**eplica. It's a pigeonhole most automotive enthusiasts use when describing a facsimile of a historically significant car, regardless of whether the model paying tribute is based on a similar vehicle from the same manufacturer's product line-up. With this in mind, it seems unfair to bundle, say, a Carrera 3.2 expertly (and sympathetically) backdated to look precisely like a Carrera RS 2.7 with a Toyota MR2 wearing an ill-fitting, proportionally incorrect Ferrari F355-style body kit. Don't get us started on the Honda Civic EG coupe we spotted pretending to be a Bugatti Veyron in the pages of *Fast Car* magazine a few years back.

There are, of course, myriad reasons someone might invest their hard-earned cash in a replica, regardless of whether it fails to fool even the most fair-weather of motoring enthusiasts. The object of desire being subject to low-volume production and therefore rendered unobtainable is a common catalyst for buyers parting with their hard-earned cash in exchange for what they see as the next best thing. Unsurprisingly, the cost of acquiring the real deal is also a major factor, especially if

we're talking old Porsches — there's a reason 917, 356 Speedster, 904 Carrera GTS and 550 Spyder replicas are so popular, particularly in the United States: the genuine article is not only hard to come by, but will command a price only a tiny percentage of the enthusiast community can afford.

Therein lies another problem: what was once regarded as an obsolete vehicle valued at a modest sum might now be a collector classic worth millions. Boasting possession of such an appreciating asset is a nice problem to have, but somewhat understandably, many owners would rather take to the streets (or track) in a replica than risk putting their pride and joy at the mercy of the hordes of idiot drivers out there. In this instance, a replica makes perfect sense, even when an individual has the means to buy the definite article — no enthusiast wants to feel uncomfortable or browbeaten behind the wheel of their car, let alone terrified about the potential for accident damage to knock a few zeros off its value. In the case of the 550 Spyder, this could be a price north of \$4m, as demonstrated by the 1955 ex-Theo Helfrich example (chassis 550-036), which shifted for a whopping \$4.2m at the Bonhams Amelia Island auction





on 3rd March this year. Earlier, in 2018, Bonhams topped the charts by selling a later chassis for \$5.17m, the most ever paid for a 550 Spyder at auction.

Accepting the fact cost of ownership puts an authentic 550 out of reach for all but a small number of enthusiasts, and acknowledging the fact a replica affords owners opportunity to put the pedal to the metal with unrestrained impulsiveness, the challenge becomes getting hold of a car promoting a convincing likeness – beyond reasonable doubt – to the original vehicle it pays tribute to. On this front, Porsche fans are in luck.

### WORKING UP AN APPETITE

Beck is a name many of you will be familiar with, such is the popularity of the brand's 356 Speedster, 550 Spyder and 904 replicas. You may also be aware of the names Chamonix and Special Edition, all related to Porsche-aping products. In short, Chuck Beck (a former employee of Carrol Shelby and described by none other than Jay Leno as a "mad genius") began building 550 Spyder replicas in the USA back in 1982, incorporating contemporary Volkswagen technology to improve handling and performance. These cars were celebrated for their engineering, but also for being respectful of the original Porsche design, a feat accomplished by Beck's decision to create body moulds from original 550 panels. In 1988, he focused his attention on developing a 904 replica, but not before establishing Chamonix, a production facility in Brazil, which he founded with former race car constructor, Milton Masteguín, and other business partners. Here, Beck Spyder kits and many complete cars were hand-produced, primarily for the US market, but also for customers around the world.

Eventually, Beck sold his share in the business and production was returned to the United States, marking the third phase of Beck Spyder production. Today, Beck GTS (904), Spyder (550) and Speedster (356) kits and cars are manufactured and sold by Special Edition Inc., aptly located in the German Township of Bremen,

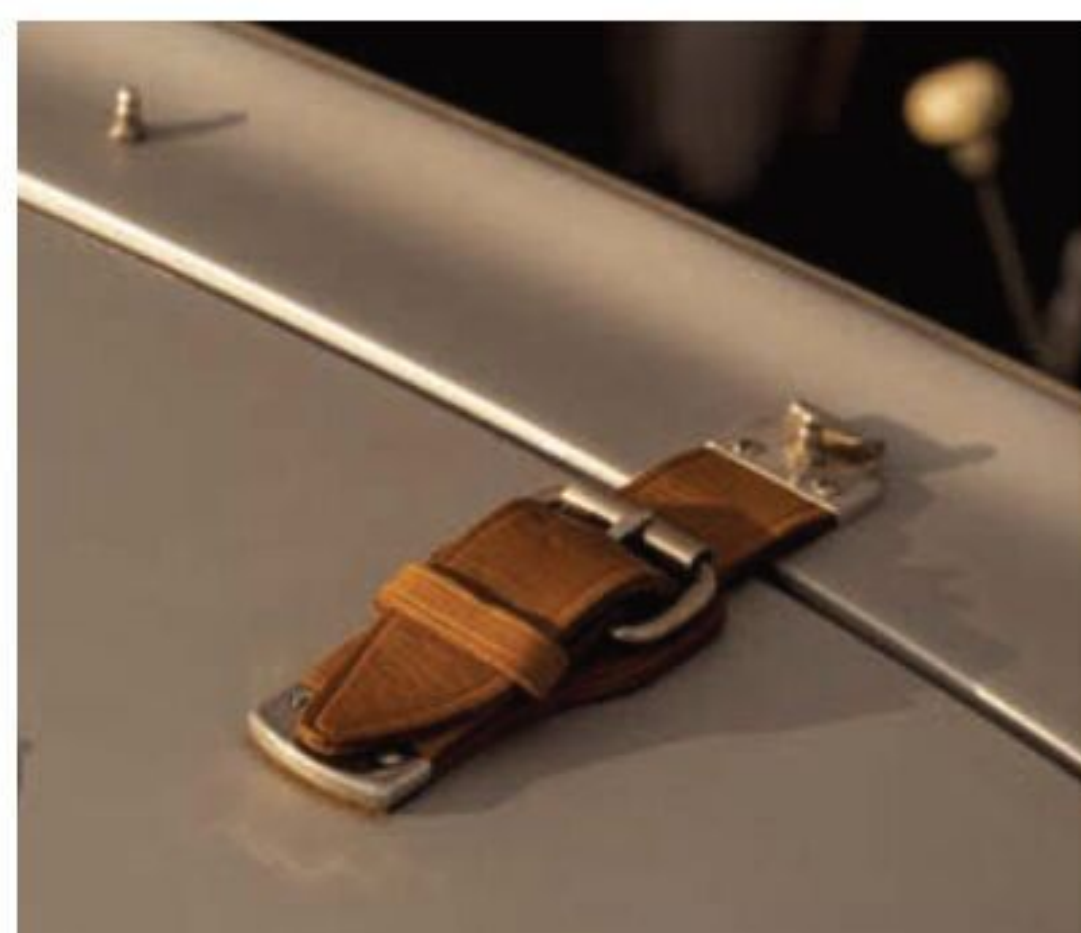
Indiana. Beyond their attractive price point, there's a reason these cars remain so popular: Chuck Beck's mission was to produce cars enthusiasts can enjoy driving, rather than having to care for overindulgently out of fear for reducing value simply through regular use. It's also worth noting how, during each phase of production, Beck Spyders have incorporated purpose-built, hand-assembled chassis constructed in spotless, professional assembly facilities by experienced industry professionals using the highest quality materials, unlike pop-up manufacturers of similar products. It's an ethos which continues to this day, and it shows.

The car you see on these pages is a Chamonix Spyder, its build stretching back to Beck production in Brazil. It's a rare beast, not only because it eschews many modern replica parts for genuine Porsche components, but also because it's right-hand drive, something which has presented a challenge for its owner, David Rennie, on more than one occasion. We'll come to this shortly. Beforehand, it's worth summarising events leading up to

**Above** David's 550 replica was manufactured at the Chamonix plant in São Paulo, but now makes use of many parts from Fibersteel, a company developing and producing aftermarket parts for original and reproduction 550 Spyders, 356 Coupes and 356 Speedsters







**Above and below** With the cost of a real 550 Spyder likely to set you back millions, a convincing replica makes a lot of sense, even if you can afford to get hold of the original Porsche product

David's acquisition of this gorgeously presented silver machine in 2018.

In the early 2000s, he bought a right-hand drive 1960 356 B coupe, a car imported to the UK from South Africa. He rebuilt the tin-top's gearbox and Super 90 flat-four at home, treating the punchy boxer to a big bore kit and racy cams. During his ownership, he spent many years "scouring the Earth" for new old-stock items, ensuring every aspect of the air-cooled classic was maintained using genuine period Porsche parts. Ultimately, however, he reasoned the way to ensure the car's survival long into the future was to treat it to a full body restoration, which he duly commissioned.

Unfortunately, the company tasked with taking on the work overpromised and underdelivered, a fact brought into light by an agonising court case centred around the largely irreversible damage caused to the car during what was supposed to be an enjoyable and rewarding restoration. Recognised marque specialists testified on David's behalf (one described the supposedly restored 356 body as "dangerous"), but irrespective of the

mountain of evidence supporting his complaint, there was no getting away from the fact his treasured 356 was ruined.

Its many original parts were subsequently sold as spares to a buyer in Ireland, leading David without a Porsche, but with a huge amount of emotional turmoil. Indeed, he admits to feeling guilty about handing the car to a business unable to take care of the work he commissioned them to do, not that he was aware of the fact at the time. Unsurprisingly, following conclusion of legal proceedings, his thoughts turned to replacing the 356 — with a keen eye on his bank balance, the notion of buying a 550 Spyder replica made a lot of sense. And he just happened to know where there was one sat motionless in a field.

"The engine had seized," he tells us. "The car was owned by a trainee solicitor who had unsuccessfully attempted to fix the fault. Throwing in the towel, he let me take ownership." The problem concerned the 550 Spyder's single tailpipe, replicated on the Chamonix build. "Where the car had been used and washed outside, water had entered the tailpipe, which is angled upward. The bores had filled with water and the engine subsequently seized."

The flat-four in question is a 130bhp CB Performance unit with displacement of 1,915cc, a significant jump up from the original 550 Spyder's 1,498cc, echoing Beck's intention to afford his replicas more power and handling prowess than Porsche was able to give its products in period. David rebuilt the CB Performance boxer, which benefits from new heads, pistons and cylinders, 550-style valve covers, a fresh valvetrain, Vintage Speed-supplied 356-style oil filler, an oil breather system (as per the factory 550 Spyder), a high-flow oil pump, aluminium-spun pushrod tubes, an aluminium power pulley, all new ignition equipment and twin Weber carburettors fed by a brace of Facet fuel pumps (wearing the same decals as those of 550 Spyder chassis 054) feeding the carbs through a vintage Bosch fuel separator and managed by a Malpasi fuel pressure regulator. The result is vivid







performance announced by way of a satisfying bark through a Turbo Thomas custom stainless exhaust system. To assist with keeping toasty operating temperatures at bay, a 550 Spyder-style centre-mount engine shroud from CB Performance was modified and fitted, as were standalone oil coolers at the front and rear of the car.

As you can see, David has taken great care to adopt (and adapt) original Porsche features where possible. It's an approach extending to a wealth of genuine 356 parts, not limited to the speedometer, combination gauges, fuel tank sender plate, rear engine grille seals, exhaust brackets, the oil temperature and pressure distributor block, both battery terminals, shock absorber mounting brackets, the fuse box and torsion bar covers. Early 356 rear brake lights have been fitted to the wings as pitlane sidelights.

### MAKE A PACKET

The body was built in the UK from a base Beck Spyder kit manufactured and supplied by Chamonix in 2009. "There's no limit to how far you can go with a 550 Spyder replica," David explains. "As a rule, the more you spend, the closer you'll get to the original Porsche, to the extent you might even option a Type 547 'Fuhrmann' four-cam." Needless to say, with his keen eye for detail and a passion for Porsche, he recognised many aspects of the car which he considered strayed too far from the real 550 Spyder. Indeed, consulting reference books, he'd identify where 356 parts had been used by Porsche and then order the same components from marque specialists, including Roger Bray Restoration, Soeger Classic Parts, Karmann Konnektion, Replica Parts and Machine 7.

The biggest haul of parts came from Fibersteel, which for more than twenty years has been manufacturing components for original and reproduction 356s and 550

Spyders from the company's base in Azusa, a city in the San Gabriel Valley in Los Angeles, California.

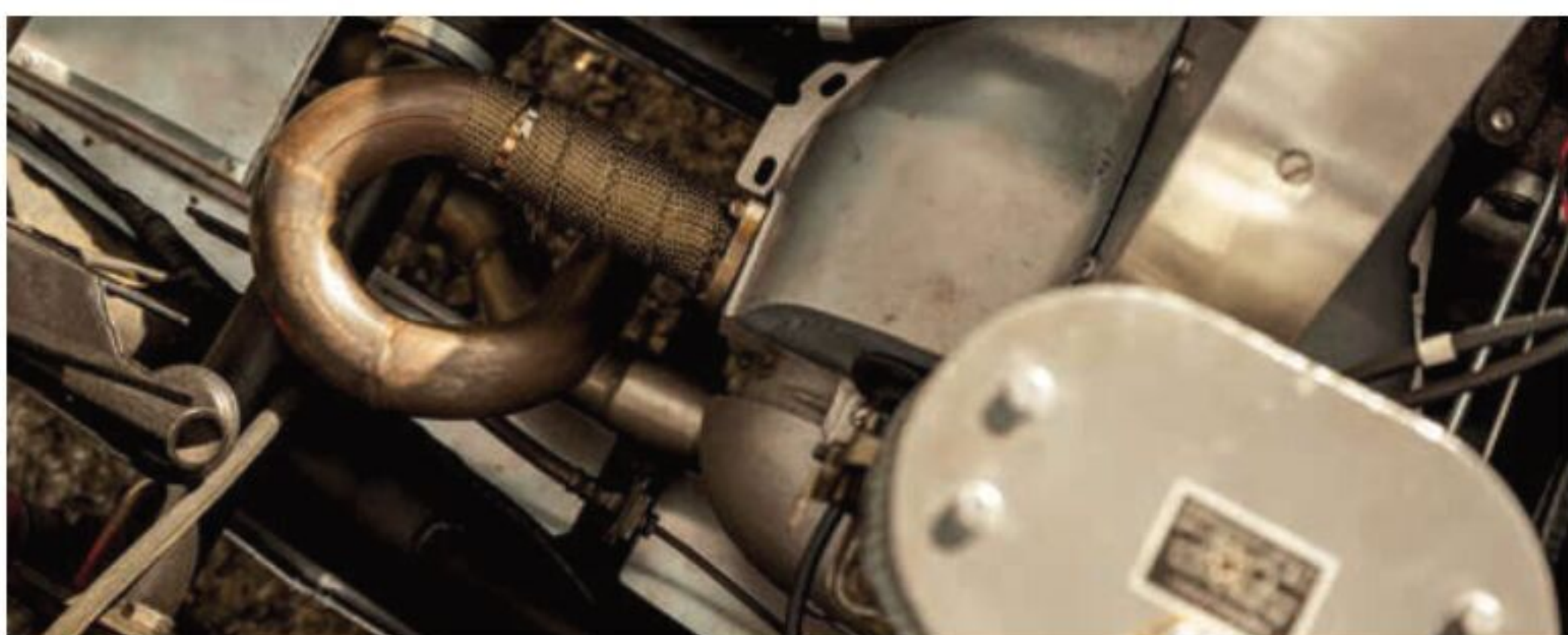
The team, led by company boss, Russ Rodriguez, is known all over the world for its high standard of workmanship, which is why David had no qualms about splashing out on a significant number of Fibersteel products for his Chamonix Spyder.

The full scope of his Fibersteel bounty is too vast for these column inches to accommodate, suffice to say highlights include a shifter, handbrake, wing mirror, rear-view mirror, dashboard handle, body badges, leather straps (for the clam shell, bonnet, spare wheel, jack mount, exhaust and nose), a polycarbonate windscreen, jack points, horn push, VIN plates, start button, pull switches, indicator stalk, brake pedal cluster, roof mounts, aluminium chassis hoop and frame rail trims,

**Below** Two-litre flat-four is a 130bhp CB Performance unit rebuilt by David and benefiting from a raft of performance enhancing updates







**Above** The lack of windscreen wipers, the open cockpit and the low-cut front glass amounts to fun in the sun, but not a great driving experience if caught out in the rain

number plate light, clam shell locks, Banjo-style steering wheel, aluminium dash pod mounting plate and genuine Bosch indicator lenses, all in the style of the original 550 Spyder. There's even a tool kit mirroring the set supplied by Porsche.

The shift assembly and pedal box required extra attention from David due to his car being right-hand drive and the vast majority of Beck Spyders —

and therefore their parts — being configured for left-hand drive. Indeed, he tells us the work he has done to adapt parts to suit his car has caught the attention of 356 and 550 replica producers and parts manufacturers in the USA, many of them keen to introduce his workarounds to

their product lines. He also had to make adjustments to the fibreglass seat shells he purchased from Speedster Clinic. "356 Speedster seats are different to those of the 550 Spyder," he reveals. "I trimmed the edges to match the shape of pews fitted by Porsche." The devil is in the detail, as they say.

Other work he has carried out, including custom fabrication, can be seen in the form of a factory-style fuel tank cover and fuel filler, a Porsche-style engine

## EVENT MANAGEMENT AT THE LE MANS CLASSIC TRIED TO USHER DAVID AND HIS CAR INTO THE DISPLAY PADDOCK

belly pan, a 'cheese grater' inner rear shell, the chassis structure in the front foot wells, the rear arch closing panels, interior cladding, rear wheel closing panels (and brushes), the fuse box mount and door caps, all made from lightweight aluminium. He's also located the battery







and brake fluid reservoirs in keeping with the original 550 Spyder, introduced a Bosch period-style foot-operated headlight dip switch, period headlight glass, period-correct horns, Special Edition windscreen wiper delete plugs, bump stops, a rear brace, an early factory-style clamshell folding stand, plus door seals mirroring those of 550 chassis 036. The gearbox is an off-the-shelf remanufactured Volkswagen unit, now paired with 550 Spyder-specification short axles and spacers. Stopping power is provided by drums at the rear and powerful CSP disc brakes at the front, both setups covered by factory-style aluminium skins.

The same nod to originality can be found on the Koni dampers, decorated with period-correct stickers and helping this low-slung Spyder to exploit the rigidity of its expertly crafted tubular chassis through nimble handling, despite those skinny wheels and tyres.

As mentioned earlier, Chuck Beck achieved the faithful look of his Spydery by taking moulds from the

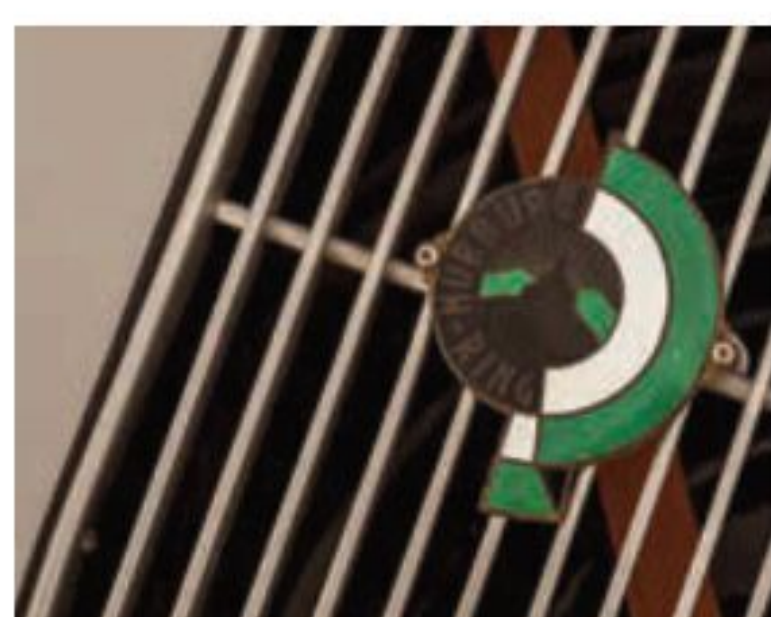
bodywork of a genuine 550. What's on display here is utterly mesmerising, characterised by supremely good fit and finish, plus the benefit of only 4,600 miles on the scoreboard.

### EVOCATIVE EMBLEM

The rear quarters are beautifully detailed with tapered blue stripes featuring gold edging, the look enhanced by white racing roundels and a Sonauto tail badge, as well as a grille badge issued at the Nürburgring during the genuine 550 Spyder's time in production at the Porsche factory in Stuttgart. In fact, so convincing is this exquisite replica, event management at the most recent Le Mans Classic tried to usher David and his car into the display paddock when he was attempting to find his way to the event campsite!

That's right, David isn't afraid to use his Spyder whenever the mood takes him, providing the weather holds out — he has a factory-style tonneau to take

**Above** The resurrection of this Chamonix 550 served as a form of therapy for David after the trauma of losing his beloved 356 coupe to a restoration gone wrong







**Above and below** The replica classic Porsche scene is huge, especially in the United States, where an entire industry of aftermarket parts suppliers exists, though right-hand drive 550 Spyder replicas are seldom seen

advantage of, but the lack of windscreen wipers isn't exactly ideal for heading out in the wet. Even so, we wonder how the driving experience compares to that of his dearly missed 356. "My Porsche was tuned by PR Services to be race oriented, with ride height and chassis tuning in keeping with a track car. Though the 550 Spyder was a race car by nature, the evolution of Porsche products had moved on drastically by the time of the 356 B — I liken the changes to the difference between a steam engine and an electric locomotive!" he laughs. "The 550 rides on very slim tyres and the mid-engine layout gives it very different handling characteristics. The rubber lights up and the back end gets twitchy where the 356 would really dig in, but this is still very much a fun car to drive, with things getting progressively more exhilarating the further you ask the rebuilt CB Performance flat-four to pass the 100mph mark." Hold on to your hats, people.

Notwithstanding the technological marvel that was the Fuhrmann four-cam, there's no denying the 550 Spyder and the replicas it has spawned are basic cars. This is no criticism — expertly engineered, their charm lies in simplicity of design. In terms of both the ownership and driving experience, the Beck Speedster (regardless of when it was built and by which manufacturing facility) is very much a 'hands on' car, ideal for the enthusiastic home mechanic and a far cheaper proposition than the cost of owning and maintaining a 356 (or a real 550 Spyder, natch). You can press on in David's car, safe in the knowledge price of repair won't require you to sell a kidney, should something go wrong. And let's face it, most people buy a Spyder replica because they want to promote the illusion of driving a real 550. When the copycat car is as good as this, and when the end result is carrying so many original Porsche parts, we can totally appreciate the appeal. **CP**





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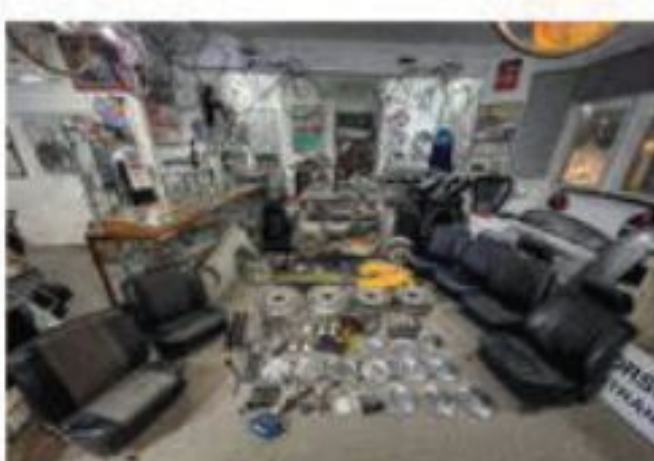
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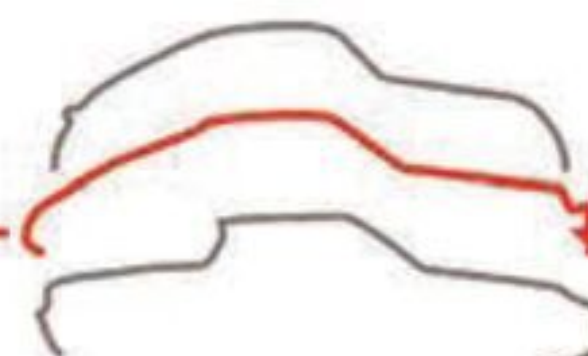
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# LIVING LEGEND

Engineer, racing team manager, test driver, tank driver, works driver. You name it, Roland Kussmaul has done it, resulting in arguably the most eclectic CV of all Porsche's backroom boys...

Words **Kieron Fennelly** Photography **Porsche**

Except perhaps at one or two retirement parties or other formal occasions, nobody at Porsche ever saw Roland Kussmaul wearing a suit and tie. Racing or workshop overalls, pit lane uniform, even a pair of grubby shorts in those shots of the sweltering Dakar, but never a shirt and tie — Kussmaul was always hands-on. A star from the wave of Stuttgart University engineering graduates joining Porsche at the end of the 1960s, he remembers the exciting period Ferdinand Piëch ("a man who knew what he wanted") was driving Porsche's motorsport programme to the very top with an energy felt throughout the company.

Unlike some of his contemporaries, Kussmaul's name doesn't often appear in Porsche histories of the period, an absence he attributes to working in an obscure part of the business which rarely attracted attention. "My degree was in mechanical engineering," he tells us. "I was selected to work on the Leopard tank programme. This meant I was based at Weissach, but not in the competition department. I worked on several evolutions

of the Leopard, which involved extensive driving trials."

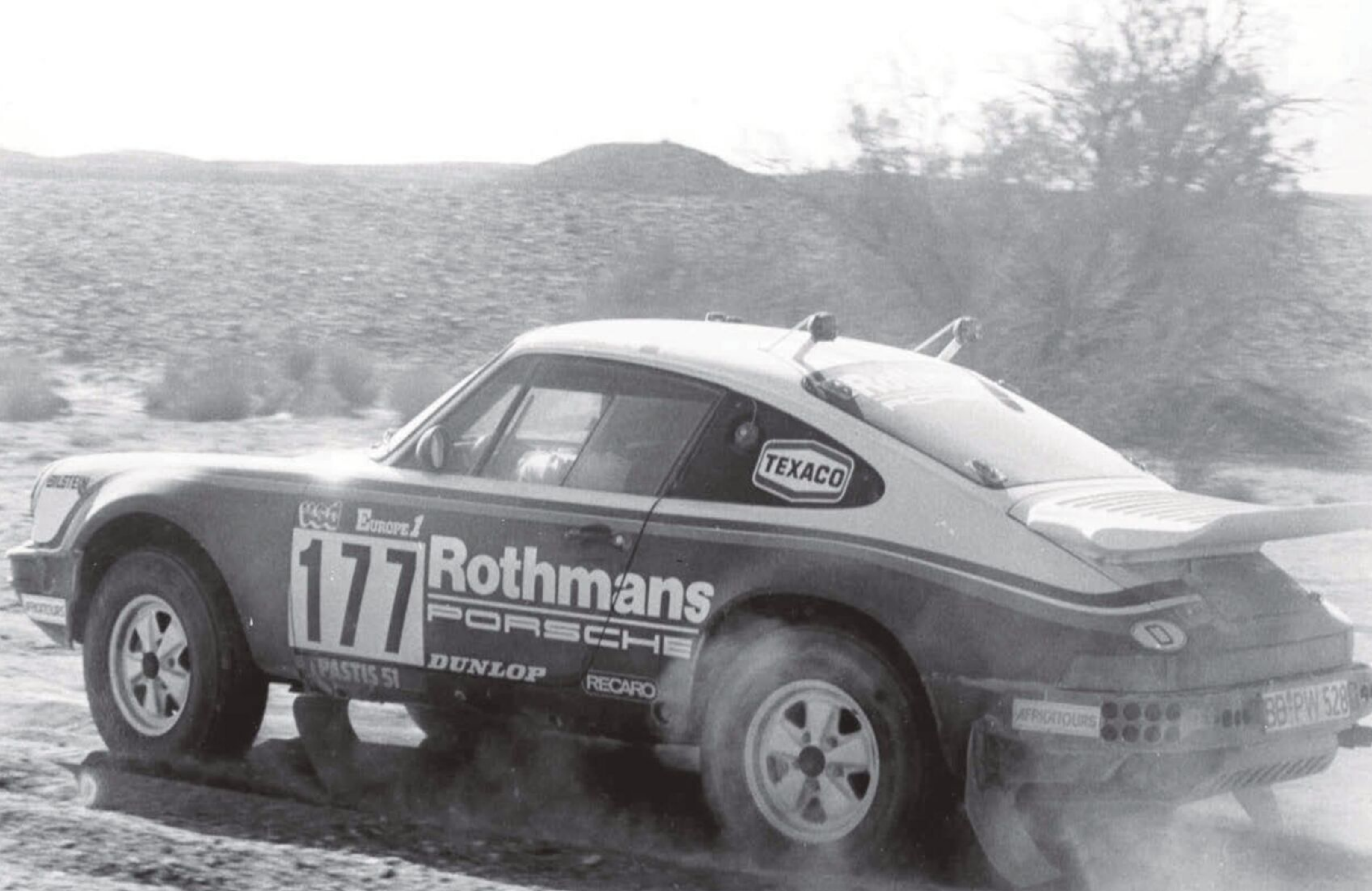
In 1974, Peter Falk, then manager of Porsche's racing division, approached Kussmaul with a request. This was when Porsche was only supporting customer teams in motorsport, rather than fielding a works squad. Falk asked for Kussmaul's help with the Kuehne & Nagel team. The international freight forwarder was sponsoring a brace of 911s for European rallies, but the cars were experiencing recurring difficulties with their suspension equipment. Kussmaul was selected to liaise with the damper manufacturer and find a solution. His expertise in chassis development had already been recognised and, at a time Porsche was taking increasing interest in the work of its competitors (especially so following development work on the 924 and 928 projects), he was often deputed to evaluate Ferraris and other premium marque sports cars on the compact circuit at Weissach. The rally car damper project was effectively Kussmaul's ticket to working for Porsche's motorsport department — when Porsche decided to reintroduce its works teams to competition in 1978, he was appointed service manager, working alongside Jürgen Barth.

**Facing page** Bodywork from 956-005 after an accident at Weissach in June 1984

**Below** Driving 953 no.177 (one of three such works entries) at the challenging 1984 Paris-Dakar Rally







The 911 had won virtually all major rallies. The object now was to win the Safari rally in Kenya. The Safari was an event where structural strength (rather than outright speed and power) was what really counted. Though finishing second, the same result as Porsche achieved in 1974, the company learned much from this experience, as did Kussmaul. "Africa is nothing like a European rally, where you have a roadbook, service backup and off you go. The distances on the Safari rally are vast. You have to conduct endless reconnaissance and, crucially, you have to be able to repair the car yourself."

### **SUPER SWEDE**

Porsche had once again enlisted the services of Bjorn Waldegård, winner (in a 911) of the 1969 and 1970

Monte Carlo rallies. "I was his co-driver," says Kussmaul. "We had no electronic navigation or diagnostic equipment back then. My job was to monitor everything from landmarks to road surfaces, listening to the car at every step, much like a flight engineer in a piston-engine aircraft. It was quite fantastic to be sitting alongside a champion like Waldegård. I learned a lot during those exciting few months. A truly amazing experience."

Waldegård's technique was, at times, extraordinary. Indeed, Kussmaul recounted how the Swede got the 911 over water courses crossed by plank 'bridges' narrower than the car. "He approached broadside." In doing so, the 911 was up on two wheels as it travelled over the planks — pure stunt driving. Kussmaul also recalls how Waldegård would accelerate hard before wide river

**Above** Kussmaul's co-driver for the Paris-Dakar was Erich Lerner, the pair losing out on top honours to the no.176 car of René Metge and Dominique Lemoyne

**Bottom left** Carrera 3.2 trials at the Volkswagen test track in Ehra-Lessien 1983

**Below** Kussmaul and Timo Bernhard chat at the 2005 24 Hours of Le Mans







**Above** Jörg Bergmeister and Kussmaul at Le Mans in 2005

**Top right** Jürgen Barth and Roland Kussmaul drove the 911 SC in the 1983 Monte Carlo Rally as a private team, finishing ninth overall

**Below** Peter Falk watches on in the paddock at the 1985 Paris-Dakar Rally while the team removes the 959's engine and Kussmaul attempts to fix the clutch



crossings, thereby making the 911 bounce like a pebble skimmed across a lake. Despite running away from other competitors in spectacular fashion, however, suspension problems dogged the participating 911s, which finished second and fourth. The Safari, it seemed, was not a rally Porsche was destined to win.

In 1981, the arrival of new company boss, Peter Schutz, not only started a new chapter in the 911 story, but opened the prospect of wider competition activity. Under Peter Falk, Porsche would return to the World Sportscar Championship, while Kussmaul continued to concentrate on rallying. The company turned its attention to the mighty Paris-Dakar. Could this event

provide the African prize which had eluded Zuffenhausen in the previous decade? Porsche decided to enter the 1984 event with a specially prepared 911 notable for its huge ground clearance. "The Porsche entry was much

derided," remembers Kussmaul. "The conventional approach to Dakar was to compete in a traditional fourby, which was believed to be the only way to cope with the sand,

but Range Rovers and Mercedes G-Wagons were heavy and slow. We knew much about off-road driving, African terrain and how to traverse sand and water."

The team's Safari-specification Porsche, the 953, was a four-wheel drive 911 using a slightly detuned

## THE NEWLY INTRODUCED IMSA SERIES OPENED THE WAY FOR KUSSMAUL'S TALENTS TO SHINE ONCE AGAIN







3.2-litre engine and weighing barely 1,100kg. There was no question of having the luxury of service vans at every stage — in addition to the two works cars, a third (the so-called *Feuerwagen*), carried spares and could, if necessary, be cannibalised to keep the other two Porsches in contention. This time, Porsche pulled off the win. The 953 driven by previous Dakar winner, René Metge, was the first competitor vehicle to arrive in Dakar. Kussmaul piloted the *Feuerwagen*. An impressive driver, he even won two of the event's stages, though ultimately didn't make it to the finish.

### LEAGUE OF NATIONS

"We lost our way at a crucial stage," he remembers. "This experience taught me the importance of local knowledge. That's why Metge was so good. I co-drove with him, too. He couldn't speak German and I couldn't speak French. We devised a kind of sign language to communicate, though I learned to shout 'frein' when he needed to brake! He was a natural at the Dakar. He'd lived in Africa and had a nose for the event. I remember him surprising me

by braking hard from 125mph in the middle of the desert, even though I hadn't said anything. He'd seen subtle change in the colour of the sand ahead. It was a shade darker, which meant it was wet. We would never have got out of it if we'd continued. He would regularly get out of the car and check the ground on foot before deciding whether it was drivable. He could smell the damp before we got to it."

The 1980s were the great days of Group B, an extravagant and almost unregulated race and rally class which appealed strongly to Peter Schutz. He saw an ideal launchpad for an über-Porsche, which would go on to be unveiled as the 959. Under the supervision of Falk, Kussmaul and Barth fitted a detuned a version of the 2.1-litre turbocharged racing engine to a systematically reinforced 959 shell for another attack of the Dakar. "When we could get decent petrol" recounted Kussmaul, "the 959 was too fast for the camera helicopter trying to follow it across the desert!"

A crash (Jacky Ickx) and engine failure due to an oil leak (Metge) foiled the 959's first attempt to win

**Above** Testing the 953 prior to the 1984 Paris-Dakar rally

**Bottom left** At Carrera Cup Deutschland in August 1997 with star driver, Dirk Müller, and the 993 Cup car

**Below** Kussmaul enjoying time out with Bob Wollek at Le Mans in 1986







**Above** Walter Röhrl, Jürgen Barth and Roland Kussmaul at the Weissach testing and development centre in 1981

**Top right** Enforced temporary retirement from driving duties following an accident with the 956 during testing in 1984

**Bottom** Ekkehard Kiefe and Kussmaul pose in front of the Mercedes 280 G used as a service vehicle for the 1985 Pharaohs Rally, but this was no ordinary G-wagen — the 'go anywhere' Benz was equipped with a 928 engine and, though intended to carry spares for the works 959 entries, was entered into classification, finishing second overall



the event. In 1986, though, Metge made no mistake. Alas, this was the end of the road for ballistic Group B projectiles, deemed too dangerous after a series of fatal accidents, some involving spectators. Porsche withdrew from the rally scene.

Kussmaul turned to circuit racing, developing and testing Porsche's Group C sports prototypes and, together with Barth, carried out final testing of all seventy-seven customer 962s built by Weissach. Kussmaul also carried out initial development of the 2708 (referencing the vehicle's 2.7-litre V8 engine) Indycar project, which promised much, but fizzled out.

In 1988, Porsche's long-serving Technical Director, Helmuth Bott, retired. He was replaced by the ambitious Ulrich Bez, who was returning to Porsche after a spell at BMW, where he led the team responsible for the Z1. Bez immediately decided to appoint the incoming 964 as the star of Porsche's popular single-make race series, which was launched to great success with the 944 Turbo. Clearly the more important product, the Carrera 2 version of the then new generation of 911 had just been revealed. Bez turned to Kussmaul to produce a Cup version of the 964, the latter drawing on his earlier experience with the Barth-inspired 911 SC RS.

Taking the 964 shell, Kussmaul lightened the chassis before welding in strengthening gussets and rebuilding

each vehicle with lowered (but essentially standard) suspension. Despite the fact they're often described as blueprinted, Kussmaul said he simply selected production engines which exhibited above average horsepower. With revised mapping, an open airbox and a straight-through exhaust, an output of 260bhp was conservatively claimed. 1990 was the first year of the single-make Carrera Cup (as it was renamed) and, after a season's close racing, Olaf Manthey won the inaugural championship. Careful scheduling and inspired support slots for major motorsport events ensured Carrera Cup rounds got maximum exposure, such as when serving as a prelude event to the German Grand Prix.

In the USA, the newly introduced IMSA series opened the way for Kussmaul's talents to shine once again. He was called upon to create a competition version of the 964 Turbo, resulting in the Turbo Leichtbau, effectively an RS chassis with the turbocharged 3.3-litre flat-six, its power raised to 380bhp. As a road car, the Turbo Leichtbau needed an experienced pilot. On the track, it won two consecutive IMSA championships.

### CLIMB UP THE LADDER

More production 911 racers — the 964 RSR, 993 RS, 993 RSR and the GT1, a car which would give Porsche its last twentieth-century Le Mans win — followed, each one bearing the imprint of Kussmaul. Arguably the best was yet to come. It took the form of the 911 GT3, which over more than two decades, has become the largest-volume production racer in the history of motorsport.

Kussmaul embodies the Porsche ethos of meticulous planning, thorough preparation and solid commitment. "It's the family effect," he says. "It goes back even before Ferdinand Piëch took control of the factory motorsport programme. You need to understand each car, you need to understand the rules and you have to accept the fact you simply can't develop and build a race car by sticking to a thirty-five-hour working week. You need to give absolute commitment. At Porsche, there was always this commitment."

By the time of his official retirement in 2008, Kussmaul was so deeply involved in the GT3 programme that he stayed on in advisory capacity and also continued to work closely with Olaf Manthey's semi-official works







team. One unashamed admirer is Andreas Preuninger, now director of GT Motorsport at Porsche. In 1989, aged twenty-four, he joined the team at Weissach, the realisation of a long-held ambition. Kussmaul, he says, was already a legend among staff because of his exploits in the Dakar. Recalling how Kussmaul was frequently seen at the Weissach development track or driving fast in a development car, Preuninger says he felt as though he should bow or offer some other sign of reverence in the presence of engineering greatness. Later, he got to know Kussmaul as an older man, who, recognising Preuninger's commitment, invited him to join his team.

Preuninger describes how the 996 GT3 was a "pure homologation special, a parts bin job" with many acknowledged shortcomings, but that several aspects, such as seat design, cabin ergonomics and the suspension changes, were absolutely right first time. "All of it was Kussmaul," he offers. "I learned a huge amount

from Roland. He had such a feel for the synchronicity of the suspension, powertrain and driver working together as one."

Significantly, Kussmaul did much of his testing on local roads, concerned to drive in the kinds of conditions GT3 buyers would encounter. The car had to be soft enough to ride comfortably and predictable in the wet, as well as having race circuit attributes.

Today, Preuninger sits proudly in Kussmaul's old office, complete with its "sacred walls." The older Porsche man celebrates his eightieth birthday in a few week's time, but he remains a regular presence at Weissach, often helping with the restoration of car he had a hand in developing. "It's always good to see him," says Preuninger. "We may crack the old jokes, but he always has good advice to offer us." We're not sure if Kussmaul will be having a party to celebrate his big day, but we're confident of one thing — he's unlikely to be wearing a suit and tie. **CP**

**Above** Jürgen Barth and Roland Kussmaul put the 924 Turbo to good use on the 1981 Monte Carlo Rally

**Bottom left** The 2708 Indycar emerges from the motorsport workshop at Weissach in spring 1987 with Porsche CEO, Peter Schutz, sitting on the front wheel (left), while Kussmaul can be seen in racing overalls, preparing to take the wheel

**Below** Testing the 465bhp 997 GT3 RSR at the racing department in Weissach





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# HIT PARADE

**First seen mixing it with drab English metal during the Automobile Association's celebratory Cavalcade of Motoring in 1955, this recently restored right-hand drive 356 Pre-A Cabriolet was one of the first Porsches sold in the United Kingdom...**

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

**D**id you catch any of the Queen's Platinum Jubilee celebrations across the first weekend of June? Regardless of whether you're a monarchist or believe in 'citizens, not subjects', there's no denying the extraordinary spectacle generated by the procession of eye-popping carnival floats on parade along The Mall (the stretch of road in Westminster between Buckingham Palace and Admiralty

Arch at Trafalgar Square). This rolling exhibition of bright colours, loud sound and vibrant imagery was the result of dedication and hard work from many different organisations and community groups, each doing their best to represent aspects of life experienced across the United Kingdom and the Commonwealth during Her Madge's seventy-year reign.

In the post-war years, this frenzied feast of colour would have been almost beyond imagination. We only











have to look back to the Automobile Association's Golden Jubilee pageant on 23rd June 1955 — less than two years after the Queen's coronation — to see a train of black-on-black vehicles strutting their stuff along the roads in and around Regent's Park in honour of the occasion. Wolsleys, Commers, vintage Vauxhalls and bull-nosed offerings from Morris were chief among the many dozens of cars on display, each presented for the perusal of the gathered masses and the beady eye of the Duke of Edinburgh, who was joined by Automobile Association executives for an inspection of patrolmen and their motorcycles, as well as the flotilla of cars journeying single-file around the 'jewel in the crown' of London's park spaces.

### SPACE INVADER

But wait! What's this? Among the decidedly monotone motors making their way along the celebration route in front of many thousands of spectators is a vehicle altogether otherworldly. Low-slung, roofless and possessing the kind of curves the chugging Austins and Rovers in attendance can only dream of possessing is something event organisers are referring to as a 'Porsche'. It is, in fact, a brand-new 1955 356 Pre-A Cabriolet, configured in right-hand drive and one of the very first Porsches to be sold in the UK by Archibald Frazer Nash (AFN), the dealer which would go on to become the country's sole concessionaire of the manufacturer's products prior to 1965, when Porsche Cars Great Britain was established. Compared to the vehicles ahead and behind, this sensational four-wheeler — carrying registration number 427 DMP — looks as

though it has joined the cavalcade from outer space, not Stuttgart. After all, the Porsche's paintwork is Pearl Grey (a kind of sandy-beige), not black.

Chassis 60791 was completed at Zuffenhausen on 29th April 1955, a mere six weeks before its star turn in London. The further back in Porsche history you travel, the scarcer right-hand drive examples of the manufacturer's output become. Considering the very first Porsche sale by AFN took place in 1954, it's safe to assume 427 DMP is incredibly rare. In fact, according to Porsche records, it appears only ten right-hand drive Pre-A Cabriolets were built in 1955. It's thought only two have survived to the present day. 427 DMP is one of them.

**Below** The highlight of the Automobile Association's golden jubilee cavalcade, watched by thousands of spectators in and around Regent's Park in 1955







**Above** Interior is a work of art and has been fully restored during the car's time in the custody of Export 56

The very first Porsche, 356 no.1, was a two-seat roadster. Drop-top motoring exuded glamour and appealed to a post-war generation of drivers who wanted the thrill of touring, rather than simply viewing a car as a tool to get from A to B. Though Porsche's early open-top success was the stripped-back, motorsport-oriented 356 Speedster (introduced in 1954), the 356 Cabriolet was luxurious and exotic, providing a cross-country driving experience characterised by comfort and rapid acceleration, certainly when compared to the vast majority of other vehicles on the road.

According to the factory Kardex, 427 DMP was sold to its first owner, a Mrs Mead, by AFN on 27th May 1955. John Adlington, head of AFN, remembered how her large dog would regularly break the passenger door window and how Mrs Mead would remain seated in her pride

## ZUFFENHAUSEN HAS ALWAYS HAD A COMPLEX PRODUCT LINE-UP WITHIN EACH YEAR OF MANUFACTURE

and joy whenever the resulting remedial work was being carried out. During her time in charge of the car, it was painted white and, in July 1962, was subjected to a new front end because of accident damage.

427 DMP changed hands in 1977, passing to a Mr Brierley of Rochdale, who had the car painted yellow and covered six thousand miles before selling to a David

Cleaver of Coventry in 1982. Cleaver enjoyed sixteen years of happy motoring in the diminutive drop-top before passing ownership to a Mr Barr of Horsham. A year later, fifth owner, Mr

Parkinson, came on the scene, holding onto the Cabriolet for four years before its sixth owner, Mike Smith of Essex-based air-cooled Porsche restoration specialist, PR Services, added his name to the logbook.

"This 356 was quite a mess when Mike bought it," explains current custodian, Mick Pacey, proprietor of classic Porsche restoration and sales specialist, Export 56. "Many years exposed to British weather had left the car in a fairly sorry state. Additionally, repair work carried out to the front end during Mrs Mead's ownership used parts from later 356 production, though this wasn't unusual practice back in the day. Unsurprisingly, recognising the rarity of this particular Porsche, Mike and the PR Services team decided to treat the car to full restoration. Award-winning Volkswagen and Porsche body repair outfit, Sportwagen, took care of the metalwork and paint."

The body was stripped back to bare metal before being meticulously returned to period-correct specification. All removed parts were inspected and documented, though despite the presence of the original gearbox, the car's 1.5-litre engine had been removed and replaced with a 1.6-litre unit many years beforehand. This wasn't an uncommon occurrence back when air-







cooled Porsches weren't worth what they are now — many owners wanting more power from their 356 would happily ditch the original Porsche flat-four in favour of a bigger-displacement, higher-output unit, perhaps even making use of a tuned Volkswagen powerplant. Regrettably, the removed engines were often sold on, as opposed to being kept in storage.

### DIFFERENT FLAVOURS

Wind the clocks forward to 2016, and Mick bought the Cabriolet in part-rebuilt condition from PR Services on behalf of a keen Export 56 customer. "Initially, he told me he wanted to buy a 356 Speedster and asked me to inspect and purchase an example going under the hammer at an RM Sotheby's auction in Battersea. The car was one of only a handful of right-hand drive 1955 356 Pre-A Speedsters assembled, but I reasoned it was going to require massive spend to restore to concours specification." With this thought in mind, he suggested his client take a look at the wider range of *al fresco* 356s from the period. Herein lies an important consideration if you're thinking about buying a Porsche of this vintage — Zuffenhausen has always had a complex product line-up within each year of manufacture. Where, say, Mercedes-Benz restricted its same-age cars to one or two variations, the wide range of body styles, trim options and engine choices offered by Porsche made for an extensive catalogue of vehicles during each model year. In other words, try not to be guilty of tunnel vision when considering your dream drive — you'll make life far

easier for yourself (and your wallet) if you incorporate the wide range of Porsche products for a given year when conducting your search.

"Many people don't realise the extent of the 356 line-up during each period of the model's time in production. Some even assume all drop-tops are Speedsters," Mick shrugs. Recognising his client's desire for a rare, early right-hand drive 356 lacking a roof, the availability of Mike's already restored Pre-A Cabriolet — albeit taking the form of a rolling body accompanied by many boxes of parts — triggered a chain of events leading to the car being transferred to Export 56's base in Cranfield,

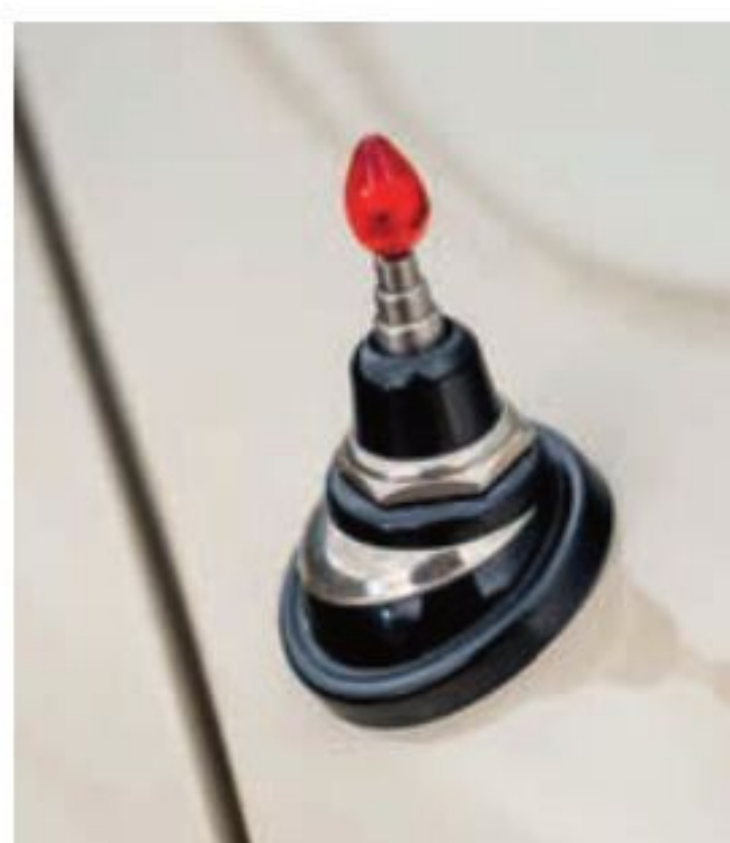
**Above** One of only two surviving right-hand drive 1955 356 Pre-A Cabriolets and, thanks to the chance find of its original engine, thought to be the only matching-numbers example







## PRE-A CABRIOLET



**Top right** Bigger-output 1.6-litre engine will be making way for the original 1.5-litre unit, currently undergoing a full rebuild at Export 56

Bedfordshire, where the process of reassembly, including restoration of the running gear, interior, engine and transmission, began. Who needs a Speedster, anyway?!

A year earlier, Mick was in the process of buying parts from Paul Smith at PR Services when the most unlikely of discoveries was revealed. A customer of the Billericay-based business had invited Paul to purchase a stockpile of old Porsche parts from a deceased estate. While he was sifting through what was on offer, he stubbed his toe on a large object hidden by a plastic cover. Beneath it was flat-four no.34694, 427 DMP's original engine! This amazing find allowed Export 56 to acquire the car as a

complete package — it's thought to be the only surviving right-hand drive 1955 356 Pre-A Speedster retaining its matching-numbers powertrain. "The car is currently utilising its replacement engine, but we will be reinstating the original boxer as soon as we've finished rebuilding it,"

Mick confirms.

Those with a keen eye will have noted another deviation from standard specification — the car was originally assembled with wheels and tyres different to what's pictured on

these pages. "When it comes to restorations and air-cooled Porsches as rare as this, while we love absolute accuracy, there's no getting away from the fact a 356 Pre-A in stock trim isn't brilliant to drive," Mick reasons.

## ORIGINAL PARTS WERE KEPT TO ONE SIDE, ENSURING THEY REMAINED WITH THE CAR AS A COMPLETE PORSCHE PACKAGE







"By 1955, these cars were getting much better, but their sixteen-inch wheels and crossply tyres are nowhere near as surefooted as the later, wider fifteen-inchers, which benefit from radial rubber. Porsche realised it needed to promote more contact patch with the road and also recognised its cars needed quicker, quieter engines – beyond 40mph, it's easy to feel out of touch with what's happening in a 356 Pre-A, which is why our client wanted to update 427 DMP with these more compliant wheels and tyres whilst retaining use of the 1.6-litre flat-four." The original parts were kept to one side, ensuring they

remained with the car as part of a complete Porsche package when it was time for another change of ownership, which occurred earlier this year.

The new (eighth) owner instructed Mick and the Export 56 team to resurrect the original four-cylinder boxer, which will return to its leather-lined engine bay in readiness for this rare Porsche's own Platinum Jubilee, which takes place in April 2025, marking seventy years since the car's original date of manufacture. Will it be driven down The Mall in honour of the occasion? We wouldn't bet against it. **CP**

**Below** The original engine, miraculously discovered by the PR Services team when inspecting a job lot of parts from a customer's estate







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# DUE SOUTH

**Air-cooled exceptionalism defines multi-talented Porsche restoration firm, Canford Classics...**

Words **Emma Woodcock** Photography **Rich Pearce**

**R**ear-engined renovation is a way of life at Canford Classics. Operating from a suite of ex-farming buildings just outside the Dorset village of Winterborne Kingston, the seven-strong team dedicates itself to every aspect of air-cooled Porsche restoration. The workshop rings out with everything from engine and transmission rebuilds – the company even carries out its own crankcase machining – to interior upholstery and headliner installation. Cross the yard and a dedicated welding room tackles panel adjustment, rust repairs and parts fabrication. A Junair spray booth ensures a paint finish to the same exacting standards.

The company relishes a challenge. Founder, Alan Drayson, responds to vanishingly rare components and previously unexplored avenues for air-cooled innovation by rolling up his sleeves and crafting solutions from

scratch. Research avenues range from high-flow cylinder heads (soon to be cast on-site) to heated carpets holding an interior at the perfect ambient temperature. Every component – no matter how small – is a valuable part of the bigger picture.

It's a philosophy Alan can trace back to his teens and a humble beginning with a Volkswagen Beetle. "He's always been passionate about old cars," his wife, Dominique, remembers. At Alan's side every step of the way, she's been part of the Canford Classics story from the beginning and has worked for the firm since 2013. "Back in our teenage years, he'd spend every evening out in his mum's garage. Every scrap of spare time he had after school was spent eagerly working on the car."

That Canford Heath-based workspace would give his company its name, but not yet. Alan was too busy grappling with his first Porsche project, a 1967 912







**Above and below** Canford Classics handles all aspects of air-cooled Porsche restoration in-house, with each full build documented by way of a presentation book come project end

**Top right** Dominique and Alan are an excellent team and have built the company from its humble beginnings, which can be traced back to mechanical work carried out in Alan's mother's garage

the then seventeen-year-old financed through shifts in a local bar. He was hooked. After enjoying the four-cylinder machine, he traded up to a 911 and set to work all over again. It quickly became a virtuous cycle. Each Porsche to enter his possession was a chance to stretch himself and learn something new, his restorations becoming increasingly more involved — and the finished cars more valuable — as his skillset grew, but this still wasn't a business.

Instead, Alan invested himself in academic pursuits, reading an undergraduate degree in geology before studying a related Master's in coastal geology. He then turned to a PhD in coastal geomorphology (a specialised

area focusing on the erosion of rock by large bodies of water) and entered industry in 2001. Six years as professional geologist followed, Alan setting up a digital mapping company working with the public sector.

In 2007, however, everything changed.

"We took the decision to close his old company and focus on the cars full time. Porsches were still his first love," recalls Dominique. "It was

a massive leap of faith, but we really felt we'd spotted a niche in the air-cooled Porsche market nobody else had filled." Canford Classics would be a one-stop shop, a company which could handle every single part of restoration on a customer's behalf. "Back then, there were places offering trim, people who did anodising

## CHRIS LOWE, THE APPRENTICE TECHNICIAN ALAN HIRED IN 2008, CONTINUES RESTORING CARS FOR THE FIRM TO THIS DAY







work, companies rebuilding engines and so on. Alan could manage all those elements and even source a project car, which is how we stood out.”

### HUMBLE BEGINNINGS

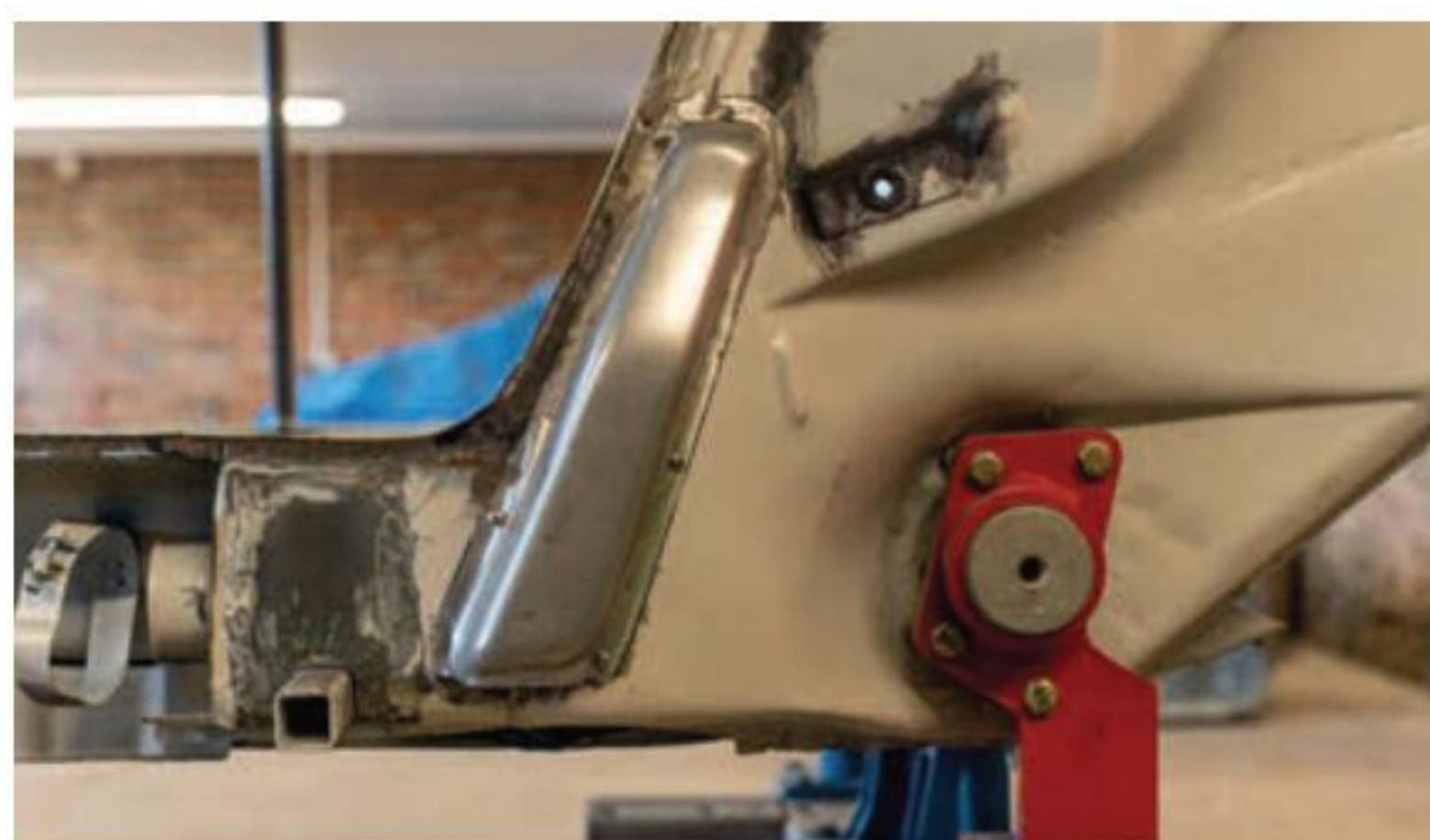
Nestled next door to a camper van specialist in Throop, Bournemouth, the nascent Canford Classics was a humble affair. Alan worked by himself for the first twelve months, only employing a second team member once his reputation started to grow. The personnel investment has paid off handsomely — Chris Lowe, the apprentice technician Alan hired in 2008, continues restoring cars for the firm to this day. In contrast, the cramped initial facilities are long gone. Business continued to blossom

into the next decade and, by late 2012, the company was ready to relocate.

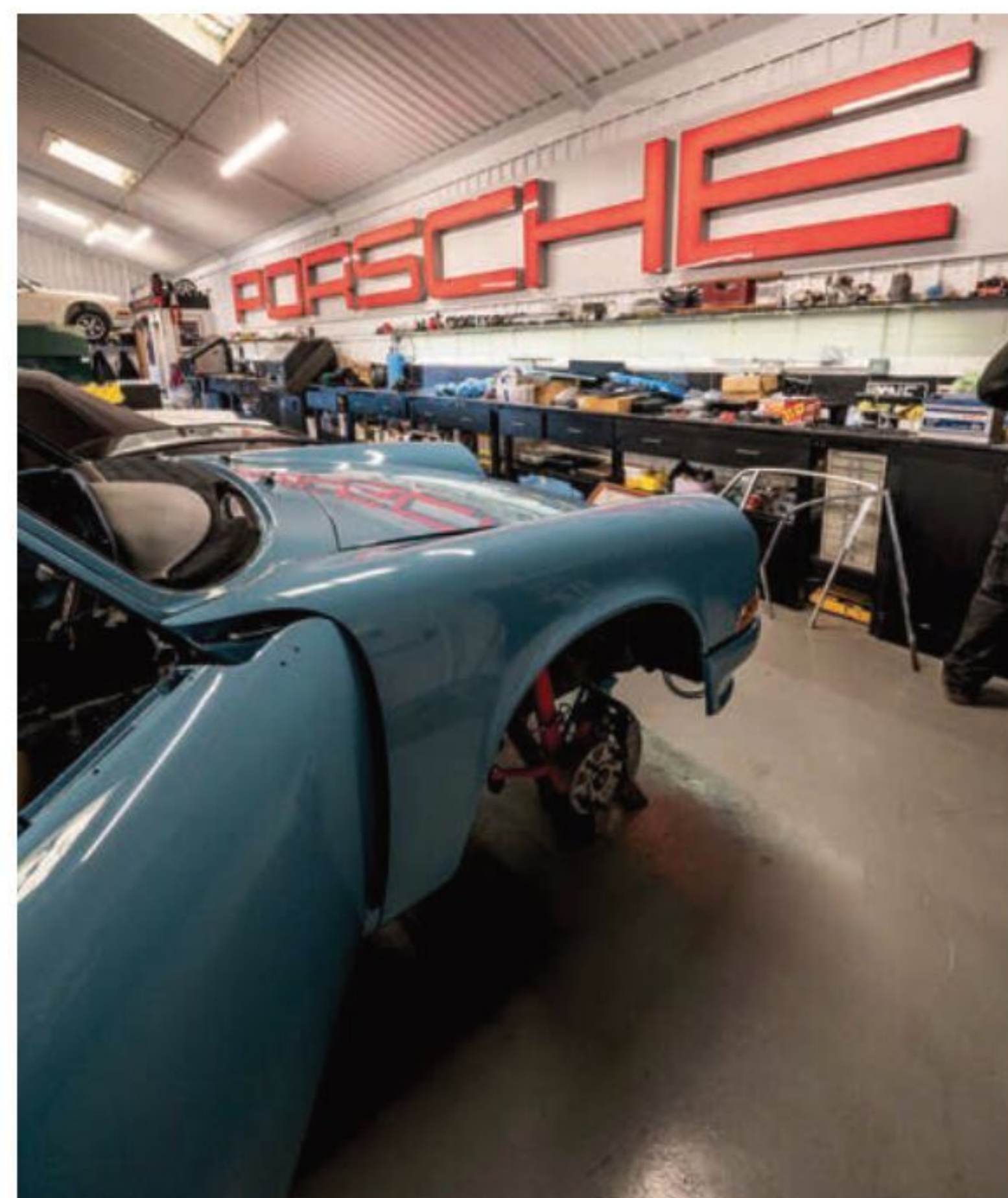
New premises were scouted out on a working farm in nearby Winterborne Kingston, securing more space to work on cars and giving the business its first office. An Operations and Office Manager joined the company to handle the growing workload. Dominique became a full-time team member soon after, taking the role of Marketing Manager. Growing and developing the site over the next few years, Alan and his team honed their headquarters to accommodate every part of their expanding operations.

First, the office was relocated to provide more room for the main workshop. Next, a custom showroom

**Above** Despite being the big cheese, Alan remains involved in every restoration, with each Canford Classics build benefiting from his ‘hands on’ approach to projects







**Above** Whether powered by a four- or six-cylinder boxer, every air-cooled Porsche is given the five-star treatment at the company's headquarters in Dorset

facility was constructed to exhibit the cars Canford Classics buys and sells on behalf of clients. "Restoration is our key business, but we've always sold Porsches," Dominique explains. "Most of the cars we sell are vehicles we've worked on. Our speciality is first-generation and G-Series 911s, though we also market the occasional 912, 964 or 993. We consider nothing else."

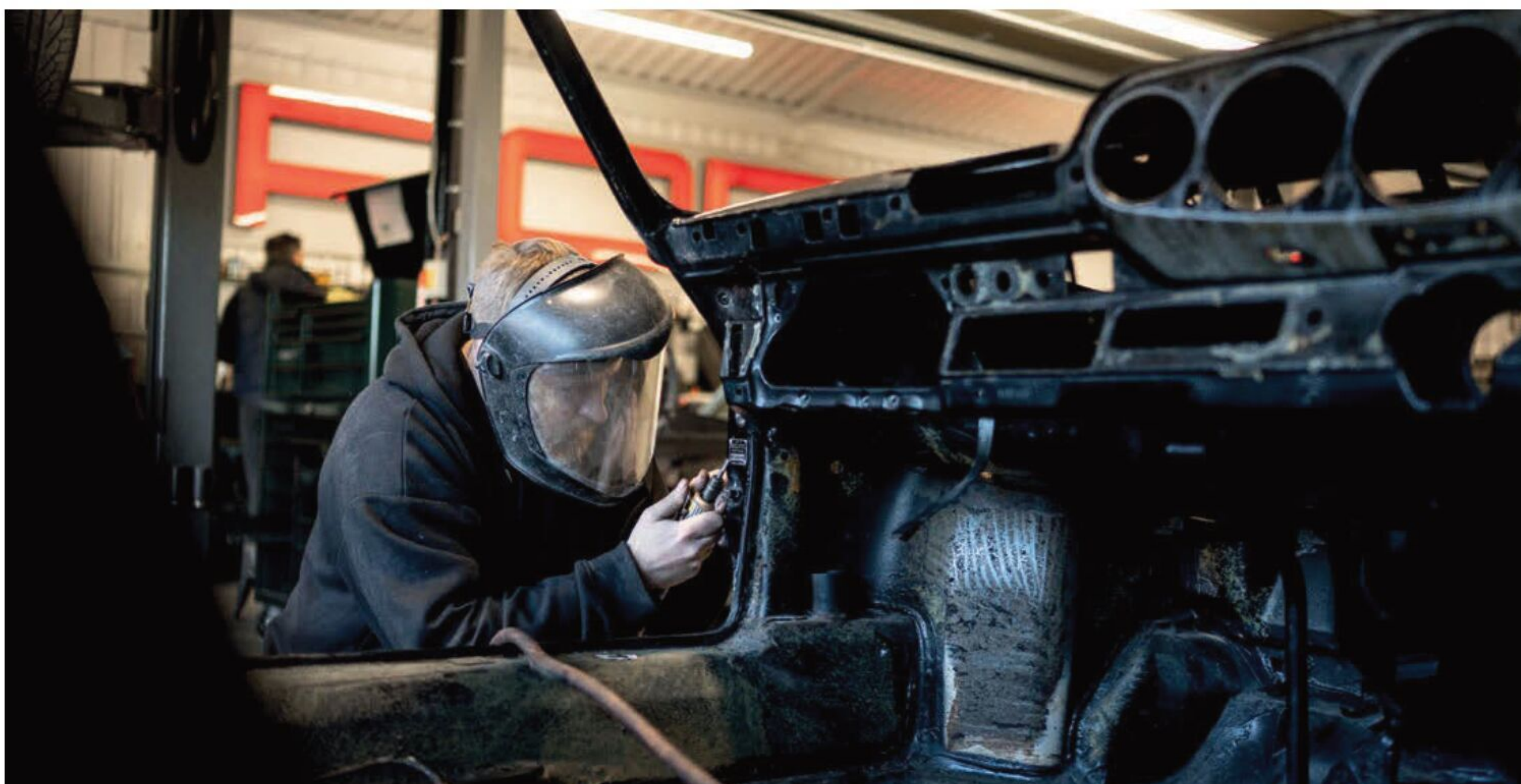
The COVID-19 pandemic and changing business demands recently swept the showroom away — the

space now hosts a dedicated welding workshop — but Porsche brokering remains an area of expertise. "Alan is a perfectionist and we're always working on these models," continues Dominique.

## ALAN AND HIS TEAM HONED THEIR HEADQUARTERS TO ACCOMMODATE EVERY PART OF THEIR EXPANDING OPERATIONS

"We understand everything about their construction, their condition and the current market. When we inspect a potential sales car, we have the knowledge to discuss precisely what work

it might need and explore changing values. Contrary to what an owner may think, it might not be the right time to sell their air-cooled Porsche."







Proving transparency is another priority, Canford Classics encourages each client to get involved with the restoration of their car throughout the project. "The journey we're undertaking together and the education we offer along the way can be just as valuable as the finished build. Videos, WhatsApp calls, photos and on-site visits are all part of how we share the process," Dominique beams. The team even helps owners to get their hands dirty. "It's a rare request, but one we accommodate! One of our clients would bring biscuits, spend the day with us and clean up parts under our supervision!" she smiles.

Every Canford Classics client benefits from Alan's obsessive attention to detail, whether their Porsche rolls into the workshop for suspension refurbishment, an engine rebuild or full restoration. Evocation is another talent — previous projects include a screaming Carrera RSR 2.8 restomodification and a faithful recreation of the Slate Grey 911 S Steve McQueen drives in the opening sequence of his motorsport movie magnum opus, *Le Mans*. "We work down to the smallest detail. This approach reflects back on us. When a customer want a factory standard car, we work hard to achieve absolute originality."

**Above** Five full restorations pass through the Canford Classics workshop each year, with many more air-cooled Porsches arriving for less intensive care and attention







**Above** Keeping all restoration work in-house ensures projects don't veer off budget and enables Alan to keep tight control of the materials and working practices used

Each of the five restorations progressing through the Canford Classics workshop each year starts the same way. Alan receives or sources the candidate car, then embarks upon an in-person inspection, allowing him to estimate the works needed and the likely project timeline. "Photos aren't enough. Only when seeing the car can we go back to the client with accurate findings," Dominique clarifies. The communication loop continues as the team strips the

car back to a bare shell, highlighting newly discovered issues as they emerge.

Project oversight is absolute, with every part of the rebuild completed under the Canford Classics workshop roof. And, to ensure optimum finish, since 2018, all paintwork has been completed in-house. "Our booth lets us control the paint process precisely. Also, it's quicker than sending body shells to an external facility. Plus, we have full control over the products we use, the approaches

## PROJECTS INCLUDE A SCREAMING CARRERA RSR 2.8 RESTOMOD AND A RECREATION OF STEVE MCQUEEN'S SLATE GREY 911 S







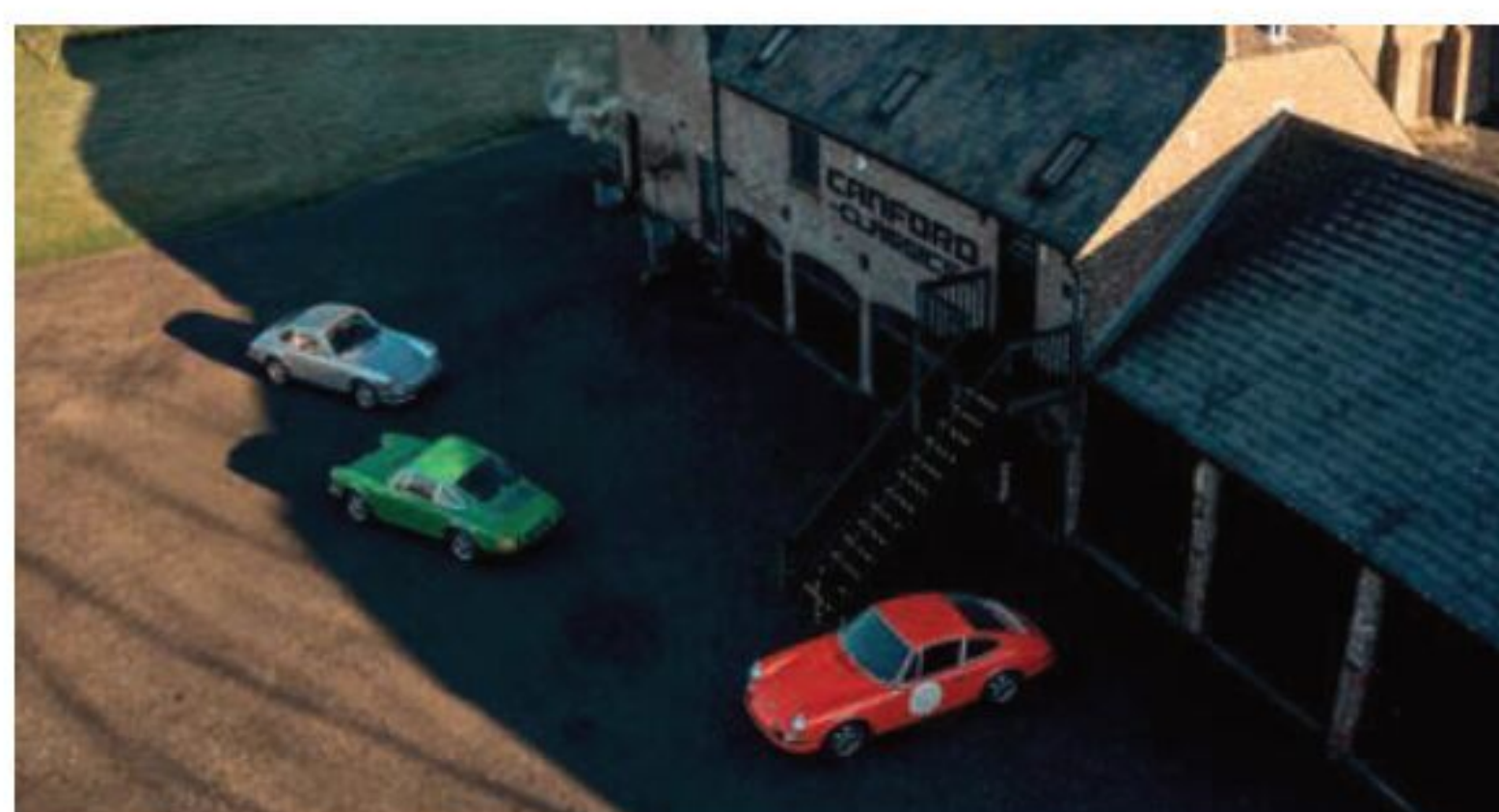
we take and the finish we achieve." The results are undeniably eye-catching.

Less photogenic but equally important is the shakedown process. Never keen to release unfinished cars to clients, Alan and the Canford Classics team road test every restoration extensively in advance of handing over the keys. "Every car will come back for snagging, but we quickly learned testing in all weather conditions helps us identify and resolve any issues." The process can take months, but Canford Classics won't be rushed. "It's an efficient course of action and greatly increases the time before a Porsche has to come back to us," Dominique says.

Not that she, Alan and the extended Canford Classics crew don't welcome passing Porsche fans and customers alike. "We used to host the annual Porsche Pull-In. It was a great social event for fans of air-cooled Porsches. A chance to grab coffee and breakfast while chatting cars. These gatherings had a real community spirit." Restrictions caused by the coronavirus pandemic have halted the event taking place, but the company still enjoys long-standing client loyalty.

"We'll often rebuild more than one car for the same client, or broker the sale of a Porsche when they want their next recommissioned." After all, a Canford Classics air-cooled Porsche restoration is nothing but the best. **CP**

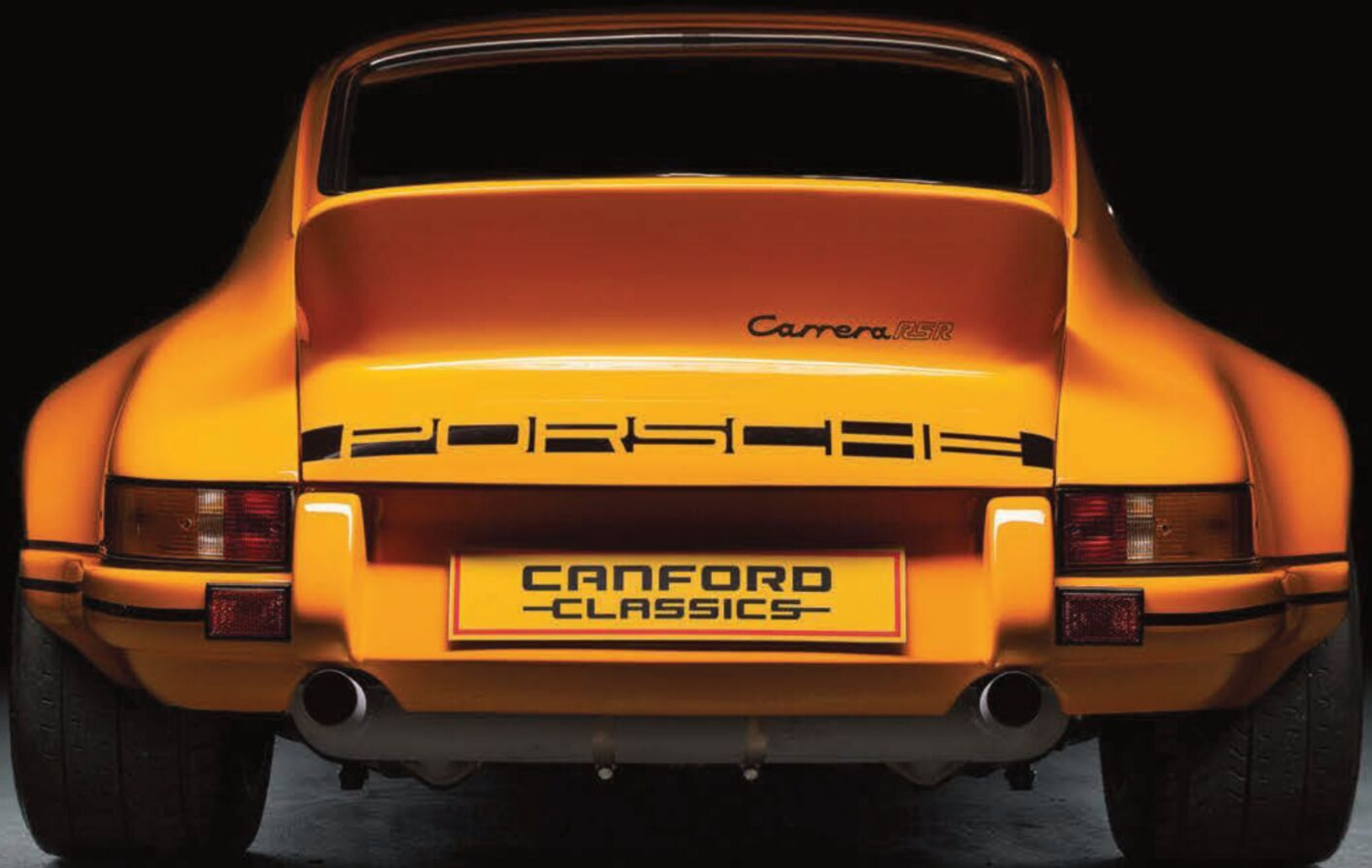
**Below** Alan's love of air-cooled Porsches saw him switch career from being a geologist to a life restoring the cars he adores





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# HEDGING YOUR BETS

Back in 1983, when the Carrera 3.2 was launched, the 911's future still hung in the balance — only a few years beforehand, Porsche heralded the 928 as the car projected to take the brand into the next century. History, however, tells a different story...

Words **Johnny Tipler** Photography **Dan Sherwood**











Porsche's foray into the world of front-engined sports GTs lasted two decades, beginning with the 924 and ending with the cessation of the 928 and 968 in the 1995 model year. In 1970, when the 924 and 928 were in design, the writing looked to be on the wall for the 911 — its ongoing survival was a close-run thing. Porsche CEO, Ernst Fuhrmann, certainly thought front-engines were the way to go.

Fuhrmann, the engineer responsible for the 356's legendary Type 574 four-cam, was intent on forsaking the 911, no matter the fact he personally had a powerful legacy with rear-engined Porsches. Indeed, the 928 had been on the cards since 1968 and, in 1971, when Harm Lagaaij joined Anatole Lapine in Zuffenhausen's design studio, the department's drawing boards were full of renderings for front-engined GTs. Even then, car styling at Porsche was a pre-determined process calculated by defined market indicators. In 1981, however, new company boss, Peter Schutz, instigated the revitalisation of the Zuffenhausen plant and decreed the 911's survival. He recognised the model's burgeoning status as a classic and broadened the 911 line-up, yet his market-led philosophy also enabled Porsches front-engined range to flourish. He's our hero, then.

Forty-five years ago, the 928 was launched for the 1978 model-year at the 1977 Geneva Motor Show, promptly winning the coveted European Car of the Year award, an accolade normally scooped by saloon cars. And yet, in terms of Porsche's front- and rear-engine configurations, there was an ongoing paradox, which was the vigorous and potent development of the 911 as a turbocharged race car, exemplified by the 934 and 935, the legacy of which spilled over into the 911 Turbo (930) road car. For the next fifteen years, the 911 and 928 were

produced in tandem, with the 4.7-litre 928 S appearing in 1980 and matching the 930's near 300bhp power output.

The 928 S2 landed in 1984, bringing with it improved specification and a slight increase in engine output. Two years later, the highly revised and facelifted five-litre 928 S4 arrived, joined in 1987 by the S4 Clubsport, a lightened version of the S4 intended for track use and only available in the USA and mainland Europe. This was followed by 1989's 928 GT, a model available only with manual transmission. The S4 and GT were phased out in 1992, ushering in the 'N Programme' 928 GTS as the final evolution of the V8 supercar. It's the model we have here.

We've come to Loughborough in Leicestershire to visit Graham York, a Porsche buff and owner of both our feature cars, as well as a 996 Turbo, but we won't go there — one water-cooled Porsche is quite enough for providing the context of this article. So, then, here we

**Above** A Carrera 3.2 finished in Guards Red was the ultimate 'pin-up Porsche' for the 1980s, adorning many bedroom and office walls







**Above** Carrera 3.2 interior is quintessentially 911, very functional, but not particularly evolved from the first iteration of the evergreen flagship Porsche product, whereas the 928's cabin feels positively space-age by comparison

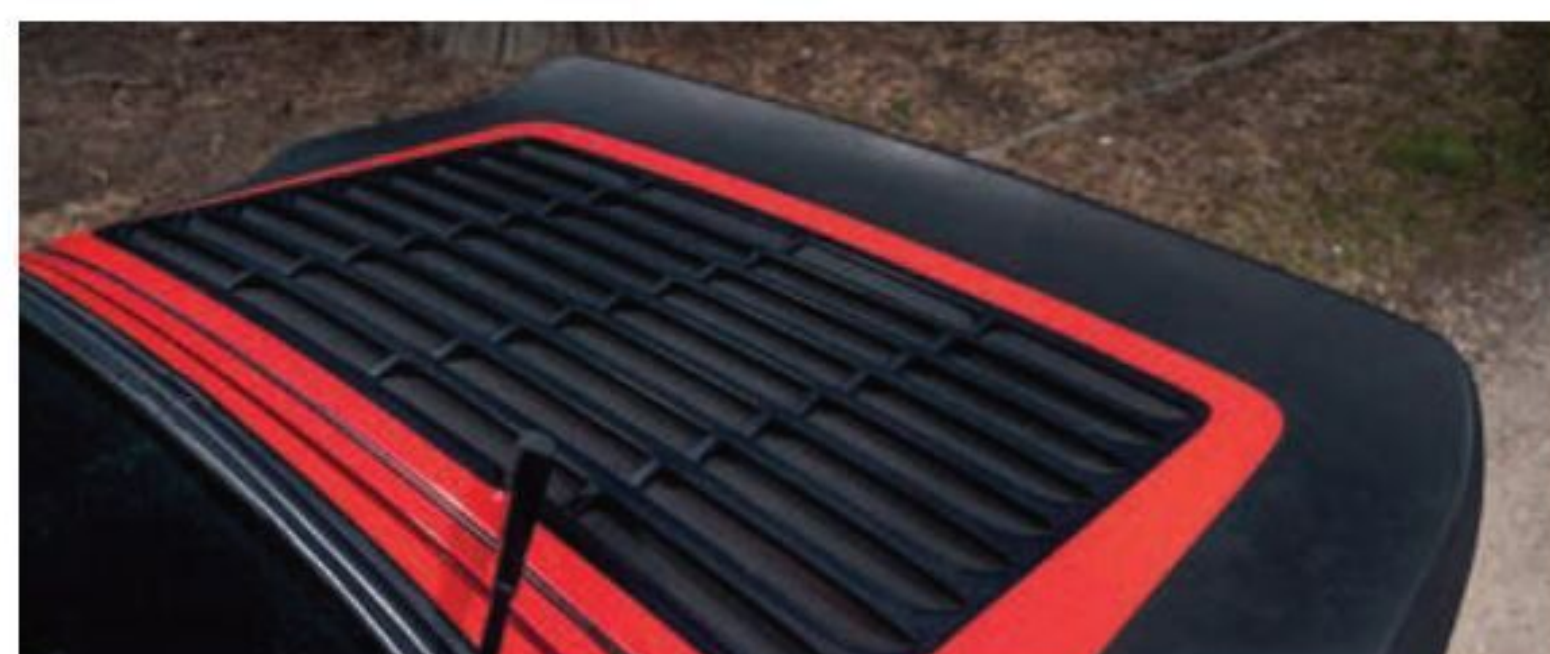
have two sports cars from different ends of the Porsche product spectrum. In today's money, they're worth about the same, leading prospective purchasers to question which is the better buy. Let's find out.

#### AIR AND WATER

Graham's 1984 Carrera 3.2 (co-owned with his son-in-law, Jonathan Allcock) came first, acquired in 2011, nine years before his name appeared on the logbook of the 1993 928 GTS. Both cars are painted Guards Red. "I enjoy the different driving experiences," he says. "One of these Porsches is a modern-feeling GT, the other is very analogue." Which does he prefer? "It's really about what you want out of the driving experience. If I was going to set off on a cross-continent dash, I'd take the 928. If I wanted to go up to the Highlands of Scotland and tackle tight twisties, I'd probably take the Carrera 3.2. They're polar opposites." And servicing? He has all three of his Porsches maintained by local marque specialist, Quorn Sports and Classics, located about six miles away from his home and well versed in both air- and water-cooled

Porsches of all ages. With the assurance of Quorn's spanner work, he's driven the 911 to the Le Mans Classic twice, as well as to the south of France. "As a family, we've enjoyed some great journeys in this car. The only downside of the Carrera 3.2 is its heavy clutch. In other words, it's not a particularly relaxing Porsche, but it's incredibly rewarding to drive. You feel everything that's going on, but you have to keep your wits about you. The gear change, for example, has to be slow and precise. Everything about the controls keeps you on your toes, whereas the 928 GTS is a comfortable cruiser loaded with an automatic gearbox, meaning you just shift into drive mode and away you go." It's thought close to eighty percent of all 928s were shipped with automatic transmission, though the seldom seen 928 GT was equipped with a manual cog swapper only.

Graham has no doubt Porsche did the right thing by keeping the 911 alive. "I've driven many different 911s over the years," he tells us. "They all have what I call a Porsche 'feel' about them, whereas the 928 is different in so many ways. It's beautifully engineered, of course,







and can be very rewarding, but it's a big, heavy car. By comparison, the 911 always feels nimble. Sure, an air-cooled 911 can be skittish at the back in the damp. You certainly don't get that sensation in a 928, but the Carrera 3.2 is much more of a traditional sports car." If push came to shove, which would he hang on to? "It depends whether you're keeping for investment purposes or for driving pleasure. If I was keeping for investment, I think the 928 has plenty of future growth, especially with renewed interest in the model as a consequence of this forty-fifth anniversary year. If I was keeping one or the other for those goose-bump driving moments, however, I'd keep hold of the Carrera 3.2."

I know whereof he speaks. For five years, I did the school run in a Carrera 3.2, thirty-five miles each way, twice a day. The only way to make such a schedule pleasurable was to do it in a 911. Enough B-roads and backroads to fully appreciate the model's lively and enlivening sportscar qualities, responding right on cue to a spot of right-foot pressure and arm twirling on the fairground-ride back-doubles. The Carrera 3.2 has solid build-quality and reliability to match. Mechanically, it's pretty well bomb-proof and, indeed, surprisingly structurally resilient. I'd go so far as to say I think it's probably a better-made 911 than the 964, plus the Carrera 3.2 combines some of the rawness of the classic long-bonnet 911's ride and handling traits — although you have to be going very quickly or driving crazily to be able to reach back and touch the wildness of, say, a 2.2-litre 911 S — with most of the creature comforts you'd expect from Porsche products manufactured in the 1990s.

The Carrera 3.2 also serves well as a grand tourer,

something Porsche will tell you is the 928's stomping ground. My 3.2 transported our family-of-four overland to our gaff in Portugal on several occasions. Granted, the kids were little back then, but the car's roof gutters enabled the fastening of a Thule top-box for maximum luggage-carting capability, and although airflow over the top of the car was somewhat compromised — the temperature gauge said so — it didn't drastically interfere with aerodynamics. Who am I kidding? Of course it did. No more so than when my son, Alfie, fainted at Puebla de Sanabria truck stop, having been roasted due to sunshine blasting through the back window and

**Above** G-series body styling, complete with 'accordion' impact bumpers, lasted fifteen years, discontinuing with the arrival of the 964







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excessive engine heat dissipated in the rear of the cabin. I couldn't touch the metalwork where he'd been sitting. It really was that hot! Luckily, a douching with a bucket of cold water brought him around.

The Carrera 3.2 is, with hindsight, the bedrock of air-cooled 911 annals. In production for six years, it epitomises the 911 shape, arguably more so than the long-bonnet classics, and certainly more than the play-it-safe 964 and its successor, the 993, what with its shapely curves all rounded off. The Carrera 3.2 was available in Coupé, Targa and Cabriolet format, with Slant-nose, Speedster, Club Sport and SSE Super Sport spin-offs. You thus had a choice of configurations in which to enjoy the experience, open to the elements or not.

#### AROUND THE BEND

And what of the 3.2's handling? As I've said before in these pages, on the move, all your senses come into play. The absence of power steering means everything is full-on and sensitive. Feedback is instantaneous — you feel exactly what the suspension is doing and where the car is going. Your reactions are honed to match. It's not that you don't get this with power assistance, you just experience it more directly. Left- or right-hooker, all 3.2s are hugely involving to drive, nowhere more so than twisty back roads. On a poorly surfaced B-road, the front wheels bubble over every undulation as they feel out the topography. It's alive, a creature working out which path to take for best effect, and you are controlling it by light movements of the wheel as it bucks slightly in your fingers with each and every passing bump. As you go faster, the steering progressively loads up, the more physically demanding it becomes.

The Carrera 3.2 features relatively long gearing, both in 915 and G50 transmission formats, which matches with the slow and deliberate nature of the gearshift, as you go from one notch to another quite deliberately. You can't just bang it through. It's not ponderous, because you have to be precise about where you move the lever. Bring a 915 gearbox from fifth to fourth, for instance, and you have to be calculated about your movement, else you quickly graunch into reverse. Of course, it's second nature before long. Put your foot down in fifth, and you can be sure this thing will deliver the power, although it's not devastating. Better to drop a cog in an overtaking situation to be safe.

Equally, you notice how strongly the Carrera 3.2 pulls when you get up to the legal speed limit. It really delivers between 4,000rpm and 6,000rpm. Third gear overtaking

**Above** The original 928 was launched with a 4.5-litre V8, which had grown to a thirty-two valve 5.4-litre unit by the time of the GTS, the only 928 available during its time in Porsche dealer showrooms







**Above** GTS interior is as comfortable as they come and features a superb 'wraparound' dashboard extending into the door cards

on A-roads is stunningly fast, accompanied by that raucous flat-six bellowing as the revs scream towards 6,000rpm. The power builds relentlessly until you run out of road or come up on a back-marker. Conversely, this 911 will pull inexorably from 1,500rpm in top. You need to get your braking done first, ideally trail-braking up to a corner, although the stoppers are so powerful that an occasional stab will take off excess speed if you are travelling a tad too fast approaching a bend. You see, you drive the 3.2 through corners. You get the lock on early and steer it through, lock off a bit of oversteer, induced with the wheel, perhaps, but most likely by

## THE 911 HAD NOTCHED UP ALMOST A DECADE-AND-A-HALF'S WORTH OF COMPETITION SUCCESSES ACROSS THE BOARD

use of the throttle — off to make the front end tuck in, or on to drift out.

On back roads, you can drive the Carrera 3.2 by the seat of your pants, attacking rather than defensive, positive rather than passive. On a sweeping A-road,

be sure you know what the limits are — both of the road and the car — to ensure you're ready for the unexpected and have time to pull up or take avoiding action.

On a roundabout, this 911 just hangs on. You can put lock on and off, making the nose tuck in or out with the accelerator. On greasy rural lanes, bearing a patina of tractor muck, you can feel it sliding, and you teeter







around bends on the point of breaking away. The thing is, it's so sensitive, you can feel as much and be confident that, within reason, the car will carry on going around and not dispatch you into a hedge. Indeed, because this is a particularly strong 911 and the suspension is equally robust, you can rumble over potholes on a farm track and the car won't bat an eyelid. Although it may not be the quickest Porsche point-to-point, the 3.2 is fun and rewarding to own and drive.

### SHARK ATTACK

Lucky for us, the Zuffenhausen hierarchy knew this, too. In 1978, when the 928 was introduced, the Carrera 3.2's predecessor, the 911 SC, was all heavy-duty concertina bumpers, the 911 not looking its prettiest. You'd probably have opted for a 928 purely on aesthetic grounds. Why did the 'land shark' not supersede the 911, then? Image? Tradition? Aspirant owner profile? Technological evolution through racing? The obvious absence of 928s in top-line competition probably says it all. Sure, a 928 S contested the 24 Hours of Le Mans twice, managing twenty-second overall in 1983, though the car was 62mph slower in a straight line than the Group C 956s. Le Mans winner, Richard Attwood, competed in a Brumos 928 S at the 1984 24 Hours of Daytona and, more recently, ran an early 4.5-litre 928 in the Historic Sports Car Club's '70s Road Sports series on behalf of Porsche Classic. None of this is to say the 928 couldn't have been developed at Weissach into a viable contender, but by the time of the 928's launch in 1978, the 911 had notched up almost a decade-and-a-half's worth of competition successes across the board. The closest to a racing variant of the 928 is the previously mentioned Club Sport, examples of which were handed out to Porsche

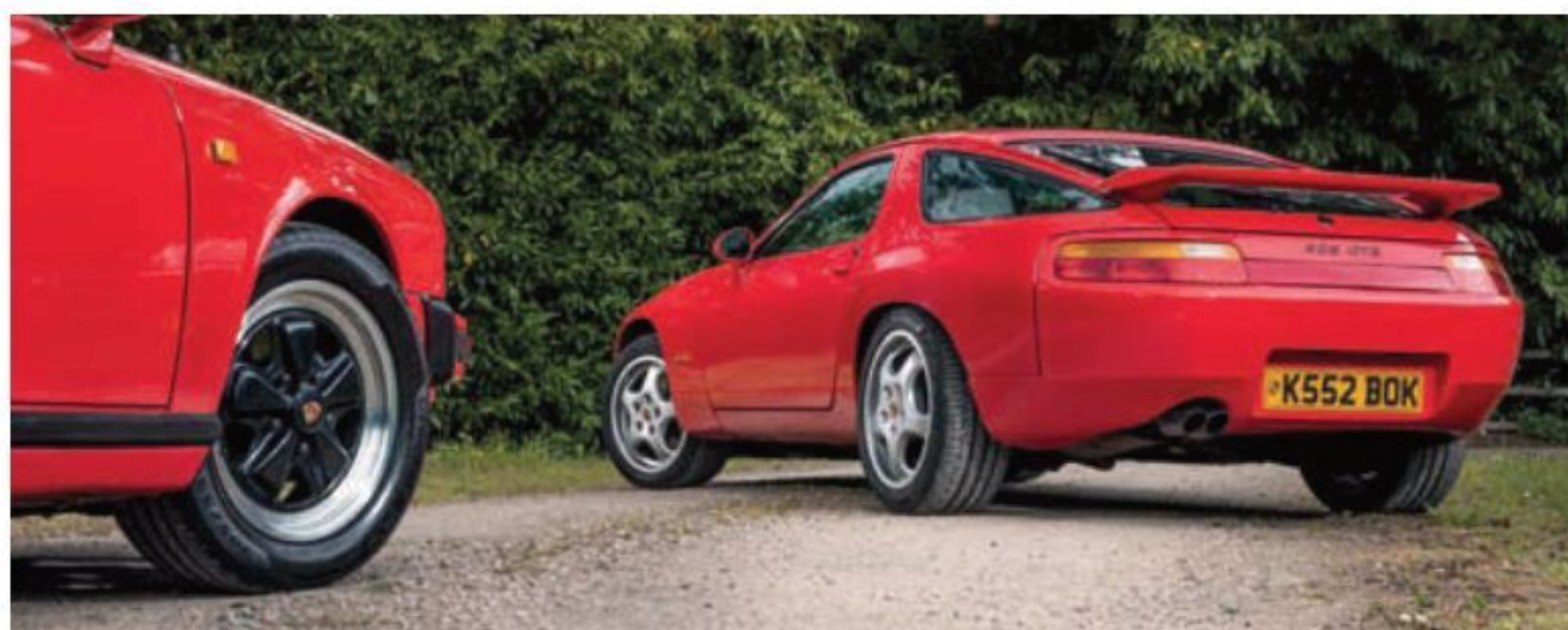
works drivers as company cars, most of them enjoying little more than the transcontinental commute between circuits during the 1980s.

Also, why rock the boat? Until the advent of the liquid-cooled 996 GT3, there was no need to. It pains me to say it, but the 924 Turbo and the 924 Carrera GT were a relative flash-in-the pan. We do the 928 a disservice, though, because it wasn't conceived as a competition car. Rather, a comfortable, luxurious express for doing the long haul. Like the 911, it's a two-plus-two and, as an example of sublime car design, Wolfgang Möbius and Tony Lapine's styling is an absolute masterpiece. Lots of aluminium, such as the wings, doors and bonnet, and the ovoid "egg styling" — emphasised by integrated polyurethane bumpers — is amusingly echoed in the model's pop-up headlights, which resemble

**Above** The 928 was Porsche's first 'clean sheet' design, meaning it was a model which didn't have its roots in any other, though there's no denying the Corvette influence brought to the party by stylists, Anatole Lapine and Wolfgang Möbius







**Above** Pop-up headlights make any car cool and were a trait of all Porsches in the manufacturer's transaxle family of cars, though only the 928 and 968 featured exposed lamps

half eggshells. The rear-three quarter windows are elongated (they're longer than the door windows) and the flying-buttress rear three-quarter posts surrounding the greenhouse rear window enable the 928 to embrace more luggage than the Carrera 3.2.

Any 928 is a long-distance grand tourer, the embodiment of the original Grand Routière concept born of Mediterranean journeys in the 1930s. This V8-powered Porsche makes regal progress in smooth and sedate fashion, totally appropriate to the bourgeoisie. Thinking back, the longest road trip I've done in a 928 is from Silverstone to the Nürburgring and back. I thought it would be a hoot to drive a 928 GT nine-hundred-and-twenty-eight miles (careful plotting ascertained this was the distance between the two iconic racetracks). Channel crossed, as my photographer and

## IT FEELS LIKE A MUSCLE CAR, IMMEDIATELY VERY POWERFUL, WITH AMAZING TORQUE AND ACCELERATION

I purred eastward on autoroute and autobahn, I couldn't help thinking, if any car merits an automatic shift, it is the 928, so torquey is the Porsche V8, even though ratios are quite widely spaced, certainly in the manual-only 928 GT. In fact, it pulled from virtually a standstill

in fifth. Normally, I appreciate a manual shift, but a car like this suits an automatic, and you rightly expect it to do the work for you.

For a coupé, the 928 possesses

a roomy cabin — I could stretch my left leg out behind the pedals, which was welcome on a long run. The steering was nicely weighted, while the brakes required a certain amount of pumping to get them up to scratch. I reflect this car was possibly not in the best of nick at the time. Nevertheless, at high speed, it was imperious and dominant of other traffic. At 100mph, it was rock-







solid. It's easy to see where the transcontinental express allusion comes from, because it is up here at these speeds that the 928 comes into its own. This is the definitive autobahn-stormer, and only its front-engined successors, the Cayenne and Panamera, do it better. Fuel economy? This wasn't much of an issue back then, unlike today, when the voluminous eighty-six-litre fuel tank would cost a packet to brim. A bit of a shocker? Maybe, but at a steady 70-80mph, the 928 I was driving averaged 25-30mpg, which enabled considerable intervals between refuelling stops.

### DIFFERENT STROKES

Graham's GTS represents Porsche's final salvo in its espousal of front-engined grand touring cars. The V8 was redesigned with a longer-stroke crank, lifting capacity to 5,397cc, with four-valve heads, LH Jetronic fuel injection, resonance induction system and electronic ignition. A stronger five-speed manual gearbox with its own oil cooler and differential-driven oil pump was offered, as was the popular four-speed automatic, with the Porsche Sperr Differential (PSD) limited-slip differential standard across the board. The engine bay is chock-full of 5.4-litre V8, with intake plenum inscribed '32V' to indicate, er, thirty-two valves. There's a strut brace fronted by a huge water radiator and oil cooler right in the front. The engine is located with the weight just behind the front axle, and, of course, the transaxle assembly is at the rear, which is fundamental to equalising the 928's weight distribution.

Separated by almost a decade, performance comparisons between the 928 GTS and Carrera 3.2 are less relevant to our theme than the chasm between their on-road behaviour, in terms of ride and handling,

as well as comfort and attitude. The 911 is invigorating and entertaining, the 928 a serene limousine. Or am I missing something? Let's take a ride. I survey the GTS's spacecraft switchgear and fire up the lusty V8. Out on the open road, when I kick down the accelerator, it downshifts and takes off. When I back off, it reverts, dropping back in line to fourth, but then, a little bit of right foot pressure, and it's off again. On Rutland's seductive ups and downs, crests and dips, the GTS's chassis and suspension is clearly very well sorted as I flick from one turn to another. The 928's sporting ability belies its size.

Preconceptions this Porsche is going to be big and ponderous fly away. There's a fluency to the drive, insofar as the number of controls I have to operate is reduced to just the accelerator pedal and steering wheel. It feels like a muscle car, immediately very powerful, with amazing torque and acceleration. Considering the 928 is such a sizeable beast, it's displaying secure and compliant handling, firm ride, and very good road holding. It's remarkably controllable as I twist the power-assisted wheel from lock to lock, the luxury liner easing gamely into shape, ready for the next corner. The sports car aspect of the GTS is just beginning to reveal itself.

This is certainly not an 'old man's car' (a sort of life consolation prize for when the 911 no longer entices or enthralls). The GTS is a powerful cocoon of car for the money. This is key – the cost of buying a 928 GTS is on par with what ownership of a decent Carrera 3.2 will set you back you right now. Sure, the 928 does things differently to the 911, but therein lies much of the V8-propelled Porsche's unique appeal. If you're torn between two very different classic Porsches sitting at the same price point, however, you don't need to hedge your bets: if your heart rules your head, you'll take the Carrera 3.2. **CP**

**Above** Currently hovering at the same price point, the Carrera 3.2 and the 928 GTS present two very different options for anyone wanting to get into Porsche ownership



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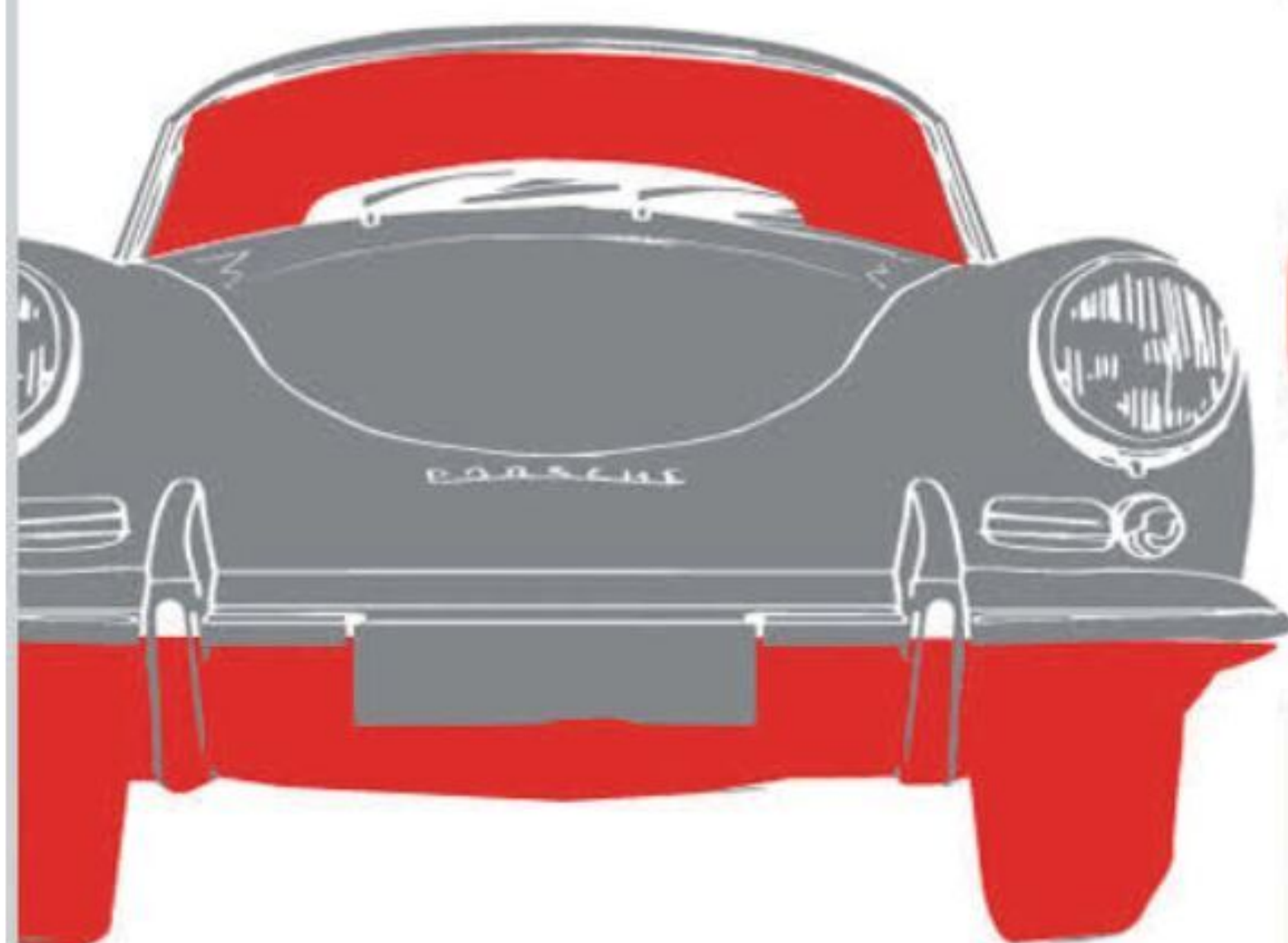
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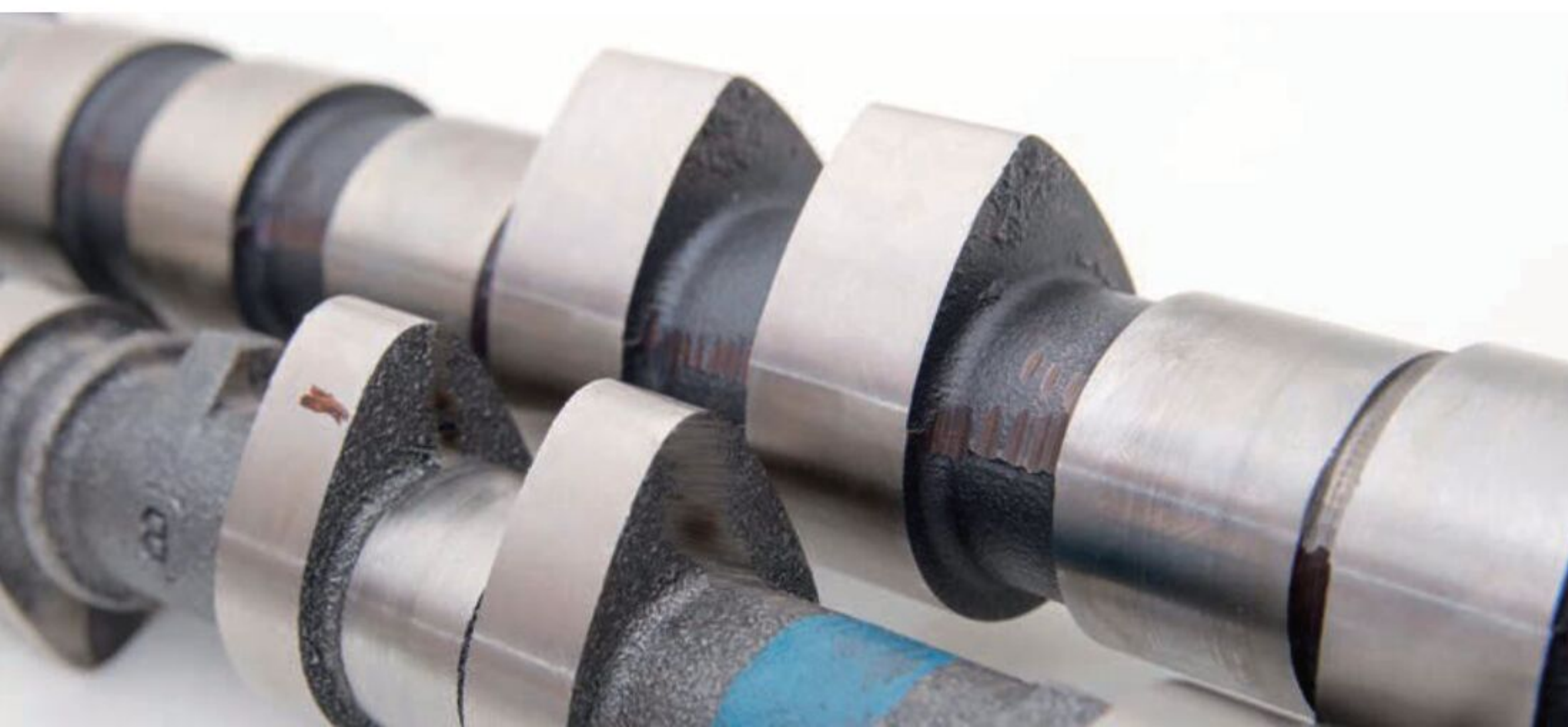
# FOR THE DURATION

In this article, we take a look at camshafts, what they do and how you can make sure you've got the right parts for your Porsche...



**W**hen considering upgrades to increase engine performance, changing camshafts should be placed near the top of your to-do list. With a few relatively minor adjustments to your Porsche's cam profile, you can wield massive influence over its engine's performance characteristics.

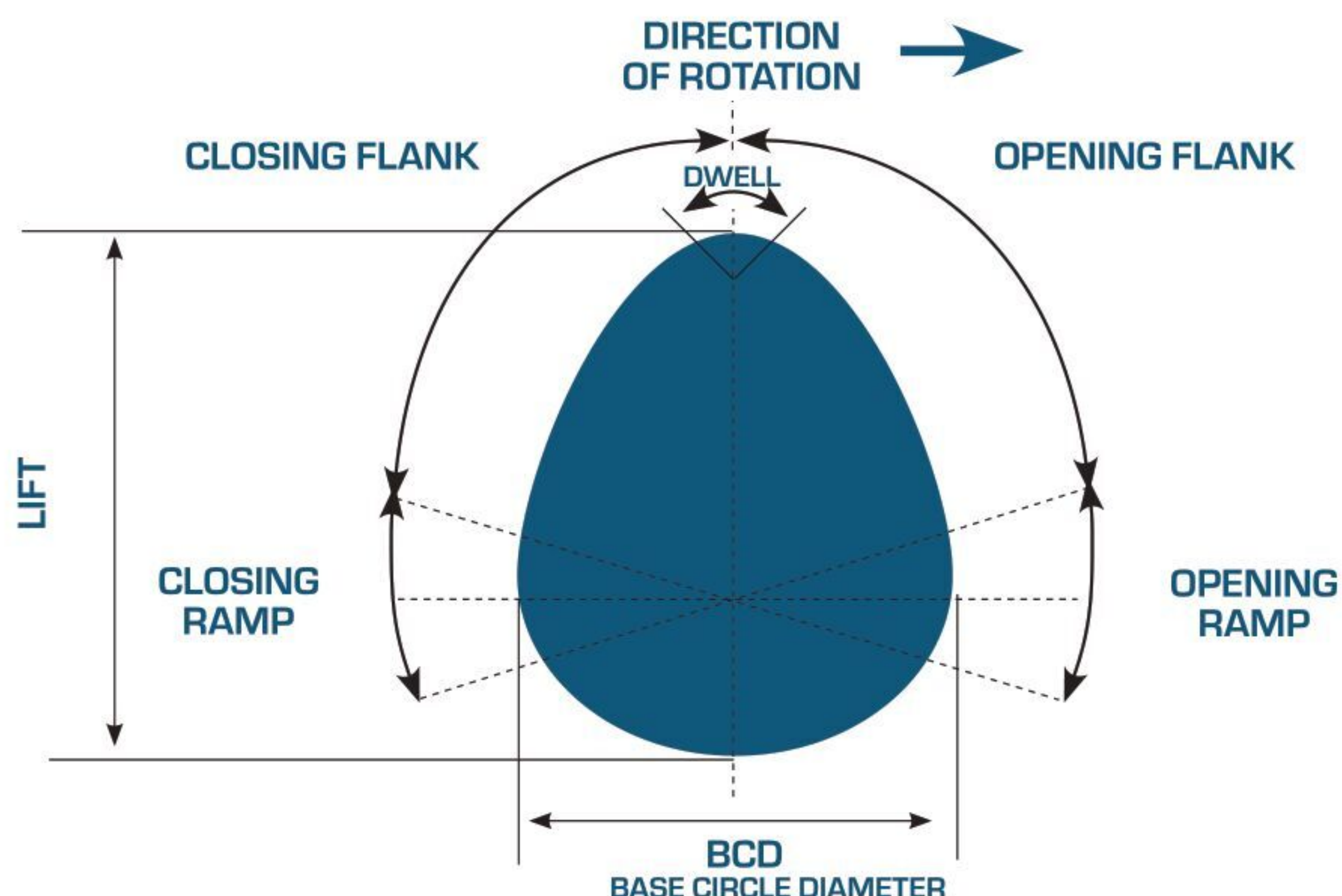
Whether you're on the hunt for more power at maximum revs for racing, or if you simply need more low-down grunt, installing uprated camshafts can help to produce the desired results. Get it wrong, however, and you can inflict hardship on your car's engine, resulting in dire consequences preventing the unit from performing at its best. Let's take a look at the design and function of these important engine components.



## WHAT IS A CAMSHAFT?

A camshaft's job is to control the air/fuel mixture entering the host engine's cylinders. It also regulates the amount of exhaust gases exiting the cylinder and the speed at which they travel in and out of the cylinder. As such, a camshaft can massively affect an engine's operating behaviour, dictating power, torque, emissions, idle conditions and drivability.





## LIFT

You've probably heard people talk about 'high-lift' camshafts when discussing engine tuning, but what does this term actually mean? In essence, it refers to the increased distance the valve is lifted from the valve seat when fully open. The further it is lifted, the more room there

is for the air/fuel mixture to enter the cylinder. This results in more energetic combustion and more power. That said, it's not true to say more lift is always best. Any cylinder head will have a physical limit to how much gas it can flow, and when this optimum is reached, there's no point in lifting the valve any further. There are no further gains to be had.

## DURATION

One of the biggest factors in camshaft design is what's known as duration, a unit of measurement indicating how long the corresponding valves remain open (not fully open, but also not fully closed). The measurement is taken as 360° (one full rotation of the camshaft) minus the amount of time the valve is fully closed. The longer the duration, the longer the valve remains open. The longer the valve is open, the more gases can flow through it.

The trade-off for a longer duration is an increased period of overlap (when both inlet and exhaust valves are open at the same time). In some cases, this can cause lumpy idle and poor

performance at low rpm. These unwanted operating conditions mean cams with long duration are usually reserved for race engines, where maximum power is needed at the top of end of the rev range. In these applications, the positives outweigh the negatives, primarily because race engines are pushed to the limit and spend most of their time at full chat.

It is worth keeping in mind that due to today's strict emissions controls, newer engines with fuel injection and electronic ignition systems tend to include cams boasting more lift and less duration. In contrast, tuning of older vehicles tends to involve cams with longer duration and less lift.

## FLANK

A camshaft's flank is its lifting edge. Its job is to rapidly open and close its corresponding valve. In terms of design, this is one of the most important aspects of the camshaft profile. It must accelerate and decelerate the valve within the working limits of the valve spring, which is why it is crucial to use the correct valve springs for the camshafts

you've chosen and the engine power output you're trying to achieve. If the flank is too aggressive for the application, you run the risk of encountering valve float (where the valve does not properly follow the closure phase of the cam profile) or coil bind (where a valve spring's coils stack solid at or before full lift), both of which are bad news for engine performance and reliability.

## DWELL

All camshaft designs feature dwell. This is the point of camshaft rotation when the valve movement is stationary (the cam stops valve opening and starts the valve closing procedure). Dwell usually only lasts for a couple of degrees of cam turn. Correct cam fitment and

timing is absolutely essential for dwell to be correctly observed — a camshaft will come supplied with a set timing figure, at which point full lift must occur.

To time the camshaft correctly, the point at which true full lift is experienced must be observed. This is the mid-point of dwell.

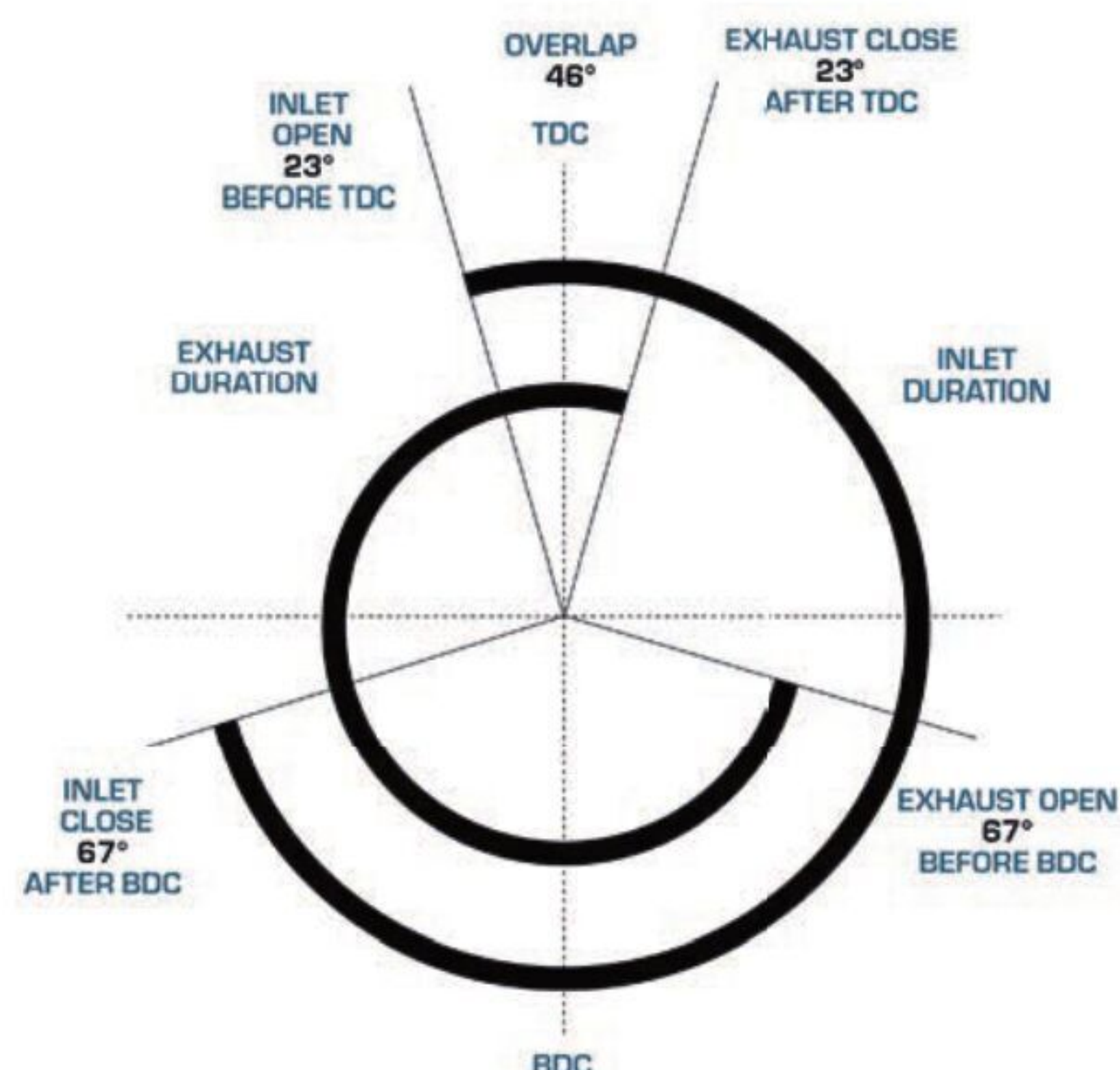


## OVERLAP

As mentioned earlier, overlap is the period when both the inlet and exhaust valves are open at the same time. Long overlap usually occurs when cams with long duration are installed. The valves remain open for a lengthier period than normal, meaning overlap time will also be increased.

Having both sets of valves open at the same time might sound like a negative. Indeed, you may be under the impression only one set of valves should be open at a time. It is true to say this is the best operating action for clean emissions and the most complete combustion, but it doesn't necessarily follow this configuration is ideal when it comes to boosting the performance of your Porsche. For example, having an overlap as the exhaust valve closes and the inlet valve opens helps increase the speed of the air/fuel mixture entering the cylinder. As the exhaust gases are forced out of the cylinder, the movement helps draw intake air into the cylinder. This isn't very good as far as emissions testing is concerned because some of the unburned air/fuel mixture will be forced directly out of the exhaust, increasing hydrocarbon output.

As a rule, you'll find that cams with a shorter overlap will product more torque and peak power than those with a longer overlap period, although cams with greater overlap tend to product more power higher up the rev range.



## TIMING

No matter what camshafts you use, setting timing correctly is essential. When we talk about cam timing, we're referring to the position of the camshaft in relation to the position of the crankshaft. Cylinder head valves need to open and close at precisely the right time to achieve their best performance. Ergo, setting the correct timing is crucial. On modern cars, you may gain as much as 20bhp simply by altering cam timing, and this is without having to switch to alternative camshafts.

In their OEM fitment, factory cams are timed to meet commonly adopted emissions requirements, but by simply adjusting timing, you can change your pride and joy's engine characteristics to trade lower emissions for more power and torque. A set of adjustable cam pulleys allows cam timing changes to be made on modern engines. The pulleys enable rotation of the cam while the crank remains motionless. Air-cooled engine cam timing alteration is more complex and beyond the scope of this article, but we'll return to it in detail in a forthcoming issue of *Classic Porsche*.

Many modern performance engines feature Variable Valve Timing (VVT), a process which alters cam timing while the engine is running. Cam timing can be set for best idle conditions at low rpm while retarding to suit high rpm performance, usually through the activation of hydraulic pressure or an electronic actuator. Obviously, there is a limit to the amount of adjustment available, and many VVT systems will only work if the cams are timed in accordance with factory settings. This is why many tuners prefer to disable VVT and manually alter cam timing to suit their needs.



## VALVE SPRINGS

Far from just making sure valves close after they've been opened, valve springs play a crucial role in controlling the valvetrain as a whole. They ensure the valve is kept in contact with the camshaft (via followers, lifters, rockers, pushrods) to ensure the cam controls the motion of the valves.

It's vital you use suitable valve springs for your chosen camshafts. If the springs are too soft, they won't be able to keep control of the valve, resulting in valve float (as outlined in the 'flank' boxout). Also, if any of the installed height, seat pressures or distance between coils is incorrect, the engine will almost certainly underperform. In unfortunate cases, it may even destroy itself!

Valve springs with too much pressure for the application are just as bad – overspringing can cause the valves to shut too aggressively, causing damage to the valve seat and cylinder head.



## LOW-FRICTION COATING

Many steel billet components, including camshafts and followers, can be treated to a low-friction coating. These coatings not only reduce friction between moving parts (thus reducing wear and increasing reliability), but they also help to reduce engine operating temperatures. After all, any form of friction will create heat, and by reducing friction, you'll reduce heat. Perhaps unsurprisingly, low-friction coatings are costly, and tend only to be used in motorsport, where maximising every last bit of power is essential.





## NORMALLY ASPIRATED vs FORCED INDUCTION

There are many differences in profile design between cams intended for normally aspirated engines and those packing forced induction, but the two most important contrasts are duration and overlap.

With a normally aspirated engine, you want to encourage the flow of as much intake air as possible. Longer duration and the resulting increased overlap help to achieve this. With forced induction, the opposite is true — you don't need to worry so much about encouraging air into the cylinder on a boosted engine due to the fact it is already being forced in by the turbocharger. Even so, you don't want any of the exhaust gases to slow the speed of intake air as a consequence of escape through the inlet tract, which is why most turbo camshafts feature a shorter duration and a resulting shorter overlap than naturally aspirated equivalent parts.

Forced induction cams are designed to work in conjunction with a turbocharger when full boost is reached. There's no point in having a set of cams designed to rev at 9,000rpm and make peak power at 8,500rpm if your car's turbo runs out of puff at 5,000rpm. Conversely, there's no point in having a set of cams making peak power and peak torque early on in the rev range if you've installed a massive turbo which doesn't start producing boost until 4,500rpm.



## BILLET CAMS

Most camshafts are produced from chill-cast iron. This process involves casting the blanks in a rough camshaft-like shape, meaning the cam profiles and bearings are ground onto the cast lobes. This is by far the most cost-effective method of producing cams in large volume, which is why almost all factory and mass-produced aftermarket performance cams are made this way. For one-offs and high-end motorsport applications, however, camshafts are often made from steel billet. The result is a much stronger, hard-wearing cam.

Billet cams are super-strong because they're made from a single piece of billet steel. Starting out as a round bar, the material is then turned down to the required size to suit the expected bearings and fixings. Cam lobes are left circular to begin with, before being ground into a shape on a computer-controlled stone grind wheel. The cams are then heat-treated and case-hardened to prevent wear.

Best suited to high-revving applications, such as professional motorsport, billet cams allow for gun-drilled centres. This helps reduce weight, but also allows for the centre of the cam to be used as an oil channel, with cross-drilled holes feeding the lobes or bearings.



## MULTI-PROFILE CAMS

Many modern engines cleverly utilise multiple cam profiles machined into a single camshaft. Honda's three-stage VTEC system is a case in point. The cam features three cam lobes per cylinder. This has the effect of providing the engine with three different camshafts per actual camshaft. In other words, the engine can have a cam profile assigned to low engine speeds, another for cruising and an aggressive profile designed for maximum power at higher engine rpm. The engine physically switches between these different profiles to provide the best profile possible for the active operating conditions.





## CAMSHAFT MATERIALS

Rockwell is a hardness scale based on indentation hardness of a material. There are different scales, denoted by a single letter to highlight different loads and indenter types. When testing metal, indentation hardness correlates linearly with tensile strength. The higher the number on the Rockwell scale, the harder the metal is. Camshafts can be made from various materials, where Rockwell scaling is observed to ensure each part is fit for the intended application.

### 1. Hardenable Iron

This is Grade 17 cast iron with an addition of 1% chrome to create 5- to 7% free carbide. After casting, the material is flame or induction hardened, producing Rockwell hardness of 52 to 56 on the C scale. This material was developed in 1930s America as a low-cost replacement for steel camshafts. It's mainly suited to applications where there's an excess

of oil e.g. camshafts running in an engine block and splash-fed from the sump.

### 2. Spheroidal graphic cast iron (SG iron)

A material giving similar characteristics to hardenable. Its failing as a camshaft material is hardness in its cast form, which tends to scuff bearings in adverse conditions. The material will heat treat to 52 to 58 Rockwell C. This material was used commonly by Fiat in the 1980s.

### 3. Chilled chrome cast iron

Chilled iron is Grade 17 cast iron with 1% chrome. When the camshaft is cast in the foundry, machined steel influencing the shape of the cam lobe are incorporated in the mould. When the iron is poured, it hardens off very quickly (known as chilling), causing the formation of a carbide matrix (this material will cut glass) on the cam lobe. Chilled chrome cast iron is exceedingly scuff-resistant and is

the only material for producing high quality OHC performance camshafts.

### 4. Carbon steel: EN8/EN9

Used mainly in the 1930 to 1945 period and is currently used for induction hardened camshafts in conjunction with roller cam followers, due to the through-hardening characteristics of the material.

### 5. Alloyed steels: EN351 AISI 8620 and EN34

Used by British Leyland in its A Series and B Series engine and best used when supported by a chilled cam follower.

### 6. Nitriding steel: EN40B

The best steel for camshafts. When nitrided, it gives a surface hardness and finish similar to chilled iron. This material is often utilised when replacing chilled iron camshafts in competition engines and is used on several of the current competing engines in Formula One.



## Conclusion

In general, steel is a good camshaft material, but the type of steel has to be matched with the cam follower it runs against because different grades of steel have different scuff characteristics. When purchasing camshafts, enquire which material the parts are produced from. This will help you find a fit for purpose solution for your engine build. For example, a chilled iron camshaft may be more expensive, but its resistance to wear in all conditions far exceeds any other type of cast iron. Of course, this article has been a somewhat simplified explanation of camshaft materials, but may assist you in asking the correct questions when purchasing performance camshafts for your Porsche. We'll go into further detail regarding camshaft selection and cam timing for air-cooled engines in forthcoming issues of *Classic Porsche*. **CP**





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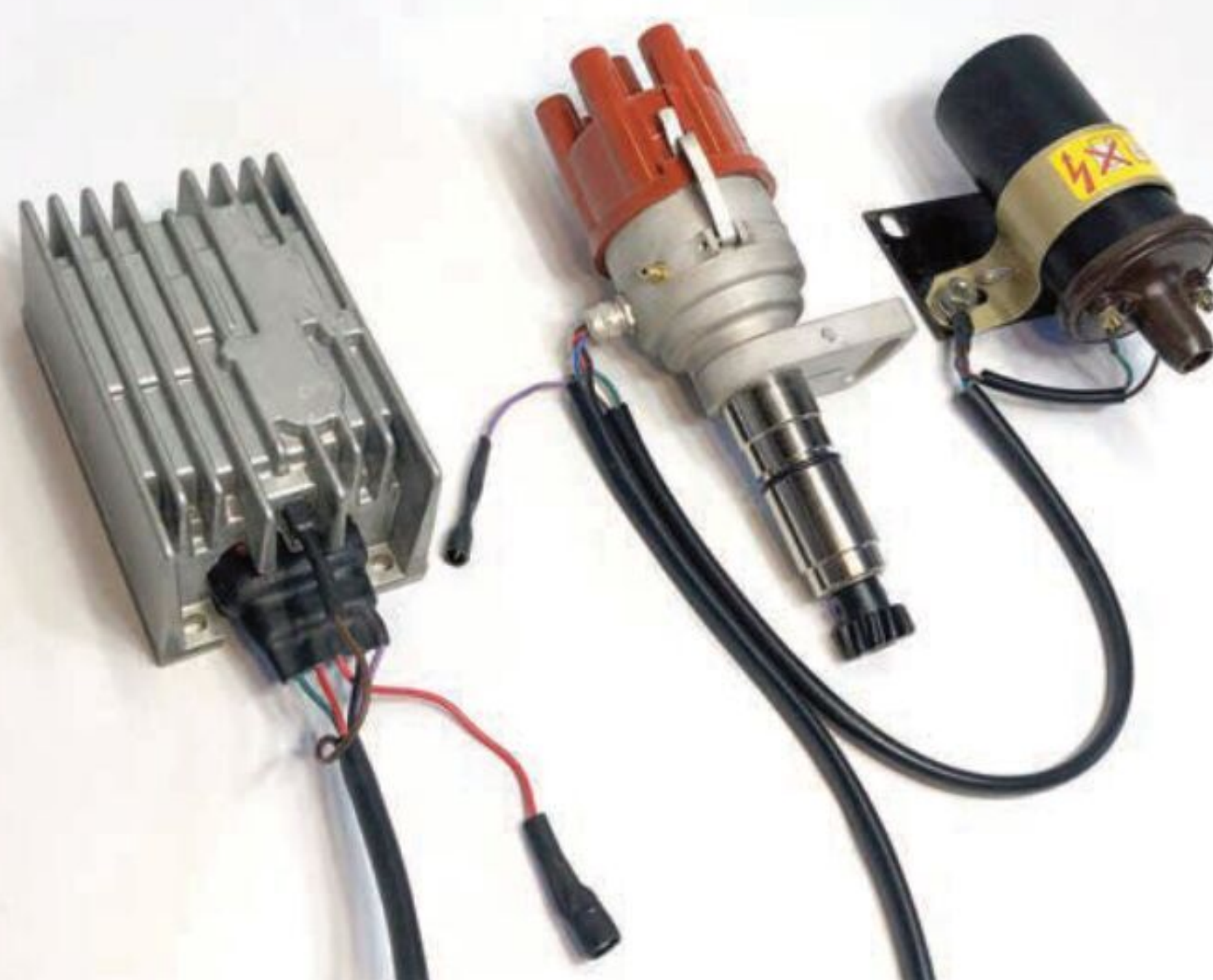
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# BATTLE DRESS

With competition season now in full swing, we take a look at ten of the most iconic historic Porsche racing liveries...

Words **Dan Furr** Photography **Porsche, Dan Furr, Dan Sherwood**

**T**wo days after this magazine hits newsstands, rally and gymkhana star, Ken Block, will be competing for overall victory at the hundredth running of the Pikes Peak International Hill Climb. Block entered the event back in 2005, driving a Group N Subaru Impreza WRX STi, but this is the first time he'll be aiming for top honours.

To help him in his quest, the self-styled Hoonigan has partnered with Huntington Beach's very own Porsche and McLaren tuning outfit, BBi Motorsport, a collaboration resulting in the 1,400bhp four-litre monster you see here. Incidentally, the project started life as a 912!

Not much of the original Porsche is left — the factory flat-four has made way for a twin-turbocharged flat-six jacked up on methanol, while an all-wheel drive system promises to get Block to the Pikes Peak finish line (14,115ft above sea level) at super-rapid pace.

Allied to kerb weight of just 1,000kg, a custom Sadev six-speed sequential gearbox, Rotiform TSF 6161 forged wheels, a bespoke

transmission tunnel and GPS-linked suspension cleverly altering its damping, rebound and ride height in accordance with telemetry gathered at the legendary venue (comprising 156 turns and an elevation gain of 4,725ft spread across 12.42 miles), 'Hoonipugasus' will take to *The Race to the Clouds* in pursuit of the most coveted title in North American sprint racing.

Nuts and bolts aside, the most striking aspect of Block's new Porsche is its livery. Designed by Trevor Andrew (known on social media as Guccighost) and incorporating the classic Mobil 1 'Pegasus' logo — ergo the 'Hoonipigasus' portmanteau — the work is clearly influenced by the famous 917/20 'Pink Pig' livery overseen by Porsche studio stylist, Anatole Lapine, in advance of the car's star turn at the 1971 24 Hours of Le Mans. With this in mind, we thought now a good time to revisit ten of the most iconic historic Porsche racing liveries. Buckle up!

Get in touch with the *Classic Porsche* team and let us know your favourite Porsche racing livery. We look forward to hearing from you.







## 10



More than five decades have passed since Manfred Kremer joined forces with his brother, Erwin, and family friends, Hermann Bürvenich and Willi Großmann, to lay the foundations for what would become one of the most successful privateer racing teams in the world. The E&M Kremer GmbH company, and the race team emerging from it, occupies a unique place in the history of Porsche motorsport — from more than a thousand race starts, the squad from Cologne celebrated outright victories at the 1968 24 Hours of Spa-Francorchamps, the 1979 24 Hours of Le Mans and the 1995 24 Hours of Daytona. There have also been no fewer than eleven Porsche Cup titles, three European GT titles, three GT Interserie titles and the 1979 DRM Championship title, won with the famous Kremer 935 K3.

We could fill an entire magazine with the weird and wonderful liveries covering Kremer race cars over the years — Jägermeister, Wally's Jeans, Mambo, Kenwood, Coca-Cola, Apple Computers and Interscope Records are just a few examples of the sponsor battle dress decorating all manner of air-cooled Kremer cars in period. The design commanding more affection from Porsche fans than any other Kremer camouflage, however, is that of the Cologne concern's Vaillant-sponsored cars.

At times a simple accent of teal over a white body, such as when Bob Wollek and Hans Heyer campaigned the no.2 935 K1 at the 1,000km of

Nürburgring in 1976, Kremer Vaillant livery is most widely celebrated in its all-over teal paintwork, accentuated by pink, red and yellow stripes, often accompanied by a caricature of the Vaillant rabbit mascot. Authored by Ekkehard Zimmerman, the automotive stylist who would go on to establish independent Porsche tuning outfit, DP Motorsport, the design has been applied to the 917/30, the ADAC Supersprint-winning 935/78, the 934 RSR and, most famously, the Kremer 935 K2, among other racing Porsches. The K2, however, is the most iconic of the Vaillant-sponsored Kremers.

Complete with removable rear quarters and a bespoke rear spoiler, the K2 — with Wollek at the wheel — finished on the podium in every Deutsche Rennsport Meisterschaft (DRM) race at the Nürburgring in 1977. The front of the K2 was largely inherited from the K1 (Kremer's first custom 935, campaigned during the previous season), but now featured larger ventilation outlets in the front wings. An adjustable splitter was installed later in the season and Kremer also experimented with tapered covers on the wing mirrors, though to little success.

Thanks to Zimmerman's flair for eye-catching automotive design, Kremer's Vaillant-sponsored race cars easily distinguished themselves from the rest of the field. And, with 1977's DRM successes, the teal-toned design became instantly iconic, spawning numerous model kits and copycat designs seen on 934 and 935-aping air-cooled road and race cars to the present day.







# 9

**T**he most recognisable Sunoco race car livery was designed in the early 1970s for Porsche's assault on the Can-Am racing series. Earlier, in the mid-1960s, Sunoco and Roger Penske Racing joined forces with racing driver, Mark Donohue, to forge a long and successful alliance. Following changes in regulations for sports-

prototypes in Europe, Porsche commissioned Penske and Donohue to develop the 917 to compete in Can-Am. The resulting turbocharged 917/10 short-tail won the 1972 series with George Follmer at the controls, a switch of driver required due to an accident temporarily forcing Donohue to abstain from racing. This victory ended McLaren's five-year reign on the competition – beaten at its own game, the Woking concern discontinued its Can-Am programme come season end, instead focusing its attention on Formula One and an attack of the Indianapolis 500.

For the 1973 season, a further evolution of the 917 was introduced to Can-Am. Dubbed 917/30, the car featured enhanced aerodynamics, a

longer wheelbase and improved on the 917/10's 850bhp power output by topping out at close to 1,500bhp, making the newer Porsche the most powerful competition sports car ever built and raced. Propelled by a force-fed 5.4-litre turbocharged flat-twelve, the distinctive blue and yellow sports prototype won all but two of the year's Can-Am races.

In August 1975, Donohue drove a 917/30 to a new speed record at

Tallegada Superspeedway in Alabama, averaging in excess of 221mph around the 2.66-mile banked oval circuit. The record stood for eleven years.

The 917/30's reputation for being the Porsche no other sports race car could compete against instantly earned it a place in motorsport history.

The sensational Spyder's livery – a

combination of Sunoco's blue, red and yellow corporate colours and flanked by Porsche-Audi branding from a time the products of both manufacturers were being promoted as one in North America – immediately brings to mind the heady days of 1970s sports-prototype racing, though it should be noted the same design was applied to the Penske 908/3 and even the 935.

## THE DISTINCTIVE BLUE AND YELLOW SPORTS PROTOTYPE WON ALL BUT TWO OF THE YEAR'S CAN-AM RACES







## 8



The 911 ST was descended from the 1967 911 R factory motorsport machine. The intention was to run the R in sportscar racing, but homologation rules pitched it in with prototypes. Consequently, in 1968, Porsche created the 911 TR, a 911 T chassis making use of a 911 S engine and homologated as a Group 3 GT car – still relatively modified, but less so than the R. Somewhere in the region of thirty-six TRs were built and campaigned by professional and amateur race and rally teams.

For 1970 and 1971, following the FIA's decision to allow big changes to production cars for GT racing, Porsche reasoned a lightweight version of its 2.2-litre S would be the perfect 911 for touring car racing and rallying. Thus, the ST was born, and though the rally cars retained standard engines, racing versions were initially increased by 52cc, accompanied by a power hike from 180bhp to 240bhp, fired by twin-plug ignition and mated with a 901 transmission and limited-slip differential. Only a handful of 2.3-litre STs were built in race and rally form, with a further twenty-three units of the later 2.5-litre ST designated as race cars. Like the TR, the ST designation was an in-house Porsche amalgam of existing model identifiers: an S engine and the lighter T chassis.

In 1970, factory racing driver and engineer, Gerard Larrousse, paired with rally star, Maurice Gélén, and drove a 911 ST to third-place overall at the year's Tour de France Automobile. Larrousse had been instrumental in developing the ST into a super-light competition car, which tipped scales at just 789kg, making it the lightest factory-built 911.

The ST in question was painted in the red and yellow hues adopted by headline sponsor and oil producer, Shell. Save for blue stripes with a red keyline where the Larrousse car carried red stripes with a black keyline, Erwin Kremer and Günther Huber campaigned a near identical 911 at the 500km of Nürburgring in 1971, winning the event and scoring valuable points for the season's Porsche Cup, but it's the earlier red-striped ST which remains a fan favourite.

Pleasingly, after recent restoration courtesy of classic Porsche specialist, Historika, the car is back to its vibrant best, complete with the very same bright yellow base colour it wore in 1970, a feat achieved with help from Shell. Additionally, thanks to assistance from the Porsche Museum in Stuttgart, Historika was able to reunite the car with its original engine case following decades of various modifications and alterations to specification.

The work was finished in 2016, after which, Larrousse was reunited with the car for the Classic Auto Endurance race, where man and machine competed convincingly until regrettable camshaft failure

forced retirement. The car was also displayed on the lawn at 2017's Classics at the Castle event, organised by Porsche Club Great Britain and hosted at Suffolk's Hedingham Castle, where this special ST's fantastic body graphics ensured it stood out on a packed display of historically significant air-cooled Porsches.







**O**n 31st March 2016, a fifty-six-year part of the Porsche motorsport story came to a close. This date marked the end of Brumos Porsche, the dealer famous for its legendary on-track exploits in a wide variety of Stuttgart-crested sports cars, most of them wearing the famous white, blue and red Brumos Racing livery.

Brumos was founded by Herbert Brundage, a gentleman racer who established the only Volkswagen dealer in a three-state radius when he opened for business in Jacksonville, Florida, after relocating from Miami in the late 1950s. Recognising appetite for a low-cost motorsport programme, he commissioned well-known race car designer, Enrico Nardi (a name familiar to anyone who has lusted after a wood-rimmed steering wheel), to develop a single-seat, mid-engined Formula Junior car built around a brand new Beetle 1200 engine, transmission, brakes, wheels and suspension. The resulting racer wasn't particularly competitive, but it did highlight the need for the SCCA to better support motorsport participants working with a modest budget – not everyone could afford to buy and punish a 356 Speedster or 550 Spyder, a fact Brundage was well aware of after his Volkswagen dealership became a Porsche importer.

Following his death in 1965, Brumos Porsche was sold to celebrated racer, Peter Gregg, famed for his time behind the wheel of the 904 and 906. With acquisition of Brundage's dealership, Gregg's unbridled access to high-powered air-cooled sports machinery from Stuttgart led to the Brumos Racing enterprise as we know it: one of the most successful endurance and sports car racing teams, serving as home to some of the most talented drivers ever to get behind the wheel of a Porsche.

The long and fruitful history of Brumos Racing, including its many championship wins and mind-blowing race cars, is beyond the scope of this article, suffice to say, among its numerous notable achievements, the team won the 24 Hours of Daytona no fewer than four times. The first of these victories, achieved with Gregg partnering Hurley Haywood (the Daytona, Sebring and Le Mans legend who would take up a leading role at Brumos many years later), was achieved in 1973, the pair piloting the no.59 Carrera RSR 2.8 to the top of the podium in the face of stiff competition, not least from the Penske Racing RSR being campaigned by seasoned Porsche racers, Mark Donohue and George Follmer. Porsche had shipped both RSRs to the USA, one landing at Brumos,

the other at Penske. Renowned for being thorough, Gregg stripped the Brumos RSR and found its flywheel to be loose. Alarmed at the potential for disaster at the track, he contacted Roger Penske to inform him of his findings, only for Penske to assume Gregg was playing mind games in advance of their cars going head-to-head. Warning unheeded, the Penske car retired from the race with a loose flywheel and the Brumos

car won, completing 670 laps of Daytona International Speedway, a significant distance over the 648 laps of second-place finisher, North American Racing Team, and its 4.4-litre V12-powered Ferrari 365 GTB/4. This watershed moment in Porsche's motorsport story saw the distinctively styled RSR become one of the most

instantly recognisable 911s ever assembled and, consequently, one of the most copied on the classic Porsche restomod scene.

## HOME TO SOME OF THE MOST TALENTED DRIVERS EVER TO GET BEHIND THE WHEEL OF A PORSCHE







## 6



The 1970 24 Hours of Le Mans is famous for being the occasion of Porsche's first overall victory at Circuit de la Sarthe. The Stuttgart carmaker was nineteen years into its Le Mans programme, which kicked off with a triumphant class win for the lone 1.1-litre 356 SL Gmünd coupe on 23rd June 1951.

The 917 made its debut at Le Mans in 1969, but clutch failure forced early retirement after what had been a strong start. The story was very different at the beginning of the new decade. Porsche racing stalwart, Hans Hermann, partnered with Le Mans and Formula One veteran, Richard Attwood, to hammer the no.23 Salzburg 917 K (the K standing for *Kurzheck*, translated as 'short-tail') across the finish line in an eventful race marred by heavy rain. In fact, the weather was so bad, only sixteen participating cars reached the end. Twelve were Porsches.

should instantly bring the car to mind: hippie. Kick-starting the Le Mans art car movement, the extraordinary artwork applied to 917-043 was an elaborate display of bright green psychedelic stripes over a violet-painted body. You'll note the design was similar to that of the Larrousse-driven 911 ST we focused on earlier in this list. Both were from the studio of Porsche stylist, Anatole Lapine.

So the legend goes, Lapine applied the purple hue to a fresh white body, leaving the stripes as exposed white paint and only turning them light green hours before the race. The work took a full week and more than 1,500 rattle cans. It has gone on to become one of the most instantly recognisable Porsche racing liveries, replicated on many privately owned Porsche restomods, as well as professional race cars, such as the no.35 917-021 short-tail entered into the 1970 Six Hours of Watkins Glen. And who should be driving the car? Gerard Larrousse.



Nobody remembers runners up, right? Ordinarily, there might be an argument to support this claim, but 1970's daylong enduro at Le Mans was the exception to the rule. Herrmann and Attwood's 917 short-tail ended the race five laps ahead of the Martini Racing customer team's 917 long-tail, driven by Gerard Larrousse and Willi Kauhsen, while the same team's 908/02 took the final podium place thanks to 335 laps completed by Rudi Lins and current Red Bull Racing F1 team advisor, Helmut Marko, who would go on to win at Le Mans in the magnesium bodied Martini Racing 917 a year later.

You're forgiven for not being able to picture 1970's 908 Marko machine, but what about the same race's Larrousse/Kauhsen 917? Yes, it was a Martini Racing entry, but don't be fooled into thinking it was wearing the blue and red stripes of the drinks brand. One word

In November 1970, the original 'hippie' 917 was crashed by Jo Siffert at Hockenheim, leading the car to be salvaged for parts. The damaged body was returned to Zuffenhausen, the mechanical components were fitted to Siffert's 917/10 Can-Am car, while the chassis number was assigned to a new build. The story doesn't end there, though. Confusingly, Porsche repaired the original 917-043 body and chassis, but having already given away its identity, deemed the resurrected 'hippie' a new 917 and assigned it an updated chassis number. The car was sold to Porsche collector and team owner, Vasek Polak, in 1972, before passing to racing driver, Massimo Pedrazzi, three years later. After much research, and with help from the Porsche Museum in Stuttgart, Pedrazzi was recently able to secure Porsche's authentication of his 917 as the original 'hippie' Le Mans racer we all know and love.





# 5

**W**e realise many of the places on this list are occupied by the 917, but considering the high number of extraordinary racing liveries applied to the model – especially when so few examples of the all-conquering competition Porsche were built – it seems only fitting to celebrate some of the standout designs by way of inclusion on this list.

The 917 is arguably the most famous Porsche race car, although at the beginning of its career, it had the dubious reputation of being barely drivable. The reason for teething troubles was quite simply a question of time: with just nine months between the first design drafts and presentation at the Geneva Motor Show on 13th March 1969, there was no available time for proper testing. The air-cooled twelve-cylinder prototype drove straight from the drawing board to the race track, so to speak, but as Porsche quickly discovered, the design process had focused on aerodynamics at the expense of downforce.

In 1968, FIA regulations for the World Sportscar Championship announced engine displacement limit was raised from three to five litres. This meant the three-litre 908 was only competitive to a limited extent. A new five-litre car was needed. Driven by annoyance about the rule change, Porsche's Head of Motorsport Development, Ferdinand Piëch, gave the go-ahead to build the 917. The 31-year-old engineer cast aside all doubts about the expense of the project – he wanted a Porsche capable

of winning Le Mans, irrespective of cost. Despite a frustrating Le Mans in 1969, where Gerard Larrousse (yes, him again) and Hans Herrmann finished second to the Ford GT40 driven by Jacky Ickx and Jackie Oliver, Piëch's risk paid off when Herrmann and Richard Attwood successfully piloted the Salzburg 917 short-tail to victory a year later.

Radiant in red, the winning 917's bodywork was styled in the vein of the bands of the Austrian flag. The design's beauty is in its simplicity, eschewing the busy stripes of the same year's 'hippie' 917 for straightforward, tapered white lines stretching from nose to tail. Such is the significance of what the car's win at Le Mans means for Porsche, not least the start of the brand's dominance of the world's oldest active endurance race, the Salzburg car's livery has been applied to a variety of other Porsche products, including the new 935, the updated 917 race car concept (a 1,000bhp beast powered by a five-litre twin-turbocharged flat-eight and intended to run alongside the 919 Hybrid at Le Mans in 2014, but ultimately shelved until being wheeled out for display purposes at Sarthe in 2020) and Porsche Cars Great Britain's wonderful two-litre 911 race car restoration project. A collaboration between the country's Porsche Classic Partner Centres (Swindon, Hatfield, Leeds and Glasgow, with assistance from Manchester-based Porsche-approved body shop, Road & Race Restorations), the finished car was unveiled at the 2019 NEC Classic Motor Show and subsequently starred on the cover of the May 2021 issue of *Classic Porsche*.







## 4



Ask most people to bring to mind the image of a 917 and they'll almost certainly picture the tangerine and baby blue Gulf-liveried cars competing at Le Mans in the early 1970s. In part, popular culture has contributed to this galvanising of association between Porsche and the oil company's branding — Steve McQueen's motorsport movie, *Le Mans*, was filmed on site during the 1970 24 Hours of Le Mans and follows The King of Cool's character, Michael Delaney, as he attempts to win the race in a Gulf-liveried 917. Many famous Porsche drivers assisted with production of the movie, which saw McQueen's personally owned 908/2 converted to a camera car and entered into the race to capture the most accurate visual documentary of driving the Le Mans race in period. The film also serves as an unintentional document of Porsche's first overall win at Le Mans, highlighting Richard Attwood and Hans Herrmann working their magic in the Salzburg 917 short-tail.

When Porsche was struggling to keep control of the 917 at high speed following model launch — to such an extent factory drivers refused to hop into the car, favouring the tried-and-tested 908 — it realised outside help was required. On March 21st 1969, Rico Steinmann, successor to Porsche competition and press department boss, Fritz Huschke von Hanstein, approached John Wyer with a proposition. As team manager, Wyer had won Le Mans several times, first with the Aston Martin competition department in 1959, then with Ford and the mighty GT40, coining World Sportscar Championship titles for Henry's boys along the way, even when Porsche was favourite to win. By the time of the GT40's Le Mans triumph in 1968, however, the Blue Oval was ready to be retired. Steinmann acknowledged the fact by asking Wyer to take on Porsche's 917 racing programme.

Wyer recognised the 917's potential as a future dominant force in sports car racing and quickly saw where changes to the aerodynamic bodywork of the model would dramatically increase much needed downforce, hence the arrival of the 917 short-tail for 1970. There was a potential fly in the ointment, though. Wyer's team, JW Automotive, which had taken over the Ford Advanced Vehicles factory in Slough and was producing GT40s on Ford's behalf, was sponsored by Gulf Oils. He recognised the GT40 was soon to become obsolete, but it was still a competitive car capable of winning races. Would Gulf be happy about

disassociating itself from a proven victor and applying its branding to a Porsche which even the factory's own drivers treated with contempt?

The answer was in the affirmative, but Wyer was committed to the World Sportscar Championship and Le Mans with Ford for the 1969 season, essentially being Porsche's fiercest rival. The JW Automotive GT40 driven by Jacky Ickx and Jackie Oliver would win at Sarthe, but only after the 917 long-tail driven by Richard Attwood and Vic Elford retired from the lead with gearbox failure two hours before race end. Earlier, privateer driver, John Woolfe, crashed his 917 on the opening lap of the race and died as a result of injuries sustained. Clearly, for a variety

of reasons, the 917 was in dire need of expert attention from outside the Porsche stable.

It got it — from the 1970 season, Wyer's squad was development partner and team management for Porsche's World Sportscar Championship and Le Mans programmes, resulting in Gulf

Oils branding decorating a string of 917s, including the star cars of McQueen's *Le Mans* movie, as well as 908s, such as the 908/3 driven to the top spot at the 1970 Targa Florio by Jo Siffert and Brian Redman. In the present, Gulf branding characterises a long line of fan-friendly official Porsche apparel and, of course, countless replica liveries applied to Stuttgart-crested sports cars of all persuasions.







# 3

**S**haken, not stirred. So says fictional British secret service agent, James Bond, when ordering a glass of Martini. The first Bond movie, *Dr No*, was released to great acclaim in 1963, by which time the Italian vermouth distillery had been sponsoring motor teams for five years. The distinctive light blue, dark blue and red stripes of Martini & Rossi's company colours have gone on to decorate many race and rally weapons, and though the car to bring Martini the most event wins and titles is the Lancia Delta HF Integrale, the company has enjoyed huge success partnering with Porsche.

Martini Racing was formed as a team for 1969 and entered a pair of 907s in various races, supporting factory entries.

Things really took off for Martini Racing in the 1970s. In the decade's first season of racing, the team bagged second and third podium

## THIS SUPER-SLEEK INCARNATION OF THE 935 REACHED 228MPH ON THE MULSANNE STRAIGHT

positions at Le Mans (with the previously mentioned 'hippie' 917 and 908/2), before going on to win top honours at Sarthe in 1971. This was Porsche's second overall victory at Le Mans and came hot on the heels of the Salzburg 917's win a year earlier. For this second victory, however, the conquering Martini Racing 917 was based on a chassis

made of lightweight magnesium, a highly flammable material which had proved dangerous in race car chassis design, leading to fatalities in F1. Legend suggests Porsche motorsport engineering boss, Norbert Singer, instructed his staff not to tell drivers, Helmut Marko and Gijs van Lennep, what materials the car was made from.

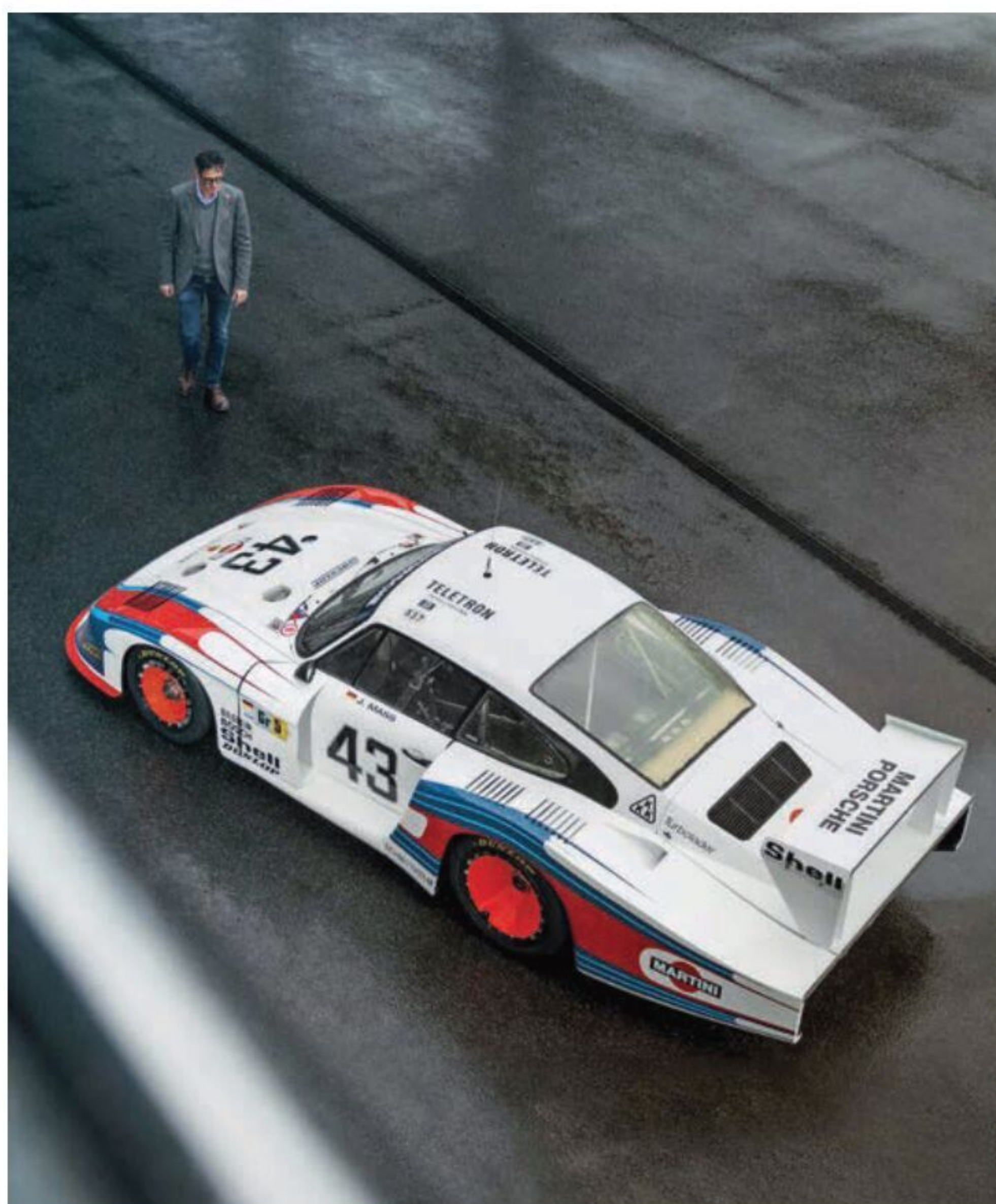
Ignorance is bliss, as they say. The car was retired after the race.

When Porsche returned to developing the 911 for competition use in place of prototypes, Martini Racing once again flourished — 1973 saw the team take the win at the Targa Florio with the then new Carrera RSR. Thanks to its instantly recognisable spoiler, this 315bhp 911 was visually similar to the Carrera RS 2.7 production car, but wider wings, heftier track width, 917 suspension and the same model's brakes bolstered the RSR in readiness for its triumphant win. Interestingly, a key difference between the parts applied to bodywork for the year's Carrera road and race cars was the RSR's 'Mary Stuart' rubber wing extensions, items which extended the ducktail over the rear wheel arches. The nickname referenced the sixteenth-century Scottish queen's collars.

Martini Racing won at Le Mans again in 1976, this time with Jacky Ickx and Gijs van Lennep at the controls of the 2.1-litre turbocharged 936. Remarkably, the team scored its third win at Sarthe just a year later, when Ickx, Jurgen Barth and Hurley Haywood drove the 936 to glory in the face of stiff competition from Vern Schuppan and Jean-Pierre Jarier in the Grand Touring Cars Mirage M8, plus various privateer teams running 935s.

In 1978, Martini Racing once again sponsored Porsche's works Le Mans entries. Ickx, Barth and Bob Wollek piloted the Martini 936/78 to a respectable second-place finish, while Haywood, Peter Gregg and Reinhold Joest rounded out the podium with the Martini 936/77. The fate of the Martini 935/78 was less pleasing.

Featuring water-cooled cylinder heads, the 850bhp flatnose won the year's Six Hours of Silverstone before qualifying third for Le Mans. With its new 3.2-litre engine, this super-sleek incarnation of the 935 reached 228mph on the Mulsanne Straight, making it the fastest event entry and a shoe-in for the win, but with the need to replace the car's engine before the race, plus mechanical maladies only a few hours into the action, 'Moby Dick' was out of contention, finishing eighth. The car was promptly retired to the Porsche Museum.







## 2



**H**ow does that old Sinatra song go? Ah, yes. *Love and marriage, love and marriage, they go together like... race cars and cigarette branding.* Something like that. This particular pairing was a huge hit before tobacco advertising was banned, and though disguised Marlboro livery decorated the 1997 911 GT1, Rothmans had already stolen the show by having its livery draped over some of the most successful race cars to ever roll out of Stuttgart.

The first Rothmans-liveried Porsches to capture the imagination of motorsport fans were the trio of 956s entered into the 1982 24 Hours of Le Mans. “The result of this most difficult long-distance race was astonishing even for the most optimistic Porsche fan,” Norbert Singer told us during a recent interview. “After twenty-four hours, the result corresponded to the numbers displayed on the side of our cars: 1-2-3! Three cars at the start and those three blocking out the podium in order. Who would have thought it?! Thus began the unique and spectacular success story of the 956.”

Rothmans-sponsored Porsches would win Le Mans three more times in the 1980s (a one-two with the 956 in 1983, an eight-lap lead with the 962 in 1986 and an astonishing twenty-lap lead with the same model in 1987), as well as the 1985 World Sportscar Championship, but endurance racing wasn't the only form of motorsport the tobacco giant was interested in. Indeed, while sponsoring Porsche's Group C efforts in 1982, Rothmans was supporting Walter Röhrl's World Rally Championship-winning Opel Ascona 400. Two years later, Porsche unveiled the 911 SC RS rally car, run by Prodrive and carrying Rothmans livery. The same body graphics adorned the 953, a heavily modified 911 designed and built exclusively to compete in the 1984 Paris-Dakar.

Before the 959 was ready for the road, Porsche returned to the Paris-Dakar for the 1985 event, using a 959 body and a further development of the manufacturer's new four-wheel-drive system allied to the 953's normally aspirated 3.2-litre engine. Chassis 010014 entered with Jacky Ickx and Claude Brasseur on driving duties. Stickered with no.185, it held the overall lead until late in the eighth stage, when the nose of the car collided with a large rock hidden beneath a layer of sand. Ickx and Brasseur were forced to retire, though they weren't alone — only 101 of the 362 cars entered reached the finish line. This demonstrates just how punishing the Paris-Dakar rally is, and that's before we consider GPS didn't make its appearance at the event until 1992.

Just a few weeks later, Porsche brought two examples of the 959 to the Pharaohs Rally in Egypt, this time with turbocharging a key feature. The number two entry (driven by Saeed Al Hajri and John Spiller) won. A few months later, another — this time, final — evolution of the rally car appeared on the start line of the 1986 Paris-Dakar, much closer in concept to the roadgoing 959 and using sophisticated electronics for many aspects of operation. Importantly, the all-wheel-drive system went further than that of the road-going 959 by allowing any split — from zero

to all of the available torque — to be sent to either the front or rear of the car. This was adjusted by the driver via a potentiometer, though there were three preset modes, one sending more power to the front axle, a second sending more to the back and a third (labelled 'Traction') for getting out of sticky situations. Proudly displaying its Rothmans livery, the 959 dominated the event, taking first, second and sixth places.

The circuit racing 959 debuted at Le Mans in 1986. Given factory codename 961, the car finished first in the IMSA/GTX class and seventh overall with Metge back at the wheel, cementing the 959's pedigree as a formidable motorsport machine in all competitive environments and earning it a reputation as the only car to have won its class at both the Paris-Dakar Rally and the 24 Hours of Le Mans. For 1987's daylong race at Sarthe, the car was sponsored by Rothmans, but scored a DNF at after Canadian-Dutch driver, Kees Nierop, slammed into second gear when he meant to select sixth, resulting in a crash into nearby Armco. After he attempted to rejoin the race, the car erupted in flame and was partially destroyed.

Thankfully, it was recently restored and is now kept at Stuttgart's Porsche Museum, alongside many other Porsche racers resplendent in the cigarette brand's iconic white, red, gold and blue livery.

3. Jacky Ickx/B	Porsche 956
4. Henri Pescarolo/F	Porsche 956
Derek Bell/GB	Porsche 956
6. Jan Lammers/NL	Porsche 956
Dr. Jonathan Palmer/GB	Porsche 956
8. Hans Joachim Stuck/D	Porsche 956
David Hobbs/GB	Porsche 956
10. Paolo Barilla/I	Lancia

**Stefan Bellof**  
**Endurance-Fahrer-Weltmeister '84**

**PORSCHE**





**H**ow could our number one historic Porsche racing livery be anything other than the brilliant Pink Pig design applied to 917/20?! An experimental race car built for Can-Am development and aerodynamic testing, 917/20 was entered into Le Mans in 1971, though failed to finish. The car sat lower and more than twenty-four centimetres wider than other 917s and remains a unique one-off. In developing this experimental Porsche, factory engineers, together with the French wind tunnel testing company, Société d'Etudes et de Réalisations Automobile (SERA), attempted to combine the advantages of the short- and long-tail 917 in a single body featuring pronounced wheel cut-outs. The idea was to exploit the low drag coefficient of the long-tail with the much welcome downforce of the short-tail.

Though the body was much wider than usual, track width remained unchanged, which meant the wheels were hidden deep in their arches. The nose (or should that be snout?!), meanwhile, was low and flat, but didn't extend as far as that of the long-tail coupe.

It might have been a rolling race car laboratory, but as far as event spectators were concerned, the best thing about 917/20 was its outlandish body design. With the car painted pink, the livery was designed by Porsche stylist, Anatole Lapine (he of 917 'hippie' and Larrousse 911 ST fame), and his colleague, Richard Soderberg. Named *Trüffel-Jäger von Zuffenhausen* (the truffle hunter of Zuffenhausen), the design features the names of butcher cuts and was a tribute to *rillettes*, the local pork delicacy of La Sarthe.

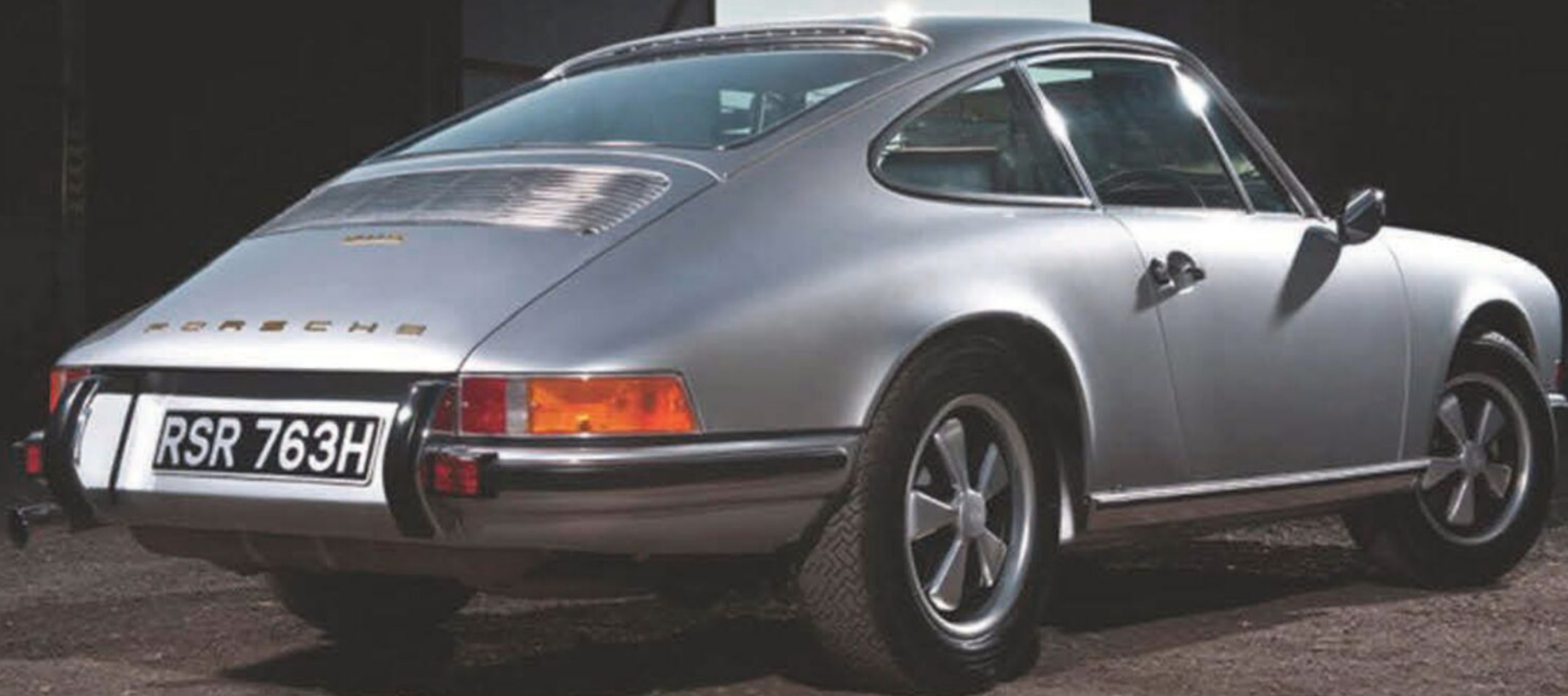
917/20's design remains one of the most popular Porsche racing liveries, which is all the more impressive considering the 4.9-litre flat-twelve-powered prototype failed to finish at Le Mans, bowing out in the twelfth hour due to an accident. The car had, in fact, moved its way up the field to third place, but its cooling fan broke loose. After a delay caused by the necessary fix, Reinhold Joest, sharing driving duties with Willi Kauhsen, regained third position, but went on to experience brake failure on the run up to Arnage, causing the car to shoot along the circuit's safety road before crashing. Game over.

During practice and qualifying, 917/20's pink body was decorated with dotted lines of the butcher's map, but the name of each cut – displayed in the Pretoria font – was applied shortly before race start. Like the previous year's 917 'hippie', 917/20 competed as a Martini Racing-sponsored works entry, but unlike the other two factory Porsches competing in the same race, 917/20 didn't carry Martini body graphics.

Irrespective of the car's extremely short service life and lack of racing success, 917/20's eye-popping body design – carrying the number of 1970's Le Mans-winning 917 – has gone on to become just as popular (arguably more so) as the Martini Racing and Gulf Oils liveries decorating many different historic Porsche race cars. In the mid-1980s, 917/20 was cosmetically restored for Porsche by Florida-based marque dealer, Gerry Sutterfield, before returning to the Porsche Museum, where it is currently stored. The car's design was resurrected for 2018's Le Mans class-winning 911 RSR, has spawned countless copycats and serves as key inspiration for the look of Hoonpigasus, the 1,400bhp monster we highlighted at the start of this article. **CP**







copyright: James Lipman



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FOR DETAILS

# FULL THROTTLE

**They look great, improve performance and sound awesome at full chat, but how do throttle bodies work?**

**L**ifted directly from the world of motorsport, throttle bodies are designed to improve airflow and optimise the mixture of air and fuel entering a combustion chamber. As most of you will know, the more of this mixture that's fed into an engine, not to mention the rate at which it can be done, the more power the engine will make.

The engineering involved in producing a set of throttle bodies is immensely complicated. Moreover, there are a number of factors which need to be taken into consideration in order to produce the perfect set of

throttle bodies for a specific application. Whacking a set of motorcycle throttle bodies onto a big V8, for example, is unlikely to yield desirable results. By the same token, bolting huge throttle bodies onto a small, high-revving engine isn't going to provide you with the performance you're looking for.

We'll go into the detail of throttle body design and manufacturing in a forthcoming issue of *Classic Porsche*. In the meantime, let's take a look at what throttle bodies are, how they work and what the different types of throttle bodies are.





## WHAT EXACTLY IS A THROTTLE BODY?

Before we delve into the complicated issues of throttle body sizing, spacing and positioning, we need to know what a throttle body is and how it works. Most standard production cars come with a single throttle body which controls the amount of air entering the engine. The part's butterfly opens and closes in correlation with the throttle position, allowing more or less air to enter the engine accordingly.

A single throttle body is adequate for the average road car, offering gentle throttle response which can be silenced to meet manufacturer noise limits. Drivers of performance cars, however, like more immediate throttle response, meaning that the butterfly needs to be located closer to the inlet ports in the cylinder head. To achieve this without the driver having to wait for the entire intake system to fill with air before it reaches the ports in the head, multiple throttle bodies are deployed. They work in the same way a single throttle body, but instead of cylinders having to draw air from a single source, they each have a dedicated throttle body.

There are many advantages to fitting multiple throttle bodies, but the primary improvements are greatly enhanced throttle response and a more focused mixture of air and fuel entering the engine at a fast pace, thereby producing harder revving, more bhp and extra torque.





## THE DIFFERENT TYPES OF THROTTLE BODY

The easiest and most straightforward way of fitting multiple throttle bodies is to invest in twin-bodies. On a four-cylinder engine, this equates to a pair of twin-bodies, much like twin carburettor setups. In fact, more often than not, the host vehicle's original carburettor manifolds can be retained, although it's worth noting that twin bodies can also be a direct-to-head fitment.

Direct-to-head bodies are exactly as their name suggests. In other words, no manifold is used. Instead, the end of the throttle body is machined to fit the inlet face of the cylinder head. The advantage of doing this is that the angle the throttle body sits against the head can be tailored to best suit the angle of the inlet port – the more direct airflow, the better the efficiency – unlike a carburettor manifold, which has to sit ninety degrees to the head.

The best 'no compromise' solution is a set of single throttle bodies. Each cylinder has its own standalone throttle body, a feature of many classic Porsche motorsport machines. A separate manifold is designed specifically for the engine

to be used with single-bodies, allowing for greater accuracy in terms of port and angle-matching to the cylinder head. The size, shape and length of a single-body can be fine-tuned to achieve the best mixture path for the required application. Single-bodies also offer you the opportunity to run multiple injectors per cylinder.



## LENGTH

The length of the inlet tract (the distance between the inlet valve and the end of the trumpet) plays a crucial role in throttle body design, impacting the speed intake air can travel at. With this in mind, it should come as no surprise to discover the biggest cause of disappointment among users of throttle bodies is a system specified to the incorrect intake tract length, resulting in a loss of up to a third of the potential increase in power.

The ideal length for an inlet tract will depend on accompanying engine modifications, but the general consensus is that a longer system will produce more torque and mid-range power, while a shorter system will move the peak torque and power figure further up the rev range. With a system installed which is too short for the application, users tend to find peak power and torque so far up the rev range that the engine simply can't reach them.

Obviously, the available space in an engine bay will influence the length of inlet tract that can be applied, but as a rule of thumb, always opt for the longest system you can get away with. For example, an inlet tract of 350mm is ideal for an engine revving to 9,000rpm, whereas an inlet tract of 175mm would be better suited to an engine revving to the 18,000rpm mark.

In addition to adjusting the length of the inlet tract through the physical size of the throttle body, different length trumpets and manifolds and, if necessary, spacer plates can be used to reach the desired measurement.





## TAPERED/PARALLEL

There are two main types of throttle body design: tapered and parallel. As its name suggests, a parallel design features a butterfly with the same diameter on both sides. Tapered bodies, however, are tapered along their length, with a diameter decreasing as it gets closer to the cylinder head. Essentially, this turns the entire inlet system into a big 'trumpet', which we'll describe in a moment. The advantage is a constant increase in air speed — as the diameter of the throttle body gets smaller, air needs to accelerate in order to pass through it. This activity delivers a smooth, progressive acceleration of air speed, which is ideal for high-revving engines.



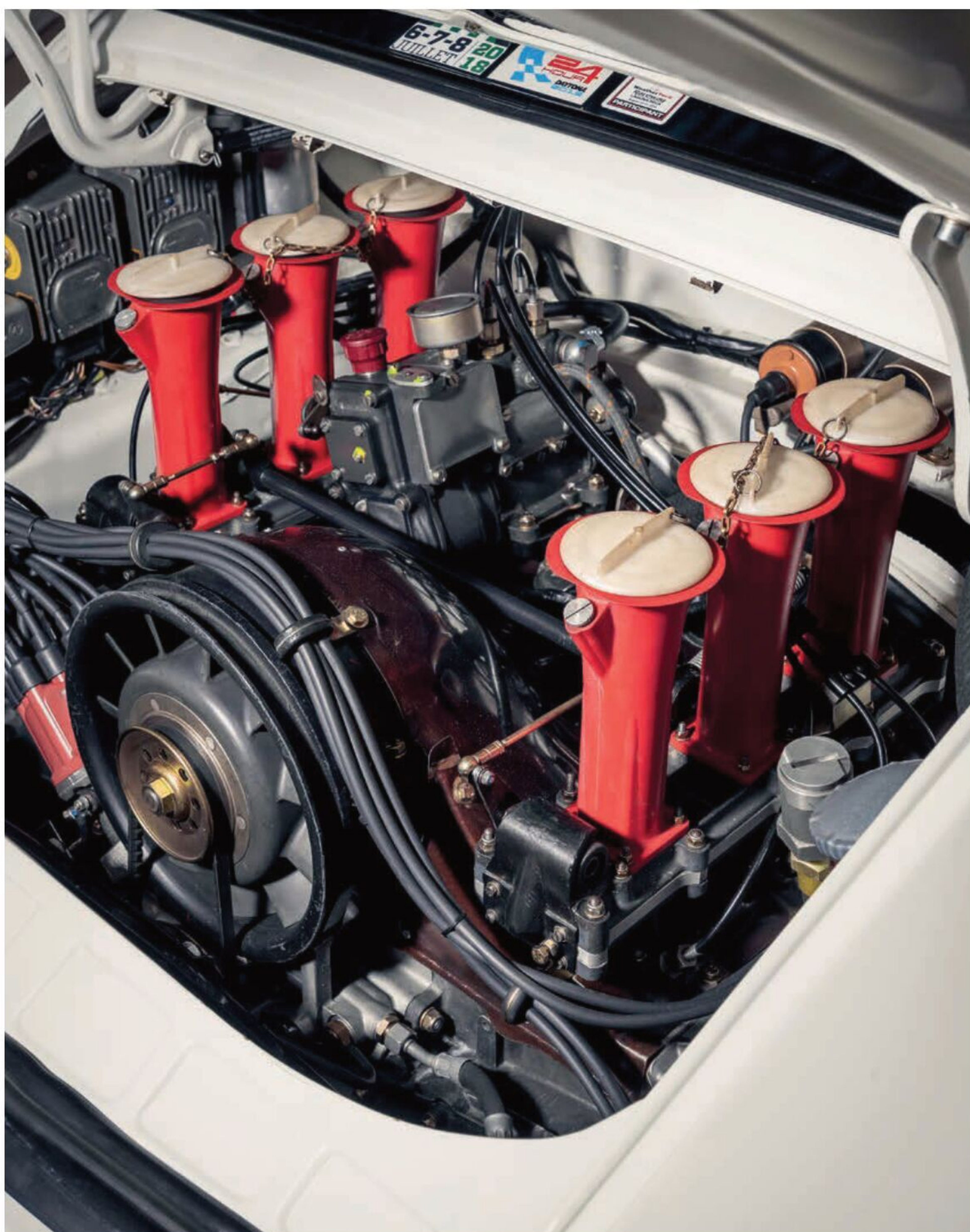
## TRUMPETS

Also known as air horns, velocity stacks or bell-mouths, throttle body trumpets play an important role in how air enters the engine. They channel air from the surrounding atmosphere into the induction system.

There is, of course, a pressure difference between the induction system (which is operated under a vacuum caused by the host engine's intake stroke) and the surrounding atmosphere (which is, of course, at atmospheric pressure).

Trumpets need to be able to provide a smooth route for the air to enter the induction system, with minimal energy loss. The way trumpets taper from a large diameter to a smaller diameter helps accelerate air into the engine, delivering the required air speed whilst providing a smooth progression to the next part of the induction system. The atmosphere end of a trumpet tends to be large in order to provide the biggest area for air to enter the intake system.

The narrower end needs to be the same size as the throttle body in order to prevent unwanted 'steps', which can cause turbulence and airflow disruption.





## BUTTERFLY AND INJECTOR POSITIONS

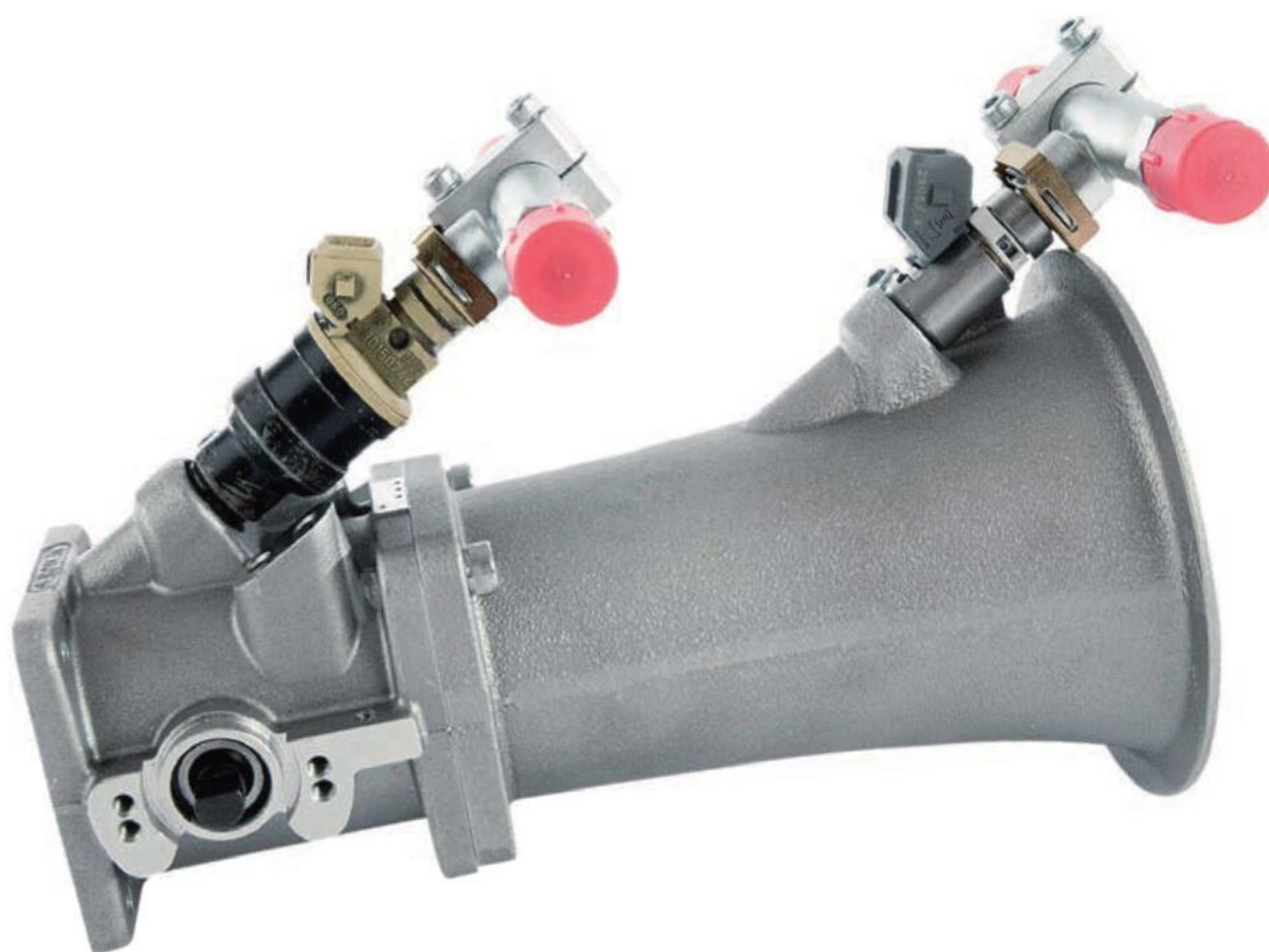
When it comes to optimising the mixture of air and fuel, the position of the throttle butterfly and injector(s) in the inlet tract is vital. If either is positioned too close to the inlet port, the distance for the air and fuel to be mixed is shortened. In truth, you probably wouldn't notice this condition at low rpm, but at high rpm, the air and fuel might not have the required time and space to mix effectively, resulting in impaired performance. Similarly, moving the butterfly and injector(s) too far away from the inlet port will have a negative impact on throttle response. Throttle body designers have to find an acceptable compromise.

As with a single, larger throttle body, the further away from the inlet port a butterfly and injector are, the more space the air and fuel mixture needs to fill before reaching the cylinder. This increase in time produces a delayed throttle response. Most production vehicles have their injectors positioned as close to the inlet port as possible in order to achieve good performance at low rpm, not to mention better fuel efficiency and lower emissions. The time available for the air and fuel to mix at high rpm, however, is reduced.

With regard to where the injector(s) sits in relation to the butterfly, many accept the optimum position to be immediately after the butterfly (engine side) — turbulence created as air passes the butterfly helps the air and recently-injected fuel to mix, delivering near-optimum results at both ends of the rev range. By moving the injector toward the end of the trumpet, you'll give the air and fuel more time to mix, which as we outlined earlier in this feature, gives great results at high rpm, but decreased drivability and throttle

response at lower engine speeds.

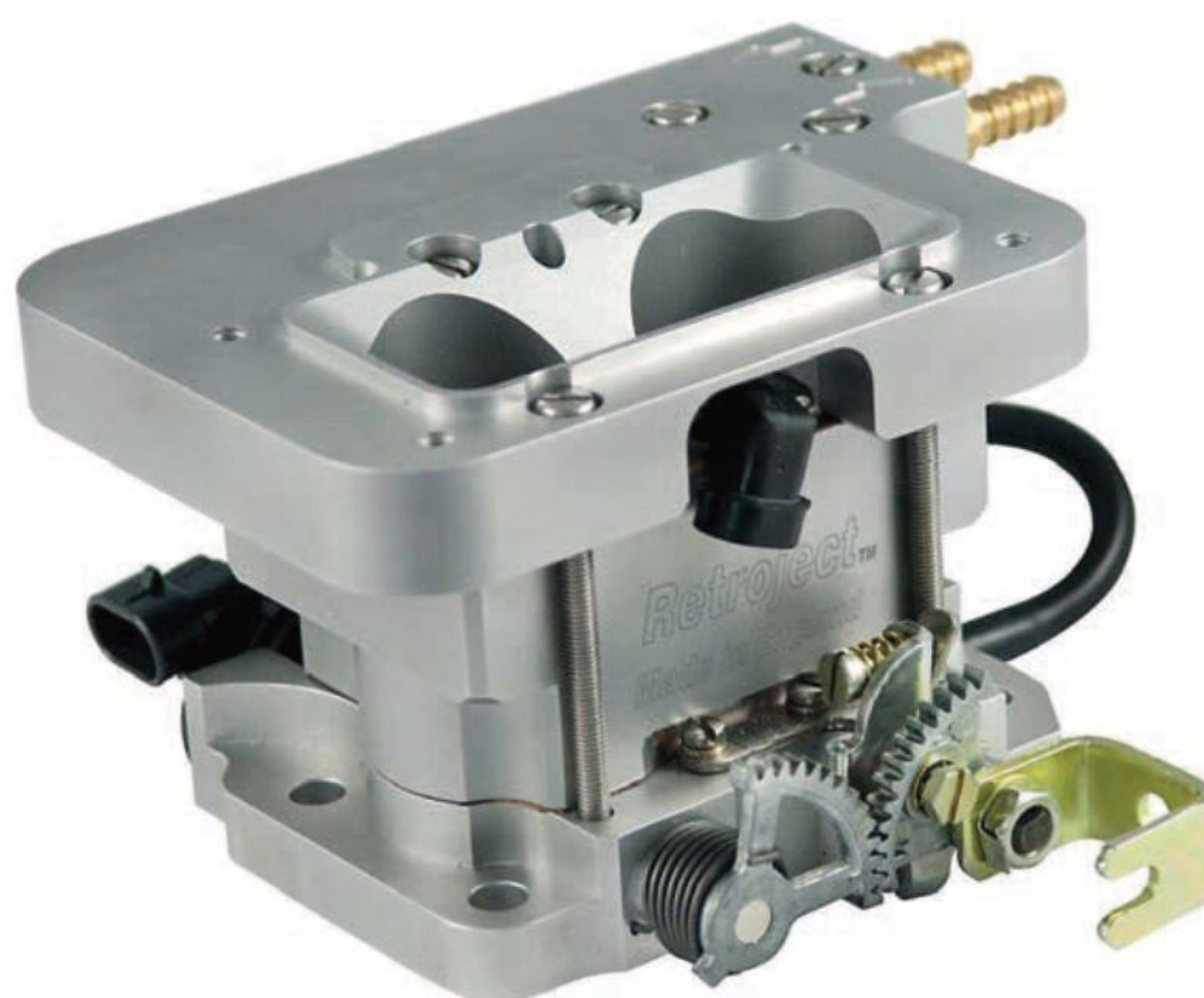
Multiple injectors per throttle body will usually see a pair of injectors mounted directly next to one another. In some motorsport and high-performance applications, the injectors are moved to each end of the inlet tract. This is because fitting a single injector close to the inlet port and another further up the trumpet provides a balance between low throttle response and high rpm power — the injector closest to the port provides instant throttle response, while the injector further up the trumpet allows the air and fuel sufficient time to mix, resulting in optimum power at high rpm.



## FROM CARBS TO EFI

Thanks to the new Weber Retroject throttle body from Britain-based fuel system specialist, Webcon, converting your carburetted classic to electronic fuel injection has never been easier. Essentially, Retroject is a dual injector throttle body designed to directly replace the Weber 32/36 DGV and 38DGAS. The critical dimensions are identical (height 86mm and mounting stud hole centres of 93x46mm), including positioning of throttle lever and throttle rotation, meaning it will be quick and easy to remove a Weber twin-choke carburettor, bolt on the Retroject unit and connect the linkage, before adding an aftermarket ECU, loom and a high-pressure fuel supply, such as the optional Webcon WFP600. All that's needed thereafter is a rolling road session to map the ECU. In doing so, you will then have the power, drivability, torque and economy of a modern EFI system on your classic Porsche. It really is as simple as it sounds — no messing about with new throttle linkages, new air filters or new inlet manifolds. Retroject is supplied complete with two genuine Weber 480cc/m PICO fuel injectors, throttle position sensor, air temperature sensor, idle motor, 3bar fuel pressure regulator and two straight 8mm fuel unions (90° angled unions are also available). There is no

vacuum take-off for distributor advance, but if this is required, a drilling is provided in the base of the unit for you to take advantage of. For further information, and to place an order, visit the Webcon website ([webcon.co.uk](http://webcon.co.uk)) or your nearest authorised Webcon dealer. Ask or search for part number ATB400.





## DIAMETER

Power, rpm, cylinder head design (and capacity), the position of the throttle body in the inlet tract and the position of the injector(s) all affect the size of the throttle body used. The key to success is keeping air speed correct for the intended application. Higher-revving, small displacement engines will require high air speed, but not necessarily the need to flow a large volume of air to fill each cylinder. In other words, a smaller diameter throttle body is all that's needed to keep air speed at the required rate. Conversely, air speed doesn't need to be anywhere near as rapid when entering a larger, lower-revving powerplant. Filling each cylinder with air is a more important consideration than the speed at which the air is travelling, hence the use of a throttle body boasting a larger diameter.

As you can see, there's a direct relationship between the diameter of the throttle body and the air speed. Although camshaft profiles and exhaust designs play their part, the basic relationship is recognised as 'the smaller the diameter, the higher the air speed'.

That said, the smaller the diameter, the less air that can be



sucked into the engine, which may prove problematic when dealing with engine tuning. This is because the amount of air your classic Porsche's engine requires increases in accordance with the amount of power you ask it to produce. Throttle bodies with a small diameter effectively restrict the flow of air, regardless of the speed it's travelling at. At this stage, a throttle body too small for the application chokes the engine.

## CLASSIC-LOOK EFI THROTTLE BODIES

Jenvey Dynamics recently announced a brand-new product guaranteed to excite air-cooled 911 owners and enthusiasts, as well as professional classic Porsche tuners and restorers. Completely designed and manufactured in-house at the company's Shropshire headquarters, new Jenvey IDA3 Heritage throttle body kits are a natural progression from the firm's exceptionally successful DCOE Heritage throttle bodies released in 2017. Boasting all the plus points associated with individual throttle bodies, the Heritage line-up maintains the understated looks of a period carburettor induction set-up, ensuring the kit won't appear out of place in the engine bays of a classic Porsche.

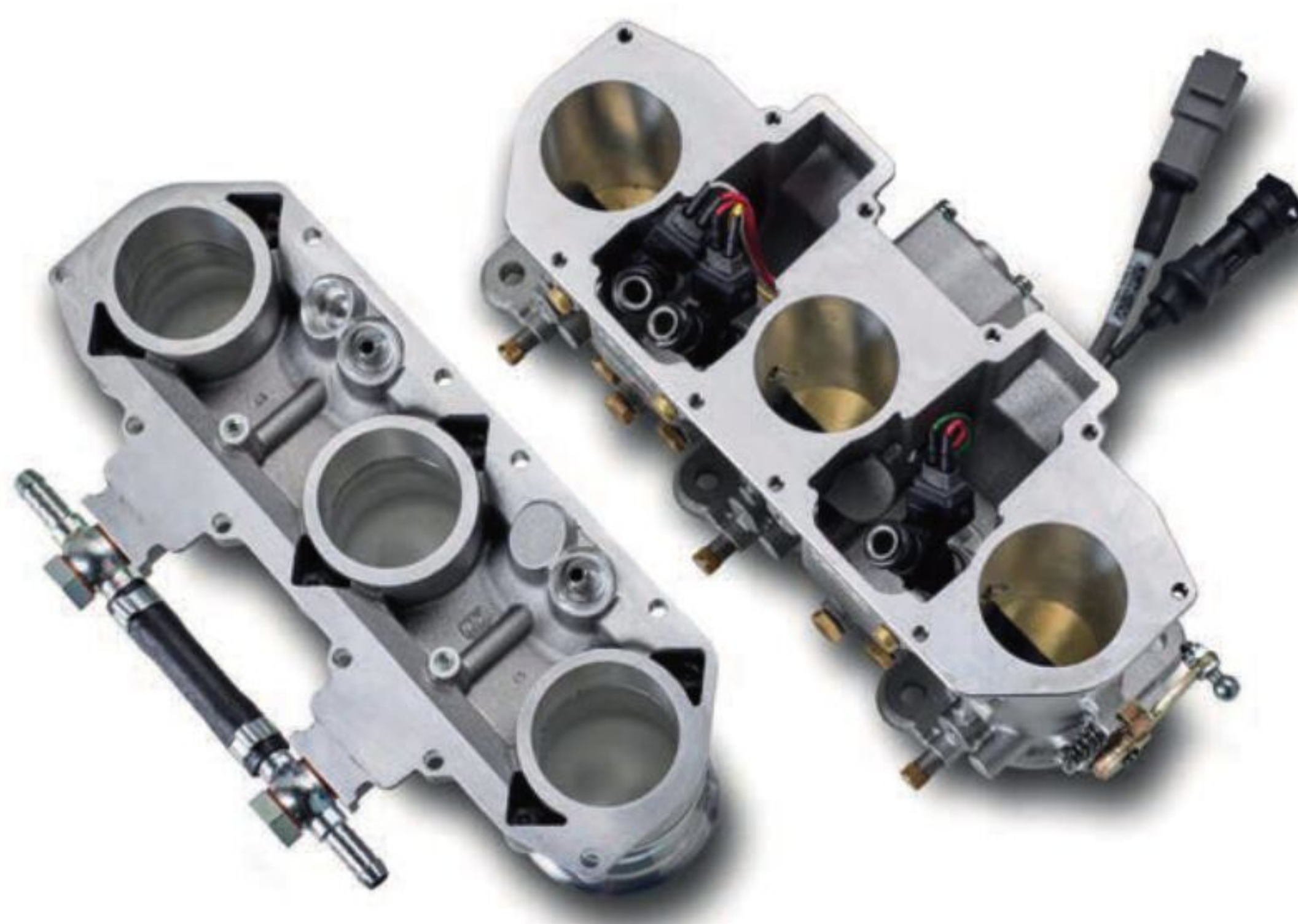
"The advantages of modern, electronic fuel injected intake systems are simply too hard and too numerous to ignore," says Jenvey's Managing Director, Mike Jenvey. "A reliable, unbroken flow of air, extremely accurate control via advanced standalone ECUs, easy starting in all seasons and, of course, more power and economy, are just some of the benefits. The sole downside on an air-cooled Porsche installation, up until now, has always been the aesthetic — many owners of classic 911s have been dissuaded from adopting throttle bodies due to an unwillingness to compromise the factory look of their car's engine bay. With the increase in popularity of the classic Porsche market and heightened demand for the benefits of an electronic fuel injected intake system, however, our IDA3 Heritage throttle body design addresses improved performance with satisfyingly OEM visuals."

The level of finish exhibited by the IDA3 Heritage throttle body is a direct result of an intensive development period prior to bringing the product to market, efforts which saw Jenvey collaborate with Rothsport Road and Race, one of the USA's leading Porsche engine tuning specialists. This relationship saw the throttle body extensively road and dyno tested on Rothsport's own development 911, with the resulting data ploughed right back into the project. Further development in the UK confirmed fantastic performance and drivability gains. The end result is a throttle body which looks perfectly at home when bolted to the top of an air-cooled flat-six, yet manages to function in a manner previously reserved for more modern induction systems. Indeed, Jenvey's attention to detail is evident in every aspect of the IDA3 Heritage throttle body design, with the completely hidden fuel injectors and throttle pot being

prime examples of how the company's engineers remained sympathetic to OEM Porsche looks throughout the development process.

The new Jenvey kit provides notable increases in power across the rev range, improved fuel economy, less laboured starting and enhanced engine sound. The company has made sure to offer the kit for the two-bolt flat-six with 35mm (two-litre to three-litre engines) and 39mm (Carrera 3.2) port sizes married to a 42mm and 45mm throttle body respectively. The smaller throttle bodies use 250cc Bosch injectors, whilst the 45mm throttle bodies use a 350cc Bosch injector. 60mm long airhorns are available with a bolt pattern matching the original. A three-bolt kit with a 41mm port size for the 964 is currently in development, utilising 45mm bodies and a cross-linkage clearing the standard host Porsche's fan shroud.

Jenvey's IDA3 Heritage kits include manifold with heat insulators, IDA3 Heritage throttle bodies, electronic fuel injectors, integrated fuel rail, cross-bank floating linkage (to allow for engine expansion), throttle position sensor and air horns. Various filtration options are available to suit each application. Visit the Jenvey Dynamics website at [jenvey.co.uk](http://jenvey.co.uk) for further information.





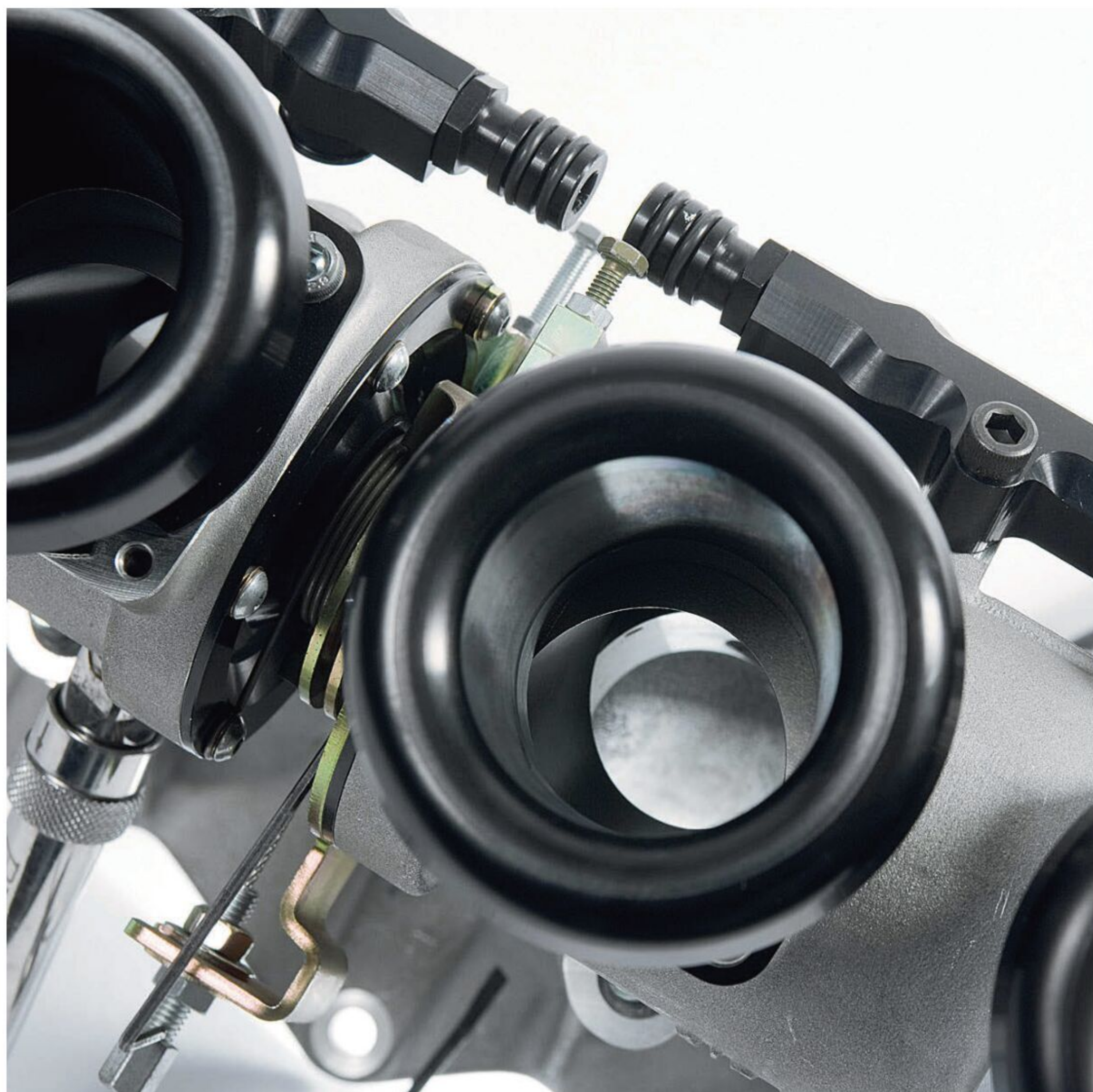
## BARRELS AND SLIDERS

Barrels and sliders work on the same principle as regular throttle bodies, but without a throttle butterfly. Instead, either a roller barrel or slider mechanism is used to control the amount of air allowed to enter the engine.

Roller barrels are best described as two tubes, one inside the other. The sides of the outer tube feature holes (usually 180° apart) which allow air to enter and exit. The inner tube will have the very same holes machined into it, but all holes will be closed as the inner tube rotates inside the outer tube. In practice, with the throttle closed, the inner tube will rotate fully so that all holes in the outer tube are completely blocked. Slider throttles use exactly the same method, but in a linear fashion instead of operating rotationally.

The primary benefit of barrels and sliders is a complete lack of airflow obstruction at full throttle. With a butterfly, even at full throttle, the air still has to manoeuvre around the butterfly itself, which causes turbulence. That said, there are arguments for and against barrels and sliders, and the same for throttle butterflies. Regarding the former, the consensus is that barrels and sliders work best at full throttle, but you have to accept a slight loss of power low down in the rev range. As for a throttle butterfly,

some adopt a train of thought suggesting turbulence caused by air working its way around the part is more effective at encouraging air and fuel to mix quickly. The trumpet allows the air and fuel sufficient time to mix, resulting in optimum power at high rpm.



## TURBOCHARGING

Although usually associated with normally aspirated engines, throttle bodies can work well when applied to some forced induction powerplants. The throttle bodies will need to be enclosed in their own plenum (chamber) to hold boost pressure, but the same principles apply as if you were fitting throttle bodies to an engine free of a turbocharger. The only difference is that when adding throttle bodies to a turbocharged engine, instead of relying on the pressure difference between engine intake stroke vacuum and the surrounding air, the latter is boosted at greater pressure and is forced into the throttle body.







## PORSCHE HERITAGE THROTTLE BODY

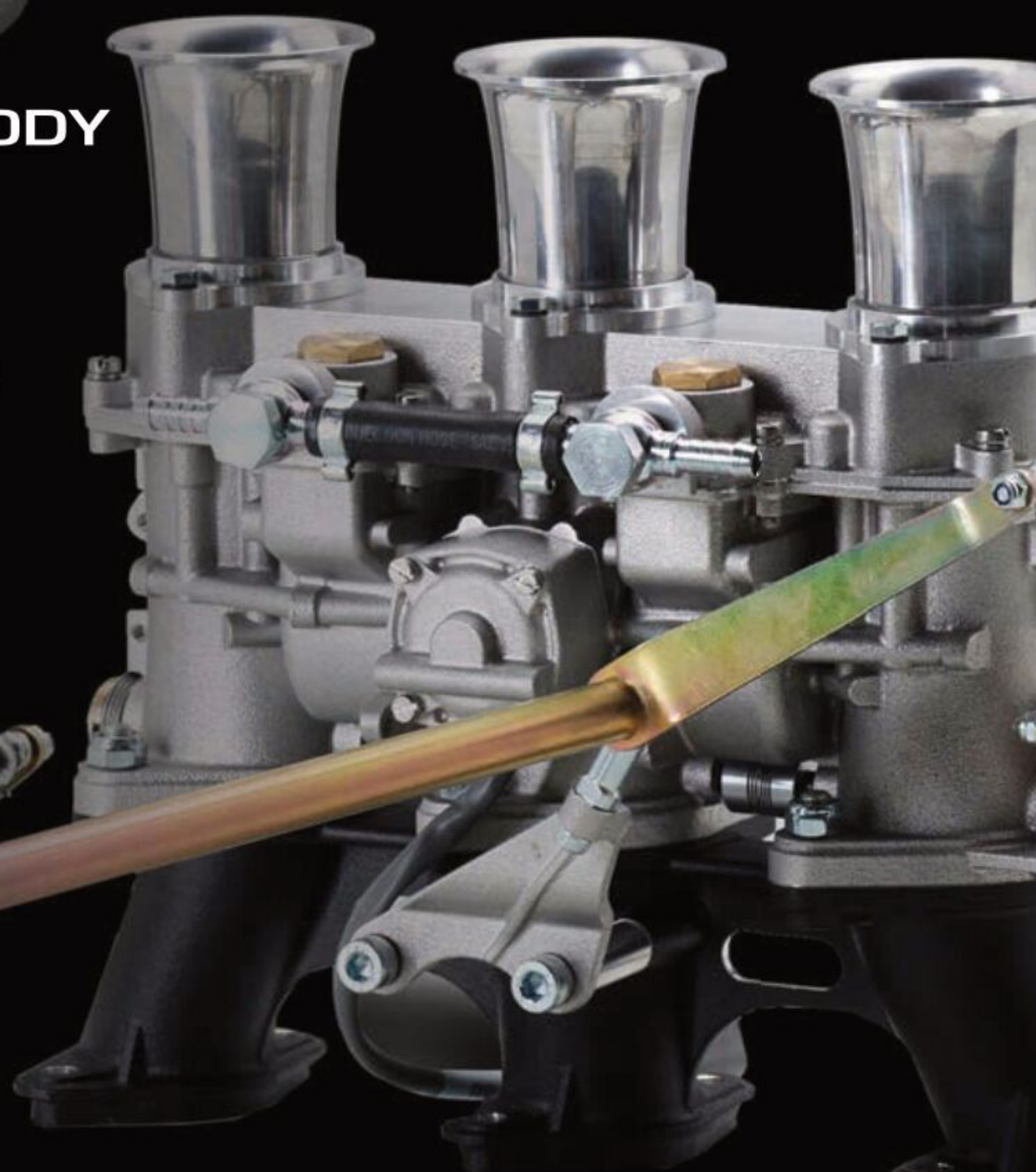
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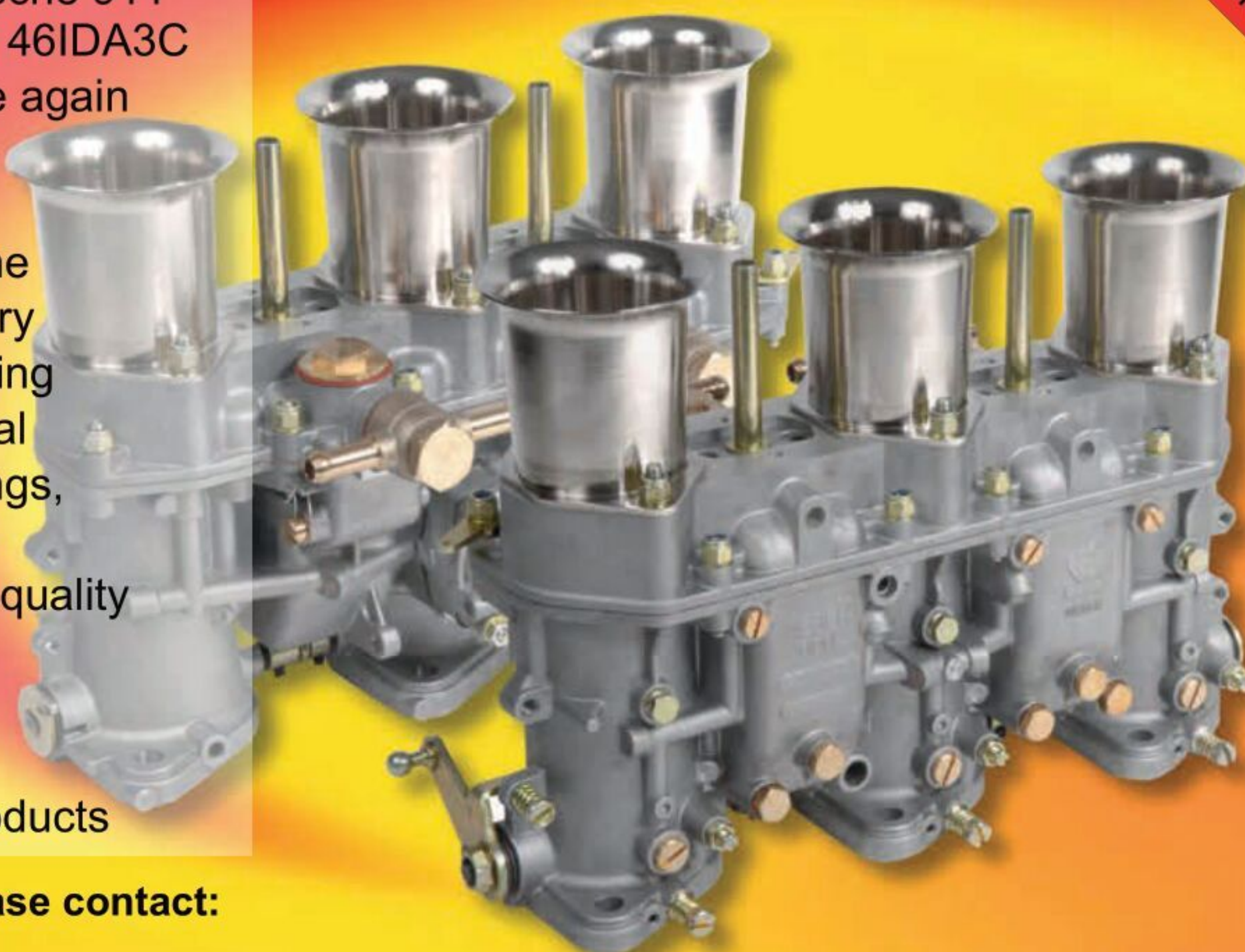
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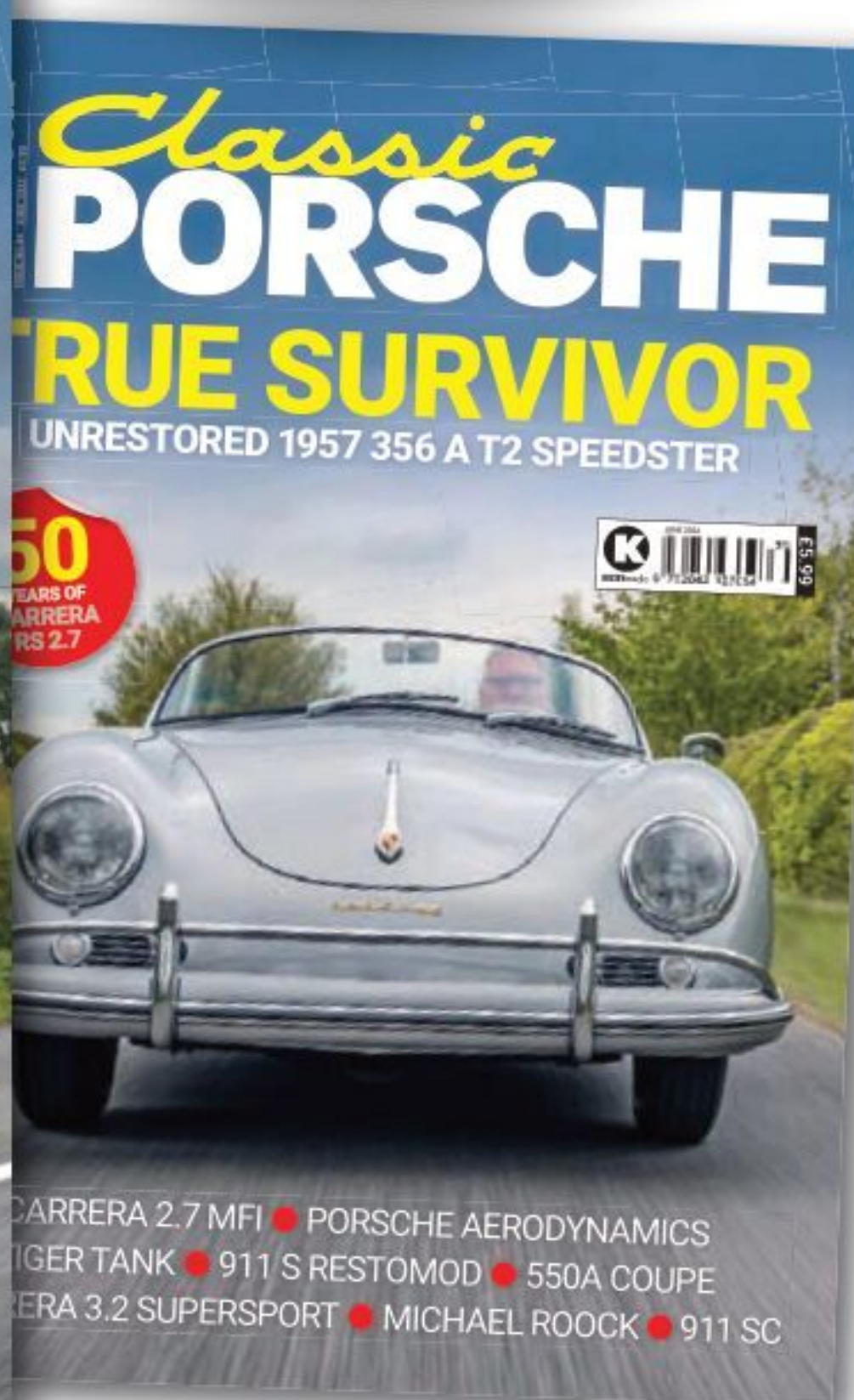
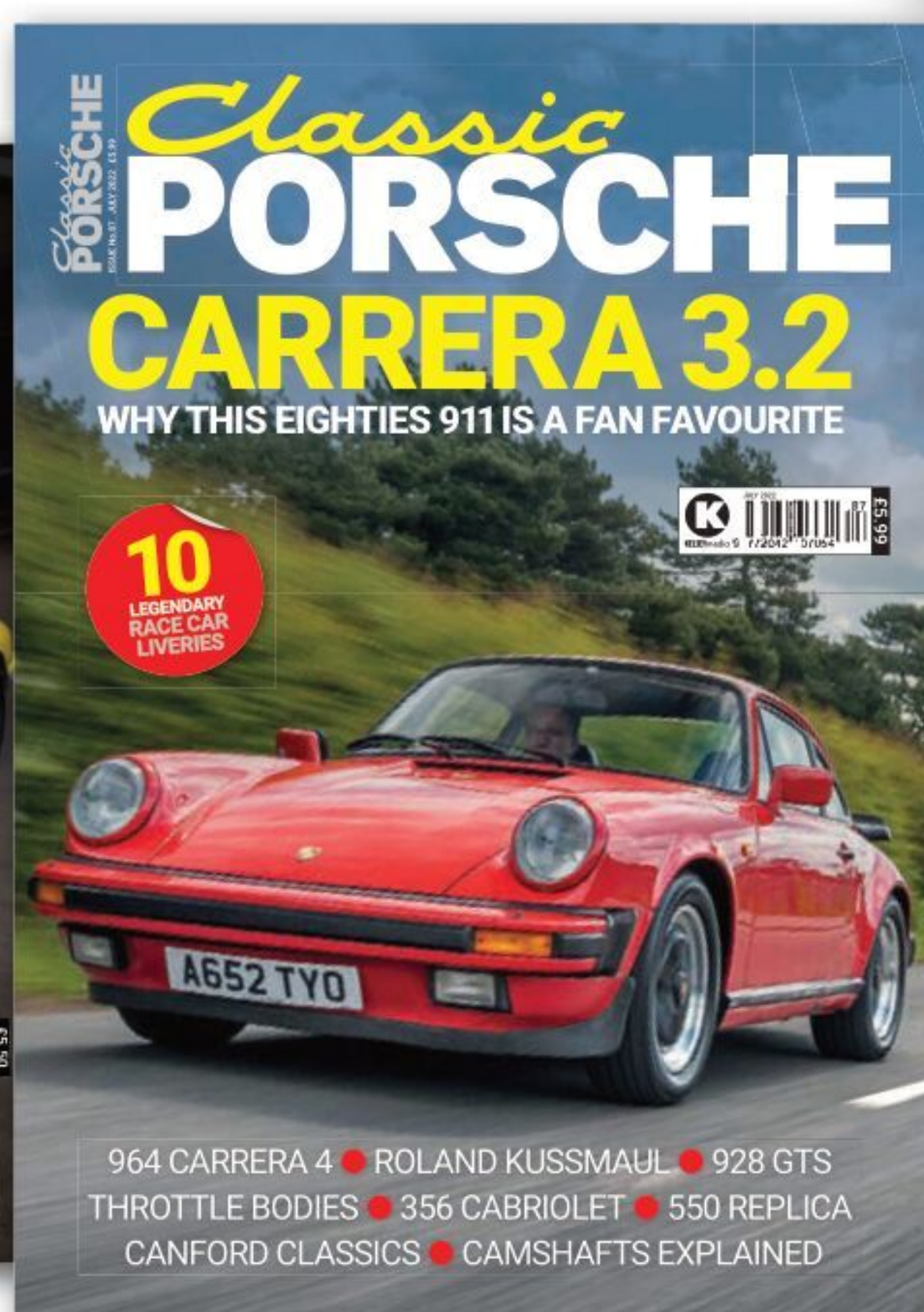
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**£4,750.** Very Tidy Porsche 924 with 1 years MOT and ready to drive away. Its only done 53000 miles with mots to back up the mileage. The car has had a good bit of money spent on it since 2019 and it runs and drives very well. We have one set of keys, the V% and lots of old MOTs and receipts and a service book with stamps at 48500. 48600, 49000 and 50000 miles. Please call 01875 820527, Scotland. (T)  
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### PORSCHE 928



**1990, 165000 miles, £29,928.** Porsche 928 S4 auto 1990. Restored by Porsche Portsmouth and Porsche approved Poole body shop for Porsche UK 40 YEARS AT THE FRONT DEALER COMPETITION IN 2016. Very rare in special order Tahoe blue, even more rare is having in excess of £55000 spent in restoring it bodily and mechanically. Done 165k with a large documented service history, all books and receipts showing over £55k being recently spent in bringing the 928 back to its former glory. Everything works on car as you would expect! Full extensive photographic record of epic restoration. Been mainly looked after by Porsche main dealers for the last 5 years, done several hundred miles since restoration. , Scotland.  
113608



## PORSCHE 912

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### PORSCHE 928



**110000 miles, £29,999.** coupe (pre-S- model). auto, a very desirable car light blue metallic with royal blue leather, full-service history, Porsche UK authentication certificate. Please call 01452 731289, South West.

110220

### PORSCHE 944



**1990, 133000 miles, £12,950.** 944S2 Cabriolet, Guards red, black interior. Lovely condition, total 3 owners, dotting last one for 29 years. Every document for that period. Serviced at Northway Porsche, always garaged. MOT to February 2023. Please call 07711703542, South East.

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### PORSCHE 944



**1990, 186000 miles, £20,995.** As featured in 911 and Porsche World, late model 952 (250hp) with FSH, cream leather, M030, genuine original car, loved by me (4th owner) for 19 years. Drives beautifully, fabulous condition which belies its mileage. Please call 07710094124, East Midlands.

113444

### PORSCHE 944



**1989, £13,950.** 944 S2 Cabriolet. Lovely Looking Appreciating Classic in Black over Cream Leather Interior. Please call 07835 877345, South West.

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### PORSCHE 944



**46000 miles, £13,950.** 944 S 16V Coupe.

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113141

### PORSCHE 944



**1991, 16999 miles, £16,999.** 944 3.0 Cabriolet S2. 5 speed manual, 92k miles, service history, 4 keepers, fully specification, Baltic bleu metallic pain with linen coloured interior, new blue mohair soft top. Please call 01452 731289, South West.

110219



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**1994, 170000 miles, £20,000.** 1994 Porsche 968 Sport C16 Clubsport Chassis car originally supplied with the CS Lux Pack and since reversed to Club Sport Spec. Only offered to the UK market and just 306 produced, this is a superb example of the now rare 968 Sport. Please call 07851694637, North West.

112441

## PORSCHE BOXSTER



**2006, 67000 miles, £11,250.** My car is in Arctic Silver with Sand Beige leather interior, registered in November 2006. It's a Tiptronic with Sport Chrono which is a "must have" option with the auto as it makes it more lively and responsive than without. It's in great condition. There's a few stone chips on the front but no rust and she benefits from many optional extras some of which are rarely optioned on a Boxster. Please call 07909923202, South East

11370

## PORSCHE BOXSTER



**2003, £9,750.** 2003 Porsche Boxster 3.2 S. Metallic Basalt Black with Black leather and Black power soft top. Facelift model with the glass heated rear window and clear indicator lenses. 6-speed manual, power steering, ABS, Porsche stability management, automatic air-conditioning, headlamp wash, factory alloy wheels, xenon headlights, Bose sound system with CD stereo, wind deflector, electric windows and mirrors, electric seat recline, remote central locking and alarm with 2 keys. Only 74,000 miles with full service history from new. Extremely nice condition throughout. Please call 01277365415, East of England. (T)

113353

## ADVERTISING INDEX

356 Panels	44	Longstone Tyres	99
Adrian Flux	113	Mittelmotor	16
Art Wheels	113	Paragon GB	21
Automotion	33	Patrick Motorsports	87
Benton Performance	81	Perma-Tune	87
Beverly Hills Car Club	23	PIE Performance	17
Canford Classics	69	Prill Porsche Classics	32
Car Bone	35	Quorn Sports & Classics	81
Christopher Ward (London)	115	Reap Automotive Design	87
Coco Mats	75	Restoration Design Europe	53
D'Eser Vintage Sports	16	Roger Bray Restorations	44
Dansk	116	RSR Independent	87
Design 911	25	Sportwagen Eckert	27
Early 911S Registry	113	Stoddard	29
Elephant Racing	31	Stomski Racing	5
Export 56	61	Tandler Precision	4
Fibersteel	45	Webcon UK	107
FVD Brombacher	2		
Gaswerks Garage	4	<b>Classifieds</b>	
Go Classic	81	Classic Passion 911	
Group 4 Wheels	35	Eisenbrandt	
Hayward & Scott	16	Lancaster Insurance	
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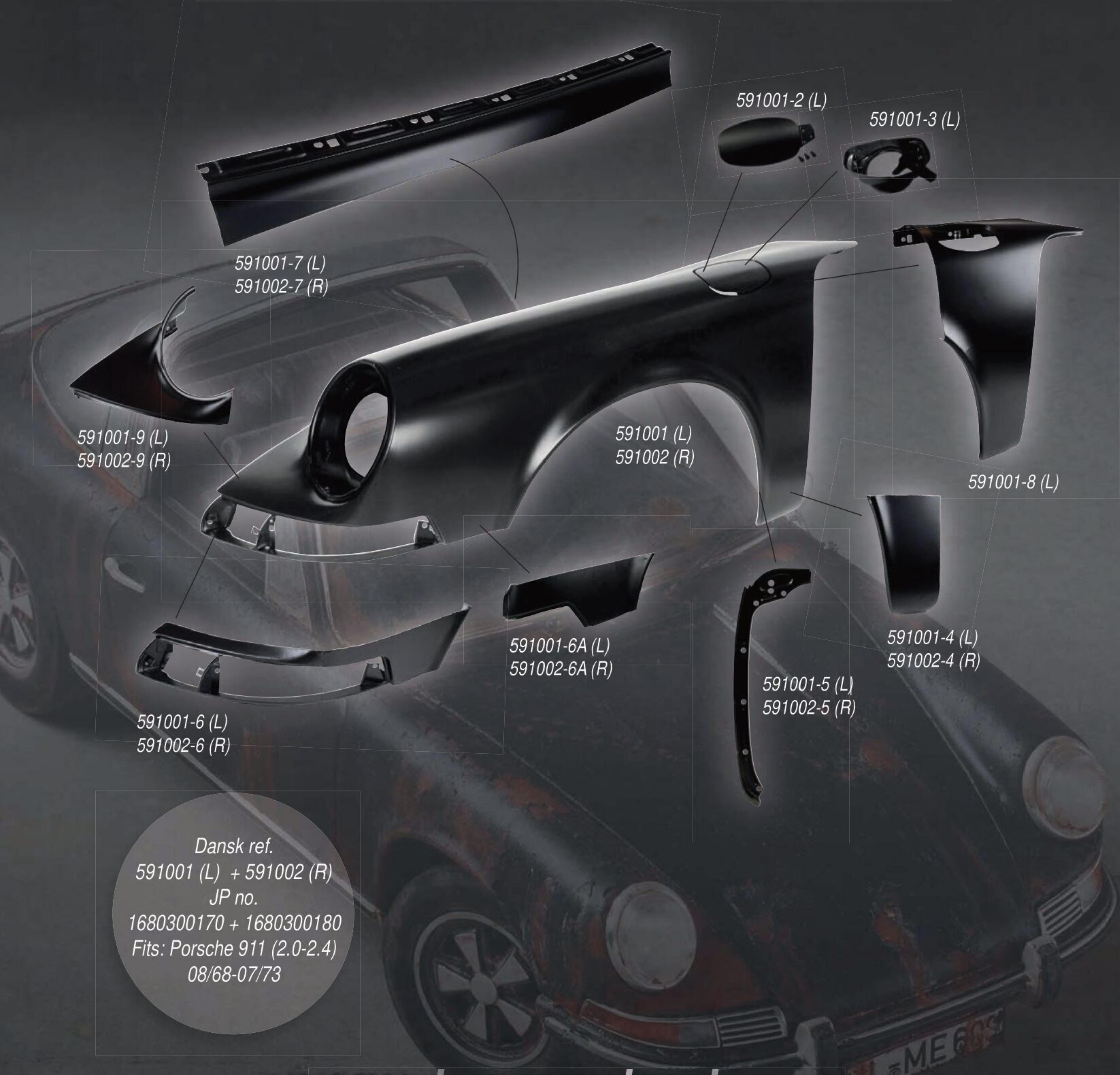
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