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ISSUE NO.80 OCTOBER-NOVEMBER 2021

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Classic PORSCHE

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GOLDEN BROWN

When I first met Mick Pacey, head of classic Porsche sales and restoration specialist, Export 56, I wondered what his personal car was. Considering he's a man steeped in sourcing some of the world's rarest air-cooled classics for private personal collections, I figured he was either riding around in a decidedly non-Porsche sports car — perhaps citing driving Stuttgart-crested machinery as something of a busman's holiday — or would wow me with one of the most sought-after vehicles to roll out of Zuffenhausen. Or, maybe, the wood shed at Gmünd.

You can imagine my delight when Mick presented the 911 you see gracing the cover of this magazine, more or less as soon as I revealed I was planning to shout about the Carrera 3.0's forty-fifth anniversary. The subject of low volume production for a limited period before the arrival of the big-selling SC, it's a 911 few people outside Porsche circles know exists, meaning it's not a car in high demand, but blending much of what came before (not least the Carrera RS 2.7) and setting a template for the SC and its successor, the Carrera 3.2, the three-litre Carrera is, in many respects, the smart choice when it comes to buying an air-cooled 911.

I didn't waste time arranging to point a camera at Mick's metallic brown beauty, which, as you'd expect from a man renowned for turning out award-winning restorations, is a superb example of the lesser spotted model. Mick's personal Porsche is also notable for being one of a small number of Carrera 3.0s in right-hand drive.

Were I looking to add another Porsche to my fleet, I'd certainly be considering a Carrera 3.0. It might not be the most powerful of air-cooled 911s, but, in many respects, it's one of the highlights in the model's bulging back catalogue.

Dan Furr Editor
@DanFurr

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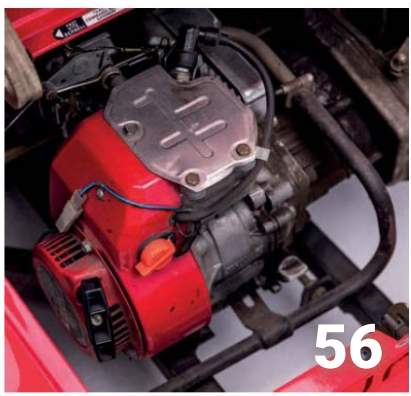


REGULARS

COCKTAIL SHAKER

Sweet, spicy and smooth — that's Green Chartreuse and words aptly summing up our mouth-watering 911 backdate. Join us and sip the nectar…

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

A subtle blend of period Porsche looks and components, this Green Chartreuse cocktail is as tasty a performer on the open road as it is in the looks department. A 911 ST lookalike, it started life as a right-hand drive 1976 impact bumper 2.7, meticulously backdated into a customised pastiche of a 1972 ST. Completely stripped back to bare metal and then methodically rebuilt over a ten-year period, the result is absolutely stunning. It's the brainchild of Suffolk-based civil engineering contractor, Jeff Hall, and leading Porsche techie, Mike Roberts, and the shell evokes the racing 911 ST through the appointment of period-correct flared steel wheel arches, plus fibreglass bumpers front and rear. This was love at first sight for lifelong marque aficionado and Cromer resident, Dave Harvey, who recently bought the car from Oli Tappin, proprietor of nearby Porsche sales specialist, Bure Valley Classics.

"It's a Jeff Hall and Mike Roberts special," explains Oli. "It took a decade to complete, but that's the thing about all Jeff's creations — none of them are undertaken as a commercial project, meaning there's no deadline to observe. He's got various cars in-build at the same time, none built to client specification. He simply builds them for fun. With this car, he assembled it, covered a few miles and, typically, had another project waiting in the wings. Occasionally, he offers finished projects for sale, and if you dig what you see, you can make him an offer." Enter Dave Harvey, who explains he's been into

Porsches all his life. "I established a car sales business, Performance Cars, on Walford Road in Northampton, when I was twenty-three years old, and soon bought my first 911," he reveals. I'm sure Dave won't mind if I tell you this was the early 1970s, halcyon days of the 911. It's obvious why he adores the ST aesthetic. Later, he built a succession of similar businesses and developed a fancy for Italian speed machines. "I've got a Ferrari, but it's too much like hard work to drive, whereas a 911 is much easier to live with, especially at my age!"

The green wide monster had a comprehensive nut and bolt rebuild expertly carried out by Mike, who's located at Performance & Classic Cars, based at North Norfolk's largest business centre, Scottow Enterprise Park, on the former site of RAF Coltishall. Here, he works with the company's Managing Director, John Timewell, on a number of classic Porsche projects. As far as this brightly coloured backdate is concerned, it's fitted with a fully sorted Carrera RS 2.7 flat-six, complete with magnesium casings, new barrels and fresh pistons. Unsurprisingly, a new clutch was fitted and there's a CDI+ ignition unit from Classic Retrofit, a company specialising in the modern electronic upgrades for vintage Porsches. The tinware claddings are now amber in hue, and a correct 1974 Bosch mechanical fuel injection pump is installed. There's a front-mounted oil-cooler, the exhaust system includes SSI heat exchangers and the Turbo Thomas exhaust box is gas-flowed. As for the running gear, one of the car's most striking features is the Aurum-gilt Group 4 Wheels Campagnolo fifteen

inchers (eight inches of width at the front, eleven at the back) shod with chunky Michelin TB15 rally tyres. This particular rubber is great on wet roads and is perfectly suited to historic rallies, but it's by no means faultless — the slight downside is that when TB15s get hot, gravel sticks to the tread, scattering it around the inner wheel arches. It is, however, impressively grippy on the warm July day we've lucked into.

INTO THE DRINK

Suspension-wise, the rear struts have been reinforced in accordance with an Elephant Racing suspension set up, comprising Bilstein coilovers, as well as poly-bronze bushes, bearings, spacers, strut brace, spring plates, bump-steer kit and shock tower reinforcements. At the front, petrol is contained in a hundred-litre centre-fill fuel tank, while the Fuchs spare is retained by an ST-style strap. Within the cabin, we find a straightforward stripped interior, appropriate for the early 1970s competition car aesthetic. BF Torino bucket seats — finished in black leather and shrouded by Sabelt four-point harnesses — are joined by an OMP half roll-cage, a lightweight carpet set, wind-up windows and RS-style door cards with canvas pull-openers. In a further nod to supposed competition use, the gauge binnacle lacks a clock, the radio is deleted, there's a fire-extinguisher on the passenger floor and a MOMO Prototipo steering wheel gives the car a genuine sporting feel. It's nice to see the instrument panel finished in the same zesty green as the exterior.

This was an expensive conversion, carried out over a long period. Surely, it's a hot rod? Well, no, not really. In my opinion, it's too much of a quality production to be dismissed as a backyard bruiser. Okay, then. What's the muse behind the Chartreuse cruise? We're in fairly esoteric territory here. If you're already scratching your head wondering what a 911 ST actually is and how it stacks up against the more familiar RS, how about the TR? Here's the background.

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, the standard 2.2-litre S became the base model for tackling the touring car race and rally scenes. This iteration of 911 is widely identified as the ST. And while the rally cars retained standard engines, racing

Above Mean, green and sounding obscene, this superb backdate started life as a 1976 911 2.7, complete with impact bumpers

Above and facing page
BF buckets can be awkward to slide in and out of, but they're super-comfortable and hold occupants firmly in place when the car is being pushed hard around corners

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. This may not sound radical compared with what came subsequently, but it was early days, and small increments made for considerable gains. It's likely fifteen examples of the 2.3-litre ST were built in race and rally form, with a further twenty-three units of the 2.5-litre ST designated as race cars. Like the TR, the ST designation was an in-house amalgam of existing model identifiers: an S engine and the lighter T chassis.

Legend has it twenty-five 'bodies-in-white' (bare shells), lighter than standard, were taken off the 911 assembly line in 1969, before being sent to Weissach to be built into race cars. The first 2.3-litre STs may well have originated from these lightweight bodies. It's also possible some of the 2.5-litre STs were built on the same. Evidently, there was far more going on with the ST than just an increase in cubic capacity. Wider wheels and tyres for enhanced grip required flared wheel arches front and rear. The solution was a delightful and fascinating mélange of materials. For example, on the early ST, the front arches were made of fibreglass and the rears from steel. The front lid and both bumper panels were assembled from fibreglass, with aluminium doors and engine lid. Apart from the front screen, all windows were polycarbonate. The rear three-quarter panels, roof and rear seat-pans were in thinner gauge steel, while all extraneous fixtures and fittings were left out, from glovebox lid and ashtray to front and rear lid locks, door and bumper trim strips. There was no sound deadening material or floor mats, and the paint was even thinned down. Apart from a competition fuel tank with central under-bonnet filler, front strut brace and brake calipers from the 908/2 prototype, the running gear was little changed. It's a purposeful looking machine, but visually, the most obvious indicator of the ST's identity is the difference in wheel types — since Fuchs didn't produce nine-inch-wide rims back then, Porsche had to look elsewhere. It found what it needed at Minilite, whose eight-spoke competition wheels (ubiquitous in contemporary touring car racing) were made of sand-cast magnesium and were lighter than aluminium.

THE FLARING OF FRONT AND REAR ARCHES IS ONE OF THE MOST SATISFYING OF ALL CAR DESIGNS

RAISING THE BAR

The 24 Hours of Le Mans is a great barometer for gauging which race cars are on the scene at any particular time, and for 1970's daylong race at Sarthe, four of the eleven 911s running were ST specification. Sadly, just one classified as a finisher (the Erwin Kremer/Nick Koob 2,253cc car, placing seventh overall). A special lightweight 911 S (featuring swirling psychedelic red and yellow livery) equipped with a bigger-bore-and-stroke 2,395cc flat-six was built for the 1970 Tour de France and driven to second place by Gérard Larrousse. The following year was, arguably, the ST's heyday, when nine STs out of eighteen 911s ran at Circuit de la Sarthe. Raymond Touroul and Andre Anselme finished sixth overall and first in the GTS class.

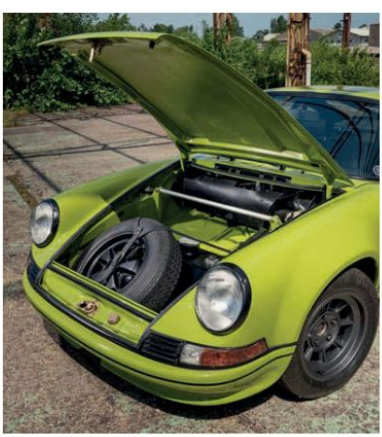
The ST's specification shifted for 1972. Appendix J permitted only the 911 S's fibreglass front bumper and embryonic spoiler to be used in the competition car, and ahead of the season, a number of 2.5-litre 911 S coupés were built for racing under option M491,

Below Spare wheel is a Fuchs held in place by an ST-style leather retaining strap

bearing the same chassis numbering as the standard 911 S, though for this reason, it's not easy to say exactly how many were created at the factory and how many were subsequently fettled to ST specification by private teams. Incidentally, it's only retrospectively this group of cars has become known as ST — Porsche management discouraged doing so at the time, though it was the engineering team's reference within Weissach. Interestingly, Jürgen Barth refers to the 1972 race cars simply as 911 S, leaving the ST back in 1970-'71, but it seems fair enough to categorise the period's competition 911 as the ST, certainly up to the inception of the Carrera RS 2.7 in 1973.

STs left the factory as race cars, although they were still usable as daily drivers. Racing 911s had yet to become too sophisticated to be used as such. The ST was followed by the RSR 2.8, essentially a race car which could be driven on the street, whereas the TR was a street car you could drive on the track. It's difficult to identify a factory build, because it could have started as a street car and, later, be sent back to the factory for conversion. Of course, this doesn't make it an original factory racer. These 1972 STs were fitted with bigger bore (86.7mm x 70.4mm) 2,492cc competition flat-six engines (Type 911/70) assigned a special serial number group mated with uprated gearboxes, improved cooling and full pressure lubrication. Suspension modifications included new anti-roll bars and harder Bilstein shocks, and a half roll-cage was located in the rear of the stripped-out cockpit. The suspension was lowered, seven-inch and nine-inch wheels were fitted (traditional Fuchs on the front and the aforementioned Minilites on the back) enclosed by the familiar swollen wheel arches, flared by five centimetres in accordance with regulations and fabricated in steel to a curvature peculiar to the ST. There were significant differences in composition to the earlier STs, and apart from the front spoiler, the rest of the body panels were also in steel or aluminium, including steel front wings and an aluminium valance between the deleted overriders, adding up to a given weight of 1,025kg.

Stylistically, what's intriguing about the ST is the way the front wheel arches marry up so beautifully with the front bumper and front valance. There's also the rather heroic swell of the rear wheel arches. In fact, the flaring of front and rear arches is one of the finest and most satisfying of all car designs, and having the classic bumpers, grilles and indicators in the wings adds to the charisma.



KNOCK IT BACK

The interior lining of the M491 cabin was black, with simplified door panelling, Recaro bucket seats, OMP four-point harnesses anchored from the rear bulkhead and a roll hoop, rather than a comprehensive cage. A smaller four-spoke steering wheel (380mm) was fitted and lightweight door linings featured thong openers and wind-up windows. The rev counter was in the conventional position, rather than being mounted

upside-down. Externally, a pair of Cibie driving lamps mounted on the front lid. The racing fuel tank was filled via a central filler nozzle and STs were delivered with Weber carburettors, but could be specified with Bosch mechanical fuel injection. Racing camshafts and pistons were incorporated, engines were blueprinted with polished intake and exhaust ports, plus a dual ignition system was fitted. In this specification, the 2.5-litre engine developed an impressive 270bhp at 8,000rpm. While our Chartreuse beauty is not an exact replica of an ST, it's close in spirit and aesthetics.

Equally, RS buffs might easily contend it owes much to the RSR 2.8, the racer which evolved almost overnight from the Carrera RS 2.7. Conceived in 1973 to contest the international Sports Racing category, where it was hoped it would be quick enough to go head-to-head with the Ferrari and Matra prototypes, the RSR 2.8 was a quantum leap from the Carrera RS 2.7, embodying the transition from 911 GTS racers to the more extreme Group 5 934, 935 and 'Experimental' 930 turbocharged specifications which entered the fray in 1976. The suffix RSR stood for *Renn Sport Rennen*, translated into English as *Motor Sport Racer*. Porsche needed to build fifty units of the RS for homologation, meaning the RSR had a legitimate basis and forty-nine copies were manufactured. The original 2,808cc RSR, complete with stripped-out cabin and built-in roll-cage, weighed 900kg and delivered 300bhp at 8,000rpm. It boasted high-compression pistons, twin-plug ignition, a bigger fuel injection pump, wider wheels, fatter tyres and flared wheel arches. For 1974, the RSR made use of 917 brakes and a stronger aluminium crankcase, bigger barrels and pistons, taking it up to three litres of displacement and 315bhp, plus slide-valve fuel injection. Wheel and tyre width broadened to ten-and-a-half inches at the front and fourteen at the rear, accommodated by steroid-bulging fibreglass wheel arches with air vents slashed in the trailing edges of the front wings and ahead of the rear wheel arches. It was fronted by an air-dam with integral oil radiator, as well as a pair of air ducts, and finished with a whale-tail rear wing. The factory used several cars as aerodynamic mules in preparation for the launch of the three-litre 934 and slant-nose 2.8-litre 935 turbo cars.

Above 2.7-litre flat-six was thoroughly rebuilt and upgraded during the ten-year restoration process

HAIR OF THE DOG

Although initially vulnerable to failing driveshaft joints, the RSR (in three-litre guise) was good enough to claim seventh place overall at the 1974 24 Hours of Le Mans, with several other high placings. John Fitzpatrick took the European GT Championship, as well as five wins in the World Championship GT category events that year, piloting George Loos' RSR 3.0. Best result for the RSR at an international level in 1975 was the 24 Hours of

Daytona, where Peter Gregg and Hurley Haywood headed five more RSRs for outright victory. Their Brumos RSR won the US IMSA title three years running, from 1973 to 1975. At Le Mans in 1975, the best finish for an RSR was fifth place (John Fitzpatrick and Gijs Van Lennep) when no fewer than fourteen RSRs took part. And this is the chronicle of inspirational iconography in which our Chartreuse cocktail is lodged in the depths of.

Enough of the gloating — let's get this show on the road! I get Dave to drive out of the village, and we swap positions. Pop the seat back a tad, get those harness straps over the shoulders and around the crotch. Like all classic right-hand-drive 911s, we have the slightly offset-left pedal situation, but once you're up and running, you don't notice it. There's a raw, energetic honesty about this car elevating from your average backdate. It sounds gorgeous from the off, and it's revelling in the revving, typical of MFI engines, where 4,500rpm seems a prudent shift point. You know straightaway this car has been put together really beautifully. It hauls perfectly agreeably in each gear and the brakes are good, too — you stand on them more than you would in a modern car, but they work fine. This Porsche feels absolutely perfect, certainly in terms of steering, throttle control, gear shift. It's as alluring and rewarding to drive as it is to look at. It's like an enthusiastic, but more raw Carrera RS 2.7 and it slingshots me down a nearby straight, writhing under hard braking and twitching at the slightest hump, its nose exploring every nuance of these rural roads. It could be a hectic ride, but I find optimum control comes by relaxing and simply being the guide rather than the hustler — the steering is light, requiring a deft touch rather than brute force, and lock isn't bad, considering tyre width. This 911 is beautifully configured and easily controllable, tracking beautifully, and with pinpoint turn-in on these tight Norfolk B-road bends, allowing me to place the nose exactly where I want.

This Porsche responds eagerly as I ease on the gas pedal, surging from corner to corner in a glorious six-pot shriek, a sheer aural delight up around 5,000-6,000rpm, where I'm using third and fourth gears, dropping down to second for the corners, blipping the throttle as I double-declutch. It's relatively softly sprung, though controlled and firm as I pitch it through a familiar set of undulating woodland corners — the closet snatch of Nordschleife I can conjure up in this part of north Norfolk. There's a thought: this kiddie would have a ball at a Nürburgring track day, but if I want another go, owner Dave lives a stone's throw from where I reside — I bet I can lure him out with it on the promise of beer, if not, a cocktail! **CP**

Below Perfect for hard driving along North Norfolk's backroads, this stunning ST evocation will be put through its paces by its new owner

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1998 Porsche 993 Carrera S Coupe stock #13650

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

1975 Porsche 911S Sunroof Coupe #14203

This 1975 Porsche 911S Sunroof Coupe that has just come out of long-term ownership is available in Light Beige with a sand beige interior. The vehicle comes equipped with a manual transmission, 4-wheel disc brakes, whale tail, and Fuchs wheels. An original California car that had the same owner since 1985 and is mechanically sound.

For $44,500

1975 Porsche 911S Targa #13639

Here is a 1975 Porsche 911S Targa that is available in Ice Green Metallic with a black interior. The vehicle comes equipped with a 5-speed manual transmission, air conditioning, 4-wheel disc brakes, and Fuchs wheels. A well-priced 911S Targa that is mechanically sound.

For $39,950

1977 Porsche Carrera Cabriolet Conversion #12736

This 1977 Porsche Carrera 3.0 Cabriolet Conversion is available in black with a tan interior. it comes equipped with a 5-speed manual transmission, 3.0-liter engine, power windows, soft top, 4-wheels disc brakes, and Fuchs wheels. The Porsche has just come out of long term ownership and is mechanically sound.

For $34,750

1964 Porsche 356C Cabriolet #11507

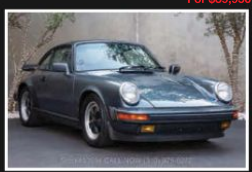
The 1964 Porsche 356C Cabriolet featured here with matching numbers (Kardex included) is available in a gorgeous color combination of Champagne Yellow with a green interior. It comes equipped with a 4-speed manual transmission, dual Weber carburetors, soft top, boot, and solid wheels. An extremely sought-after 356C Cabriolet which had the same owner for many years and is mechanically sound.

For $125,000

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 #3407 Signal Red with a black interior. The vehicle comes equipped with a 4-speed manual transmission, 1600c engine, dual carburetors, sunroof, matching numbers hood/deckld, chrome wheels, and 4-wheel disc brakes. An excellent 356C Coupe that is ready to be driven and enjoyed. This extremely sought-after Porsche had the same owner since 2000 and is mechanically sound.

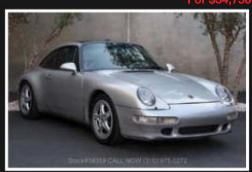
For $119,950



1988 Porsche Carrera Coupe #13994

Here is a low mileage 1988 Porsche Carrera Coupe featured with matching numbers and with 23,679 miles on the odometer. Available in its (special order) color code #36P Venetian Blue Metallic with a blue interior. The vehicle comes equipped with a 5-speed G50 manual transmission, spoiler (front & rear), automatic speed control, air conditioning, steering wheel with elevated hub, power windows, locking differential, automatic heating control, sunroof, 4-wheel disc brakes, Fuchs wheels, spare tire, tool kit, air compressor, and jack. Both the color code and options sticker are still in place under the hood. Also included with this vehicle are paint meter reading photos as well as service records dating back from 1997 to 2019 documenting the mileage and totaling over $18,000. An excellent and original air-cooled Porsche that is ready to be driven and enjoyed. Do not miss your chance to own such a beautiful sports car that is mechanically sound.

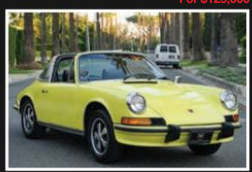
For $108,500



1998 Porsche 993 Targa #14059

This amazing and well-equipped 1998 Porsche 993 Targa featured with 62,883 miles on the odometer and is available in its factory color code #92U Arctic Silver Metallic with a grey interior. The vehicle comes with a clean Carfax and is equipped with a Tiptronic transmission (4-speed), Tiptronic buttons for steering wheel, Flat 6 Cylinder 3.6-liter engine, automatic speed control, 8-way electrical seat (left & right), pleated leather seats, board computer, power windows, power steering, air conditioning, Stainless steel door entry guards with model logo, and 4-wheel disc brakes. Both the color code and options sticker are still in place under the hood. An extremely desirable and well-taken care of air-cooled 993 that is mechanically sound.

For $76,500



1973 Porsche 911E Targa (Original Paint) #12666

Here is a recently discovered original paint 1973 Porsche 911E Targa featured here with matching numbers is available in its factory color code #117 Light Yellow with a black interior. The vehicle 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 that still retains its original paint (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 $125,000

1988 Porsche 930 Turbo Coupe #13833

Here is a beautiful 1988 Porsche 930 Turbo Coupe featured with matching numbers and with 70,000 miles on the odometer. Available in its (special order) color code #980 Silver Metallic with a linen interior. The vehicle comes with a clean Carfax and is equipped with a 4-speed manual transmission, Flat 6 Cylinder 3.3-liter engine, air conditioning, power windows, sunroof, 4-wheel disc brakes, and jack. An extremely sought-after low mileage 930 Turbo that is mechanically sound.

For $119,950

1977 Porsche 911 Targa #14092

This 1977 Porsche 911 Targa is available in Meteor Metallic with a black interior. The vehicle comes equipped with a 5-speed manual transmission, Flat 6 Cylinder 2.7-liter engine, 4-wheel disc brakes, and Cookie Cutter wheels. An original California car that is mechanically sound.

For $36,500

1990 Porsche 964 Carrera 4 Coupe #12689

Here is a beautiful original paint 1990 Porsche 964 Carrera 4 Coupe featured with 33,589 on the odometer and is available in its factory color code #700 black with a black interior. It comes with a clean Carfax and is equipped with a 5-speed manual transmission, Flat 6 Cylinder 3.6-liter engine, air conditioning, automatic speed control, power windows, power steering, jack, 4-wheel disc brakes, D90 wheels, and jack. Both the color code and options sticker are still in place under the hood. Also included with this vehicle are paint meter reading photos. An extremely desirable low mileage 964 Coupe that is mechanically sound.

For $108,500

1990 Porsche 964 Carrera 2 Cabriolet #14124

This well-equipped 1990 Porsche 964 Carrera 2 Cabriolet featured with 73,294 miles on the odometer is available in its factory color code #908 Grand Prix White with a sand beige interior. Comes with a clean Carfax and is equipped with a Tiptronic transmission, Flat 6 Cylinder 3.6-liter engine, automatic speed control, air conditioning, power windows, power steering, soft top, boot, 4-wheel disc brakes, and Porsche D90 wheels. Both the color code and options sticker are still in place under the hood. The Porsche 964 could use some light cosmetics and is mechanically sound.

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LIVEWIRE

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

TRAVELLING ROADSHOW OF 917s LANDS AT MONTEREY CAR WEEK

In the August issue of *Classic Porsche*, we reported on the appearance of 917 chassis 026 as a star lot in the RM Sotheby's Monterey Sale. Offered with a lower estimate of $16m, the car failed to sell, but it wasn't the only 917 causing a stir at the show. In fact, no fewer than thirteen other 917s were presented at Monterey Car Week as part of *Porsche Success Story at Le Mans,* a rolling exhibition curated by the Porsche Museum in Stuttgart and currently making its way around the world.

Every year, Monterey Car Week attracts several thousand visitors to the Californian coastal town, with the Pebble Beach Concours d'Elegance (held in the grounds of the nearby Pebble Beach Golf Links golf course) being the event highlight. As part of the prestigious competition, the proceeds of which are donated to charity, an expert panel judges a range of immaculate classic cars from different categories, based on their originality, functionality and elegance.

Monterey is just one of fourteen stops on the exhibition roadshow, which celebrates Porsche's various successes at the world's most famous endurance race. By the end of the year, more than twenty original overall and class-winning race cars will have travelled to ten countries spread across three continents. In addition to the 917, star cars slated for display include the 962 C and the 919 Hybrid. Destinations include Zandvoort in the Netherlands, the Chinese city of Shanghai, and Dubai, in the United Arab Emirates.

Porsche Success Story at Le Mans celebrates seventy years since the aluminium-bodied 356 SL drove to a class victory at the 1951 daylong endurance race at Sarthe. Since then, Porsche has racked up nineteen overall wins and 108 class victories at the tradition-steeped event. Though the brand has been absent from the top-flight category in recent years (instead fielding GT cars and concentrating efforts on developing electric vehicle technology in the realm of Formula E), an impending return for Porsche in the new LMDh (Le Mans Daytona hybrid) category will see the Stuttgart squad fight for overall victory in France once again.

The star of Monterey's 917 line-up was the Martini-decorated short-tail bearing the number twenty-two, which made history at Le Mans in 1971, when Gijs van Lennep and Helmut Marko (yes, the very same Helmut Marko now famous for being head of Red Bull's Formula One development programme) crossed the finish line in first place. The pair covered a distance of 3,315 miles, completing 397 laps at an average speed of 138.13mph, setting records which would remain unbeaten for almost four decades.

The near 600bhp racer claimed the Le Mans 'Index of Performance' (an award for the most efficient ratio of fuel consumption to displacement) and was the first Porsche to race with a magnesium tubular space frame. This made the car so light, engineers were able to integrate a fifty-five-litre oil tank benefiting weight distribution and ensuring the sports prototype racer tipped scales at the required eight-hundred kilograms. The car had a short but stellar career: it was completed on 5th June 1971 and won the 24 Hours of Le Mans eight days later, before being retired.

As part of the roadshow, Porsche Experience Centres (PECs) are diving deep into the brand's Le Mans story with dedicated Heritage Corners celebrating the various victories, cars and people involved. PECs in Le Mans, Atlanta, Franciacorta, Shanghai, Silverstone and Hockenheim have already launched their Heritage Corners and, in Zuffenhausen, fans can find out more along a glass partition providing a view of the workshop inside the Porsche Museum. Also, a selection of impressive Le Mans racers will be on display at the museum while the roadshow works its way around the globe. Meanwhile, the Porsche Museum's social media channels will be publishing updates, as well as running the *Porsche Moments* short film series, taking viewers on a journey through time, focusing on a different Le Mans-winning car each episode.

RARE FACTORY 911 R SELLS FOR MORE THAN $3M AT RM SOTHEBY'S AUCTION

Porsche rarely, if ever, follows any other automaker's lead, but Colin Chapman's maxim of "add lightness" was taken to heart by Zuffenhausen's former motorsport director, Ferdinand Piëch. He tasked his engineers with shaving as much weight as possible from the 1967 911 S coupe with the goal of competing in the FIA's GT two-litre category. The resulting 911 R proved a brilliant racing and rally machine. Under Piëch's supervision, four prototypes were constructed, after which, Porsche commissioned coachbuilder, Karl Baur, to build another twenty examples in a numbered production series (118990001R-118990020R).

This example, chassis 11899006R, left the factory on 26th October 1967, bound for Paris-based Porsche dealer, Sonauto, and then to its first owner, Ferdinand Schigler, who was already an accomplished rallyist, competing in Renaults and Peugeots with some success. By the time of licensing his new Porsche on 30th October 1967, Schigler had installed a quartet of driving lamps and entered the 1967 Tour de Corse as No.96 with Gérard Couzian drafted in as his co-driver. Schigler also entered the year's Criterium des Cevennes and, in 1968, he used his 911 R in five rallies: the Lyon-Charbonnières-Stuttgart Solitude, the Ballon d'Alsace, the Course de Côte de Fribourg, the Rally Lorraine — where he placed fourth overall — and the Course de Côte de Vuillafans.

Today, the 911 R is one of the most sought-after air-cooled Porsches, but surviving examples rarely change hands. Making this exquisitely restored example even more desirable, it remains equipped with its original engine. Supplied with a large folio of period rallying photographs and eligible for many of the world's historic motorsport events, the car attracted a winning bid of $3,360,000 at RM Sotheby's Monterey sale.

COURTESY RM SOTHEBY'S

PORSCHE FIELDS COMBINE FOR EPIC SILVERSTONE CIRCUIT SHOWDOWN

All of Porsche Club Motorsport's track series combined for two entertaining races at Silverstone on Saturday 14th August. Chris Dyer and Simon Clark's Cayman S, heading the Petro-Canada Lubricants Porsche Club Championship with Pirelli, were runners for the outright wins, with Toby Barlow's Boxster S taking top honours in class two.

The Porsche Classic Boxster Cup saw a pair of close races with Will Heslop and Richard Forber taking a win each, but all eyes were on the TracTive Porsche Club 911 Challenge Series, even though the packed programme of motorsport meant participating cars competed in twenty-five-minute races, rather than the usual one-hour outing.

The 911 Challenge runners started on their own grid at the back of the field with a twenty second delay after the rest of the pack set off, but this didn't stop Tim Bates and his 911 SC catching the rear of the main field and climbing up to nineteenth overall by race end. Just one place behind him was class rival and 964 driver, James Neal, who felt he could have been closer if he hadn't slipped down the order early on after a poor start. "In contrast, I got a good start and enjoyed chasing down the Boxsters ahead," says Bates, who coined fastest lap with 2m28.846s at an average speed of 88.53mph. "I didn't want to interfere too much with the newer Porsches racing, but I picked a few off!" he laughs.

When the 911 Challenge entrants were released for their second outing of the day, Bates once more showed his pace by reaching sixteenth overall. Neil Harvey came home second in class and twenty-first overall in the 964 Neal had raced a few hours earlier. Similarly, David Harrison took the controls of the 964 Carrera RS N/GT Nathan Luckey had driven in the first event of the day. Both men scored third place in their respective 911 Challenge races.

"I enjoyed Silverstone," Bates continues. "Moreover, I was pleased to be quicker in race two. I've owned my SC for so long, it gets developed bit by bit, rather than a wholesale rebuild in advance of race weekends. I just love driving it." We don't doubt him — with a time of 2m27.247s, he achieved fastest lap in the second 911 Challenge race, too!


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PETERSEN AUTOMOTIVE MUSEUM SHOWCASES 956 AND 962 IN SECOND CELEBRATORY LUFTGEKÜHLT EXHIBIT

In partnership with Luftgekühlt — the name given to the world-famous annual Porsche event founded by founded by two-time Le Mans class winner, Patrick Long, and creative designer, Howie Idelson — the Petersen Automotive Museum in Los Angeles has opened *Prototype Giants*, the second of two exhibits celebrating historically significant air-cooled Porsches. As the name suggests, this second event focuses on the history and legacy of legendary Porsche prototypes: the mighty 956 and its successor, the 962.

The 956 was built to comply with the 1982 FIA World Sportscar Championship (WSC)'s new Group C regulations and was the first racing Porsche to feature an aluminium monocoque chassis and ground effect aerodynamics. The 956 was heavily inspired by the independently developed, Porsche-powered KMW SP20 sports prototype, which you can read about on page 78. Factory 956s won the 24 Hours of Le Mans on their first outing, leading every lap and taking first, second and third place overall. A year later, in 1983, a 956 driven by Stefan Bellof set the overall lap record at the Nürburgring Nordschleife, an achievement which stood for an amazing thirty-five years until a modified 919 Hybrid Evolution driven by Timo Bernhard slaughtered Bellof's time of 6:11.13 with an eye-popping 5:19.55.

There was, however, trouble in paradise. The 956 was designed to compete in both the World Endurance Championship and the North American IMSA GTP Championship, but IMSA's regulations effectively outlawed the 956 on the grounds of safety, chiefly because the driver's feet were ahead of the front axle centre line. To make the 956 eligible for IMSA use, Porsche extended the 956's wheelbase, thereby moving the front wheels ahead of the pedal box. At the same time, a steel roll cage was added and the engine was modified — in place of twin K27 turbochargers, a single K26 was used in response to IMSA's GTP rulebook stipulating a ban on dual turbo setups.

The resulting 962 (962 C for Group C entrants) became one of the most dominant race cars of all time, winning the World Sportscar Championship in 1985 and 1986, the IMSA championship every year from 1985 through 1988, the 24 Hours of Le Mans in 1986 and 1987 and, somewhat controversially, the French enduro in 1994.

"We are delighted to share our second Luftgekühlt exhibit, which features some of the most iconic 956s and 962s ever produced," said Petersen Automotive Museum's Executive Director, Terry L. Karges.

"This gallery will explore the rich history of these amazing race cars and shed light on why they were so dominant against stiff competition." Cars on display include a Leyton House 962 C built by Kremer, the 0123-numbered Art 962 C (pictured above) driven by Hurley Haywood, the Copenhagen-branded 962 campaigned by A.J. Foyt, the Miller High Life/BF Goodrich 962 which won the 1989 Rolex 24 Hours of Daytona and a three-time race-winning, Rothmans-liveried works 962 C driven by Jacky Ickx and Jochen Mass. Additionally, the Coca-Cola livered 962 driven by Bob Akin and Hans Stuck will also be on display.

Pleasingly, in the present, most of these vehicles participate in historic races, aided by the stellar work of marque specialists and the continued support of event organisers, such as Peter Auto.

This must-see exhibition concludes the Petersen Automotive Museum's two-part series in partnership with Luftgekühlt. The first, *Pfaffenhausen Speed Shop — The RUF Gallery*, opened on May 15th and highlighted the work of celebrated German sports car manufacturer and Porsche tuner, RUF Automobile.

Prototype Giants opened to the public on August 25th and replaced the RUF exhibit in The Vault, presented by Hagerty. *Prototype Giants* will leave the museum on November 19th. For more information about Petersen Automotive Museum display cars and exhibitions, including the forthcoming *Bond in Motion*, *Supercars* and *Reclaimed Rust* (the collection of classic cars reimagined by Metallica frontman, James Hetfield) hop online and visit *petersen.org*.

NEW DATA REVEALS CLASSIC AUCTION BOOST DRIVEN BY ENTHUSIASTS

The latest update to the Hagerty UK Price Guide has provided a market overview of the first six months of 2021, revealing more cars are being sold and average prices have risen. The data shows the number of cars offered is up, with Hagerty having tracked 4,019 so far this year versus 4,666 during the whole of 2020. The sell-through rate is also up, from just over seventy percent to more than eighty percent so far in 2021.

In 2020, the average auction sale price was £38,984, but for 2021, that figure has already shot up to £45,648. What's more, cars are selling much better against their estimates — this year, almost thirty-five percent of lots have sold for more than their top estimate, compared with just under eighteen percent in 2020. The number of cars selling for below their low estimate has fallen, documented as a shade under twenty-five percent (compared to almost forty percent last year). There have also been changes in the type of cars offered at auction, with the proportion of cars produced in the 1980s rising the most. To put this into perspective, last year, less than fifteen percent of cars offered were registered in the 1980s, compared to almost seventeen percent in 2021, representing the biggest gain per decade/era. Cars from the 1990s remain the most numerous at auction, accounting for eighteen percent of all lots. Meanwhile, evidence suggests most buyers prefer classics with potential for improvement, but shy away from those requiring restoration — 'fair' condition cars were most in demand, with sell-through rates at eighty-one percent. Restorations were the worst performing. "The popularity of 'fair' cars is notable," comments John Mayhead, editor of the guide. "That these are so popular supports our view the recent sales boom has been generated by enthusiasts, rather than investors."

COURTESY RM SOTHEBY'S

INDUSTRY BODIES URGED TO PETITION FOR ANNUAL CLASSIC CAR SAFETY TEST

Classic car organisations, such as the Federation of British Historic Vehicle Clubs (FBHVC) and the newly-formed Historic & Classic Vehicle Alliance (HCVA), are being urged to lobby government to introduce a basic safety test for older vehicles. The calls are being championed by Ben Field, Managing Director of Vintage Tyres, the world's largest supplier of original-equipment tyres for enthusiast vehicles.

Back in May 2018, MoT exemption was controversially aligned with historic vehicle tax (VED), meaning UK-registered vehicles built more than forty years ago no longer need to be tested annually, providing no "substantial changes" have been made in the last thirty years. Ben reckons a consultation regarding the decision "read like a done deal against the MoT from the start" and that representatives from the Department for Transport responsible for organising the consultation, collating responses and drafting the report, didn't fully understand what an MoT test actually involves. "Surely, the MoT was the backbone of vehicle safety — a second pair of eyes and hands checking everything is in order?" he argues. "Granted, the MoT was a bind, and yes, it probably wasn't entirely fit for purpose when it came to inspecting older vehicles, but to eliminate the test altogether wasn't a satisfactory solution."

The need for a safety test has never been more important, Ben claims, having witnessed a steep decline in the condition of tyres fitted to classic cars in recent years. He also says colleagues across the industry are dealing with serious mechanical and structural problems far later than they would if a test were flagging advisories on a yearly basis.

"Just recently, we welcomed the owner of a classic into Vintage Tyres for new rubber," he told us. "The tyres on the car were decades old and were visibly deteriorated. Three were radials, one was a crossply. The car itself was brimming with body filler and was one wet winter away from disintegration, yet it just been sold on for a five-figure sum. This sort of thing is not untypical." He also believes anyone selling classic vehicles, trade or private, should have to produce a valid MoT certificate before completion of sale. Do you agree? Contact us through the usual channels.

RUF BTR TAKES CENTRE STAGE AT HISTORICS ASCOT AUCTION

Just before we went to print with this issue of *Classic Porsche*, Historics Auctioneers contacted us with details of a star-studded line-up of classic Porsches due to go under the hammer at the firm's Ascot Racecourse auction on Saturday 25th September. There's a 1986 Carrera 3.2 Supersport (lower estimate £85k), two 1989 928 S4 (one offered without reserve, the other with a lower estimate of £25k), a 1996 993 Cabriolet (£45k) and a 2001 986 Boxster S loaded with Tiptronic transmission (another lot without reserve), but the Porsche bound to generate most interest at the sale is the classic 911 Turbo (930) upgraded to RUF BTR specification using original RUF parts.

Those that know Porsche, know RUF. Headed by Alois Ruf Jr, the company takes the blueprints for already formidable driving machines and turns them into psychotic hooligans, usually using blank 'bodies in white' Porsche chassis to create its own cars (RUF is recognised as a standalone manufacturer in Germany). Historically, the Pfaffenhausen concern has offered conversion kits to owners of factory Porsches, and though the company was founded as a general service garage by Alois' father in 1939, vehicle production began in earnest in 1983 with the first car to bear a RUF chassis number: a 3.4-litre 911 Turbo-based model pushing out 369bhp through a RUF developed five-speed manual gearbox. It wasn't just about raw power, though. Twin-spark ignition, bespoke harnesses, seats and steering wheel formed part of the package, cloaked in bespoke RUF BTR (the nameplate standing for Group B Turbo RUF) bodywork.

The early left-hand drive RUF BTR pictured here is powered by the RUF 3.4-litre flat-six (with single-plug ignition) and is believed to be one of between seventy and eighty BTRs bearing an original Porsche chassis number. First registered in 1979 as a standard 930, the car was significantly upgraded to BTR specification by the then authorised RUF importer to Japan, Ishida Engineering, in 1985.

To confirm as much, Alois Ruf Jr's team has supplied official RUF correspondence confirming the originality of all RUF parts and modifications used to transform the car into what you see here. Finished in Grand Prix White, it makes use of a RUF five-speed gearbox, staggered Speedline seventeen-inch forged five-spokes (with painted red centres), a RUF quad-tailpipe exhaust, a RUF manually adjustable boost controller, a full RUF body kit (front bumper with integrated oil cooler, a vented rear bumper, deeper side skirts and bespoke engine lid), 935-style door mirrors, a RUF embossed steering wheel and matching gear lever, a RUF-badged instrument cluster, RUF lightweight floor carpets, RUF-specified twin-tone Recaro bucket seats, custom safety harnesses and an Ishida Engineering build plaque attached to the glovebox.

A Certificate of Authenticity from Porsche outlines the car's original specification, with further documentation from Alois Ruf Jr's team highlighting all modifications. Registered for road use in the UK, recently serviced and with a full twelve-month MoT, this purposeful RUF is excellent as is, or as a starting point to further develop into a 911 capable of embarrassing much newer sports cars. The lower estimate is £85k. Visit the Historics Auctioneers website at *historics.co.uk*.

In recent years, RUF owners have been discovering one another like never before, helped by the efforts of RUF Automobile UK in bringing like-minded fans of the brand together at popular Porsche shows. Want to register your interest? Hit *rufautomobile.co.uk* and make contact.

PRODUCTS

Exciting products to help you get the very best out of owning a classic Porsche...

CHRISTOPHER WARD C60 #tide

Inspired by those who seek to preserve the oceans, the new Christopher Ward C60 #tide is not only a COSC-certified dive watch (and comes with paperwork to prove the fact), but the perfect partner for the company's new line of #tide straps, developed in partnership with the Swiss University of Applied Sciences and made from upcycled plastics. These straps reflect the mission of #tide, an organisation dedicated to transforming ocean-bound plastics into premium raw material available for the manufacturing of sustainable products, such as watch straps, thereby stopping waste plastic from entering the ecosystem. Pleasingly, £5 from the sale of every #tide strap (super-comfortable canvas-style fabric, complete with quick-release latches and available to buy as either 20mm or 22mm widths in a range of colours) will be donated to the Blue Marine Foundation, a charity combatting overfishing. The tide is clearly turning.

What of the watch itself? Based on the popular Christopher Ward C60 Trident range of dive watches, the C60 #tide is priced competitively and packs big specification. In keeping with the rest of the C60 range, this new offering takes the form of a 42mm 316L steel case with a height of 14.1mm, lug to lug measurement of 49.32mm and water resistance up to 600 metres, but there are notable differences from the rest of the C60 family. For a start, the use of Super-LumiNova Grade X1 BL C1 and a complex organic wave pattern gives the C60 #tide's anti-reflective sapphire dial a 3D look, which glows in darkness, but maintains a cool and discreet appearance in daylight, reminiscent of bio-luminescent algae. The Sellita SW200 COSC 26-jewel mechanical chronometer is visible through the semi-transparent dial, highlighting how the C60 #tide's accuracy and reliability are as unshakeable as its materials. There's a date window at the six o'clock position, too.

The C60's usual 3D trident-decorated caseback is replaced here with a deep-stamped #tide mark and a second blue ring of #tide upcycled plastic, matched by a smaller version of the same combination on the crown. The minute hand is a straightforward baton, the hour hand is in the shape of a dagger and the second hand is counterbalanced with a trident, typical of the C60 range. "Last year, we worked with #tide to create a one-off strap for the C60 BLUE, our sold-out limited edition dive watch created for the Blue Marine Foundation," says Mike France, Christopher Ward's CEO. "The fantastic success of that project taught us two important things: our team is inspired by environmental concerns, and our customers want to see us do more with eco materials. We now have the widest selection of ecologically-produced watch straps on the market," he added, though it should be noted the C60 #tide is also available with a steel bracelet at additional cost. Eco-friendly, recycled packaging is used for the presentation case irrespective of the option you choose.

With a 38-hour power reserve, anti-shock system and top-brushed indexes with diamond polished facets, this Swiss-made timepiece is the perfect wristwatch for those who want to support efforts to save the oceans, ensure marine preservation and promote the training of fishermen to sort, process and transport sea-bound plastic. When wearing this watch, you'll be demonstrating values important to you (and the team at Christopher Ward) in style. At just £895, we can't recommend the new C60 #tide highly enough.

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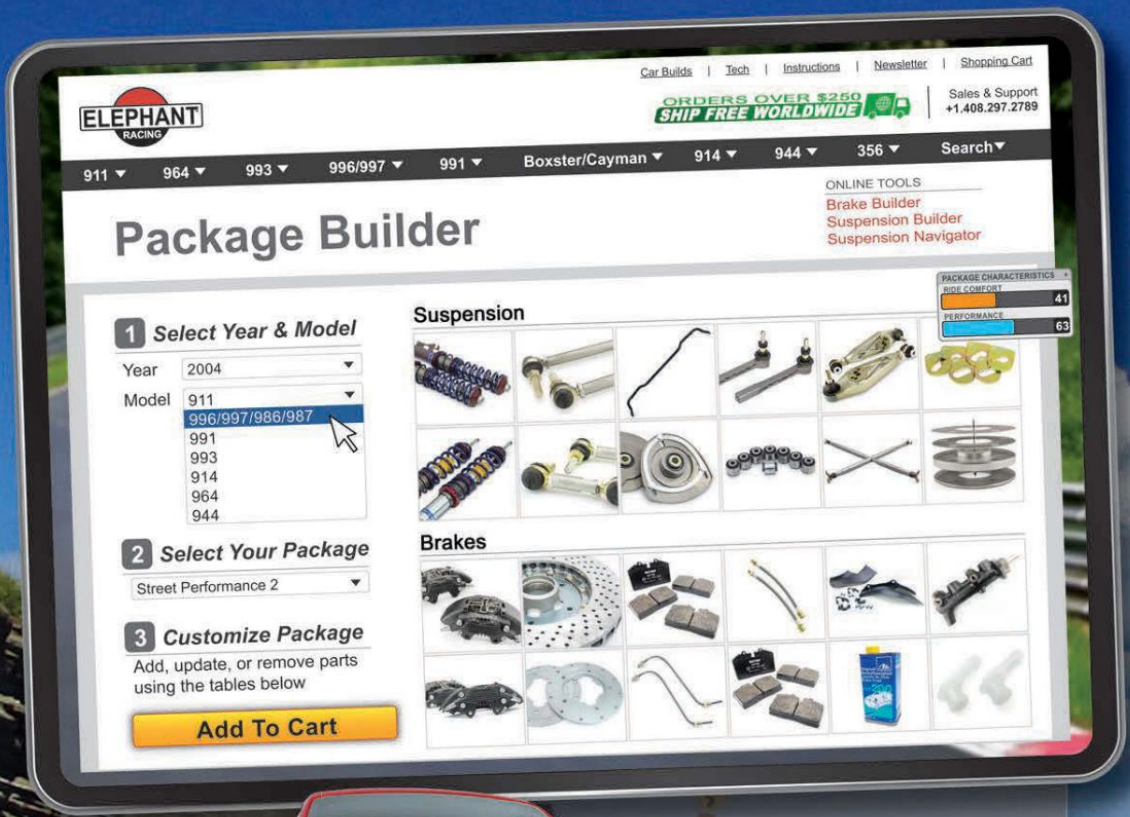

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LN ENGINEERING 2.5-LITRE SHORT STROKE CYLINDER AND BILLET PISTON SET

Based in the eastern Kankakee County, Illinois, and close to fifty miles south of Chicago, Momence is described as a quiet, friendly community of 3,300 residents, but this unassuming city plays host to a hub of Porsche precision performance in the form of LN Engineering, a celebrated brand serving classic Porsche owners with motorsport-derived engine equipment since 2002. The firm's latest exclusive offering is a 2.5-litre short stroke cylinder and piston kit for air-cooled 911s. Featuring 89mm Nickies cylinders and billet pistons custom-manufactured by Mahle Motorsport in response to popular demand (forgings are no longer available from Mahle to make these products), the included 103-89 cylinders use standard 2.7 case registers and feature windage notches, knock sensor provision and even more cooling fins than before. Cylinder head sealing ring grooves are optional. Interested parties are advised to call the LN Engineering team to verify delivery times, though this new kit can be ordered direct from the company's online store with immediate effect.

Price: $7,369.57

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

CSF PERFORMANCE OIL COOLER FOR CLASSIC 911/930

Once upon a time, certain procedures in the field of automotive restoration and New for the air-cooled 911 (including Turbo) is this highly anticipated front-mounted oil cooler from Porsche cooling specialist, CSF. Directly replacing the factory oil cooler, this uprated part is intended to promote greater efficiency whilst aiding hot-rodders with enhanced cooling abilities (a claimed near ten percent improvement) to complement engine upgrades resulting in increased output. After more than eighteen months development work, this state-of-the-art oil cooler maintains a factory look, but is packed with innovative modern technology, including a stronger square fin design, no increase in pressure drop and a 50mm core (versus OEM 45mm). OEM-style M30x1.5 high-flow fittings, M22x1.5 inlet/outlet connections, a temperature sender combination mounting boss, readiness for optional AN16 connections and slotted mounting holes for easy installation (ideal for retro-fitting to early 911s) make this 100% TIG-welded, pressure-tested part a must-have addition to any modified classic 911 or those in need of a replacement oil cooler. DIY fitting instructions and a ten-year warranty come as part of the package.

Price: $899

***csfrace.com* or call +1 800 827 1991**

MAXILITE 15-INCH STEEL WHEEL FOR 356/912/911 (1964-1973)

Switzerland-located wheel producer, Maxilite, has developed a classic-look steel wheel suitable for the 356 C, 912 and 911 (models spanning 1964 to 1973). Finished in silver and mirroring the look of the steelie commonly associated with the early 911 and 906 race car, this fifteen-inch rim is offered with widths of 4.5, 5.5 and six inches. The offset is ET42, other than the widest wheel, which is ET36, with all wheels making use of a 71.6mm centre bore and a 5x130 PCD. The wheels carry German TUV certification (considered the toughest test for any wheel) and are supplied through British Porsche parts and restoration specialist, Karmann Konnection, with a three-year warranty. The cost varies depending on size, but the look remains true no matter which rim you choose: it's quintessential classic Porsche!

Price per wheel: 4.5x15 £222, 5.5x15 £228, 6x15 £234

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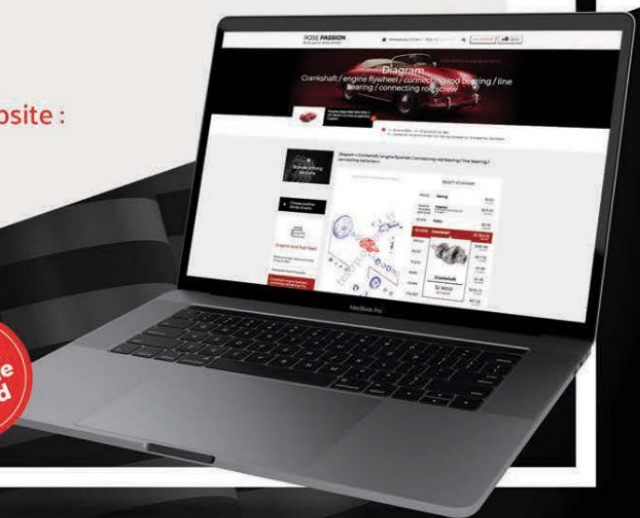

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PERMA-TUNE BESPOKE IGNITION SYSTEM FOR 911 SC

Advanced ignition system developer, Perma-Tune, manufactures electronic ignition kits concealing the latest technology inside classic-look packaging, ensuring seamless integration into the engine bays of classic European sports cars. Offering all-new systems and core exchange products, the company is currently celebrating its fiftieth anniversary and has marked the occasion with a new Perma-Tune offering for owners of the 911 SC.

Supplied complete with distributor cap and rotor, the Gen 6 Perma-Tune comes in two flavours: the 911SC906 Premium ignition module and the 911SC706 Basic ignition module. The Basic model is just that: it performs only the same functions as the analogue Bosch systems from back in the day. For the average street car, this may be all that's required and, of course, is more affordable than the Premium model. It remains, however, a high-performance part, promoting increased reliability perfect for motorsport participants attending race venues which don't allow programmable digital ignition systems. The Basic model has a more period-correct housing than the outgoing Gen 5 Perma-Tune packaging, too.

The Premium ignition module features a smooth, matte finish mirroring patina of the original aluminium die cast part. This model variant provides full control over rev limit, mechanical advance timing, power output, multi-spark function and has many other features programmable via computer, tablet or the free TUNE+ smartphone app. Read and store ignition curves, modify and share with your friends! A USB Smart Wire is used to configure and program the ignition module on a workbench and will power up the module automatically. The Bluetooth Smart Wire is installed permanently on the ignition module and is allows you to fine-tune the engine for various road and track conditions.

The 911SC906 comes pre-programmed for the 911 SC, meaning any alterations to suit modified cars are entirely optional. The programmable mechanical advance feature is, however, handy for restoring a distributor advance curve distorted by worn mechanical parts. Plus, it doesn't require you to disassemble and repair the distributor.

The Gen 6 Premium Perma-Tune makes troubleshooting and datalogging easier by providing onboard diagnostics automatically displayed by two LED function lights. These lights assist in diagnosing the operating behaviour of both the vehicle and the ignition module itself. The green LED is a status indicator, which can flash diagnostic fault codes. The red LED is a strobe light flashing each time the coils fire, much the same as a timing light. This LED is especially useful for detecting intermittent engine misfire caused by wiring or distributor problems. Additionally, there are three self-resetting overload protectors assisting in troubleshooting while protecting your Perma-Tune from damage. They're hidden underneath the ignition module to ensure they don't spoil the OEM look of the part.

This direct bolt-up, plug-in replacement part is the latest development of Perma-Tune's successful bespoke ignition module, requiring no modifications to the host 911 SC and making use of the original copper core spark plug wires. Visit the Perma-Tune website for further information, including all details relating to the system's programming options.

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ALEX MANOS

While those in the know celebrate the forty-fifth anniversary of the Carrera 3.0, 911 enthusiasts in the United States are enjoying a resurgence of interest in the early 911 Turbo (930), which was first marketed this side of The Pond in 1976, exactly forty-five years ago...

Alex Manos is owner of Beverly Hills Car Club, sourcing and selling some of the world's most beautiful and unique vintage automobiles, including a wide range of air-cooled Porsches. View the firm's inventory at *beverlyhillscarclub.com*

The year was 1974, and it brought exciting times for Porsche. The 911 Turbo (930) was being readied for release, though for the US market, the force-fed model wasn't officially promoted until 1976. That said, in a year earlier, the 930 was available to purchase through select Porsche dealerships, as demonstrated by the 1975 911 Turbo I currently have in stock at Beverly Hills Car Club. According to the 930 Registry, this car is one of just twenty 911 Turbos sold in the USA that year. Resplendent in the classic combination of Guards Red paintwork and black leather interior, it's a gorgeous Porsche and retains all its original mechanical equipment, thereby qualifying for 'matching numbers' status.

Astonishingly, considering how few 911 Turbos were sold in this country back then, I'm also in possession of another 930 from the same year. This example is a non-sunroof Turbo, making it even rarer — the standard 930 was almost always sold with the option of a hole up-top. Not that I'm selling this car. Perhaps, when the Guards Red machine has moved on, I'll consider putting it on the market, but, until then, I think I'll enjoy driving it some more.

At the 1974 Paris Motor Show, Porsche presented a 911 Turbo prototype, which also served as a way to showcase the then new generation of 911. Porsche badged its attention-grabbing demonstration vehicle simply as *Turbo*. The car was very well received and the commercial launch was immediately — and correctly — anticipated as a roaring success.

For series production, a number of parts were taken from the Carrera RS 3.0 and a new cylinder head was designed to lower compression ratio, which was necessary to install a turbocharger. Of course, this wasn't the first time Porsche had experimented with forced induction — the Stuttgart concern began playing with turbocharging technology in motorsport during the late 1960s and, come 1972, began development on a turbocharged version of the 911.

The first Turbos were offered from spring 1975. These amazing 911s sold much faster than expected: the first four-hundred units found a buyer by the end of the year, while a thousand 930 sales was achieved on May 5th 1976. Thus, Porsche decided to keep the 911 Turbo in its product catalogue. The model had a top speed of 155mph, rivalling the Ferrari 308, though with big power came inherent danger, hence the 930's reputation as *Widowmaker*. In truth, drivers simply had to be careful enough not to engage boost in error, else handling became positively juicy and wild.

THE MODEL HAD A TOP SPEED OF 155MPH, RIVALLING THE FERRARI 308, BUT WITH BIG POWER CAME DANGER

Incidentally, the gearbox, which is only a four-speed unit, pulls very long. You can reach almost 50mph in first gear and not far from 125 mph in third. In fourth gear, the turbocharger is only signalled above 111mph.

In 1978, Porsche made its first and most significant change to the 930, enlarging the engine bore by 2mm to a total displacement of 3,299cc and adding an air-to-air intercooler. Porsche also upgraded the brakes to units similar to those used on the 917 race car. These alterations increased weight, contributing to substantial changes in the handling of the 3.3-litre Turbo when compared to the earlier three-litre variant. Even so, in its earliest form, the nimble 930 is much sought-after by enthusiasts, who consider it to be the purest and most enjoyable of this long-lived series. And I just happen to have two of them in stock!

ANDY PRILL

Following forced postponement of 2020 Monterey Car Week as a consequence of travel restrictions and social distancing brought about by the pandemic, this year's event came back with a bang, and though enthusiasts enjoyed what was on offer, eyes are already pointing toward the 2022 gathering, which promises to be a belter...

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***

Monterey Car Week never fails to disappoint. Each year, classic cars of all varieties take to the Californian city's streets, golf courses, parks and the WeatherTech Raceway at Laguna Seca for many different events, including historic racing, auctions, specialist lectures, restoration reveals and themed static displays, all culminating with the Pebble Beach Concours d'Elegance (currently enjoying its seventieth anniversary), featuring two-hundred of the world's best collector cars. Held across ten days from August 5th, this year's Monterey Car Week was a huge success — despite the challenges event organisers faced in continuing to deal with the pandemic — and, as you'll have read elsewhere in this magazine, the turnout of Porsches was fantastic, spearheaded by an impressive collection of 917 race cars, including the Martini-liveried winner of the 1971 24 Hours of Le Mans.

After 2020's Monterey Car Week was postponed through restrictions caused by COVID-19, it came as no surprise to see motoring enthusiasts and manufacturers embrace 2021's event with open arms, the latter keen to promote new car reveals. Alongside Bruce Canepa, Patrick Long and others, I serve on the Selection Committee for the Rolex Monterey Motorsport Reunion (MMR), one of Monterey Car Week's highlights. Each year, we celebrate a specific marque, and for 2021, Ford took the limelight. More specifically, we celebrated the Blue Oval's contributions to the Trans-Am series on the fifty-fifth anniversary of its debut. Ford enjoyed massive success in the competition, especially during the 1980s, 1990s and 2000s, and it was right for the MMR Selection Committee to recognise the fact. There is, however, an even bigger celebration on the horizon and, as a restorer of classic Porsches, it's one especially close to my heart.

I'm pleased to be able to reveal — hold the front page — 2022's dedicated marque will be the 24 Hours of Le Mans. Granted, Le Mans isn't a carmaker, but, occasionally, the Selection Committee will break with tradition and dedicate MMR to a historically important automotive event. It's difficult to think of one having as much impact as Le Mans. I'm also delighted to report the Automobile Club de l'Ouest (the largest automotive group in France and organiser of Le Mans) will be headline sponsor, using 2022's MMR to kickstart a series of celebrations marking the hundredth anniversary of Le Mans in 2023. With this in mind, 2022 Monterey Car Week promises to be an extraordinary event and, to make it easier for visitors to see and do more of what's on offer, MMR will be realigning its calendar, offering racing on the Friday and Saturday (as opposed to the traditional Saturday and Sunday outings), ensuring enthusiasts don't have to make tough decisions regarding visitor attractions. No longer will you have to decide whether to hit Laguna Seca or Pebble Beach on the Sunday — you'll be able to enjoy both on different days! Be sure to make MMR a date in your diary.

OCCASIONALLY, THE SELECTION COMMITTEE WILL DEDICATE MMR TO A HISTORICALLY IMPORTANT EVENT

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45 YEARS OF CARRERA 3.0

THE UNSUNG HERO

In production for just two years, the Carrera 3.0 is rare, yet it stands as a cornerstone of the 911 dynasty, consolidating the impact-bumper generation and a bulwark for its SC and Carrera 3.2 successors…

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

Here's a rare bird, and we kind of owe it a debt of gratitude. That's because the Carrera 3.0, introduced for the 1976 model year and currently enjoying its forty-fifth anniversary, lifted the 911 dynasty onto a slightly higher plain. How come? A sort of stepping stone from the flighty 2.7 models, the bigger-displacement Porsche harboured mechanical as well as panelwork upgrades. That's to say, it featured slightly broader rear wheel arches and was implanted with the 911 Turbo (930) model's stronger die-cast aluminium engine componentry (minus the turbocharger, of course), plus a fresh 915/44 gearbox. Essentially, the Carrera 3.0 was the precursor of the latter-day air-cooled 911. Endowing the Carrera 3.0 with a naturally aspirated three-litre lump was a pragmatic move, since the 2.7-litre unit was, by then, nearing the end of its development life.

Porsche's line-up for 1976 comprised three 911s, designated *I-Programme* in the company's alphabetically evolving specification roster. This trio was the Carrera 3.0, the 930 and the entry-level 2.7. The latter was

sold in Britain as the 911 Deluxe, a 165bhp model with electronic fuel injection, and was the last of the classic narrow-bodies, yet was configured with then new accordion-style impact bumpers. To put these cars in the context of a fast-moving and jumbled era of Porsche production, our favourite manufacturer was in the process of hedging its bets with front-mounted versus rear-mounted engines, unveiling the conventionally laid-out 924 in 1976 and its V8-powered sibling, the 928 'land shark', coming into the picture not long after. And let's not forget the mid-engined 914 in production from 1970 to 1975, proving very popular in the USA. Meanwhile, on the race track, nothing stood still and, as an example, the 936 (a Group 6 sports prototype introduced as spiritual successor to the 917) won Le Mans in 1976. The 935 also dominated its class.

Back on public roads, the Carrera 3.0 and its successors, the SC and Carrera 3.2, represent the bedrock of 911 history — certainly its air-cooled epoch. With a reputation for being bomb-proof, these cars combine classic looks and driving traits with modern manners and modest maintenance costs. Launched

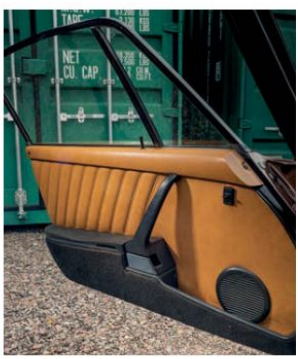
against a world background dominated by a Middle Eastern oil embargo, fuel shortages and power cuts, however, prospects didn't look good for the new generation of 911s in the mid-1970s. Suddenly, gas guzzlers were far from cool, and Porsche showroom sales cascaded from 15,000 911s invoiced in 1973 to just 8,000 in 1975. The earlier figure would not be overtaken again until 1986. Despite this, it was a time of consolidation, and the fact Porsche stuck to its guns and kept faith with the 930 (and then went on to release the 928) says much for its ambition and self-confidence.

COOL, CALM AND COLLECTIBLE

Despite this ambiguity of Porsche's front-engined, mid-engined and rear-engined products, the middle years of the 911's life story (from 1975 to 1989) turned out to be a model of stability as far as specification was concerned, never mind events in the Zuffenhausen boardroom. The frenetic changes in chassis dimensions, body styling, adoption of fuel injection and, most of all, shifts in engine capacity (2.0, 2.2, 2.4) characterising the late 1960s and early 1970s settled into a pattern enduring with mild evolutions, and just three significant introductions. First in the canon is the 1974 2.7, with three models on offer: the basic 911 (replacing the entry-level 911 T), the 911 S (taking over from the 911 E) and the Carrera 2.7 (superseding the 2.4-litre 911 S and using the 210bhp unit from the outgoing Carrera RS 2.7). As well as the controversial impact bumpers and thicker swage lines below the doors — design cues calculated to appease American road safety regulators — the cars destined for Uncle Sam were humbled by stifling emissions equipment.

Do I need to spell out why it's named Carrera 3.0? I doubt it, but let's not confuse this seldom seen 911 with the competition-oriented Carrera RS 3.0. Unsurprisingly, the *3.0* suffix refers to the cubic capacity of the corresponding flat-six engine, lifting it 300cc from its immediate 2.7-litre predecessor. There's something to be said for crossing the psychological three-litre threshold, whether any great performance gains are made or not. Kind of grown-up, don't you think? "There's no substitute for cubic inches," ran the authoritative US advertising slogan, and with its road-going flat-six attaining three litres of displacement, the 911 finally joined the big league. As for *Carrera*, this is the nomenclature

Above Seldom seen, the Carrera 3.0 was produced in low numbers prior to the arrival of the 911 SC



Above Typically 1970s interior features the same steering wheel Porsche introduced to the transaxle line on launch

annexed by Porsche to designate its most sporting models after Hans Herrmann scored a class win with the 550 Spyder in the 1953 outing of daring Mexican road race, La Carrera Panamericana. Though used on the 356 from 1955 (the first such-badged model being chassis 53456, built on 3rd May that year and first registered to Porsche engineer, Reinhard Schmidt), the name made a comeback with the Carrera RS 2.7 in 1973, the epithet slipping seamlessly onto the more competition-focused Carrera RSR 2.8 and Carrera RS/RSR 3.0. Obviously, there was mileage to be had in dealer showrooms from all this, and the man-in-the-street (could be you, certainly me!) was seduced by the availability of a Carrera-badged 911. In short, the arrival of the Carrera 3.0 marked the first time a road-going 911 was dubbed *Carrera*.

This new 911 was available from the outset with either Coupé or a Targa body styles with a black roof panel and offered with a choice of three transmissions (four or five-speed manuals or a three-speed semi-automatic Sportomatic). It's not a stretch to say the Carrera 3.0 is the least well-known of the impact bumper 911s. Its predecessor was certainly a hard act to follow, but the normally aspirated, K-Jetronic-loaded three-litre boxer (as mentioned earlier, the same basic engine as that of the turbocharged 930), features Nikasil cylinders, developed for the three-litre RS engine. In other words, this particular flat-six is virtually unburstable. The Carrera 3.0 engine casing was even stamped as a 930/02, but this doesn't mean it was merely a low compression alternative to the 911 Turbo's beating heart — compression ratio was raised from 6.53 to a much higher 8.521, and the ports were redesigned, too.

HAD THE MODEL BEEN SEEN IN NORTH AMERICA, IT'S EXTREMELY LIKELY TO HAVE SOLD WELL

The Carrera 3.0 produced 200bhp at 6,000rpm — nice, round numbers — and 188lb/ft of torque at 4,200rpm, accelerating to 60mph quicker than the outgoing Carrera 2.7. It could even run on low octane 91-RON petrol.

RING THE CHANGES

The Carrera 3.0 was also lighter than its successors, tipping scales at 1,093kg, which is six percent less than the later SC (1,160kg) and almost ten percent lighter than the Carrera 3.2 (1,210kg). For its suspension, the Carrera 3.0 was offered with a thicker 18mm front anti-roll bar, larger diameter torsion bars (19mm front and 23mm rear), Bilstein Sports gas dampers, stronger rear wheel bearings, and forged aluminium-alloy semi-trailing arms, which were stiffer and significantly lighter than the previous fabricated steel versions. But wait! We're getting slightly ahead of ourselves. Let's backtrack to 1974. More specifically, the transitional moment from pre-impact bumper 911s to what came next, when Porsche moved the 911 into its new phase of design, driven by safety legislation in the crucial US market, which ushered in the now famous rubber-fronted snout and tail.

The concertina-rubbers and raised impact-bumper look was greeted with a certain amount of derision at the time, mainly on the grounds of aesthetics. "What have they done to the pretty 911?!" asked traditionalists. The new styling and what lay beneath, however, was imperative for the 911 to comply with stringent new US road safety legislation in the USA and Europe, which meant all cars had to be able to withstand a 5mph impact without sustaining any damage. Something

far more fundamental was afoot, too: Porsches were just as prone to rust as any other steel-bodied cars, and few precautions had been taken to prevent it. Porsche tackled the problem by introducing zinc-dipped galvanised steel for all body panels and was the first manufacturer to offer a six-year corrosion warranty on a main body shell, excluding the wings.

THE GRAND TOUR

The cabin of the Carrera 3.0 was better appointed than the more austere classic models it replaced, making it a better proposition as a touring car. It featured 'tombstone' seats, of which, the backrests resembled the outline of an, er, tombstone, upholstered in a variety of materials from leather to velour (the latter good for hot climates). These pews provide good support on long journeys. The dashboard contained the familiar 911 hotchpotch of switches, with the centrally mounted rev counter and a chunky leather rimmed three-spoke steering wheel dominating the driver's view. Heater regulation was improved by means of a constant-running fan system, in part thanks to an upgraded 70-amp/980-watt alternator, while externally, there were black window trims and, more significantly, an electrically operated driver's door mirror. The Turbo's whale-tail rear spoiler and rear window wiper could also be specified — the ducktail was now very passé.

Just 3,687 examples of the Carrera 3.0 were built. Compare this number with the 58,000 911 SCs made between 1978 and 1983. Of course, such rarity ought to impact on values, but in reality, it doesn't, largely because the Carrera 3.0 is something of an unknown quantity and it's much easier to find an SC or Carrera 3.2. One reason for low-volume production is the simple fact the Carrera 3.0 wasn't available in the USA, despite its bumpers complying with the necessary safety legislation and K-Jetronic injection being cleaner than carbs. Had the car been seen in North America, it's extremely likely to have sold well in a market then restricted to just the de-tuned 2.7-litre 911 and the 930. Nevertheless, good examples of the Carrera 3.0 do seem to have hardened up at around £68,000 (€80,000) in the current climate. Some fetch slightly less, a few for rather more.

The Carrera 3.0 was dropped, along with the 2.7-litre 911, for 1978, making way for the SC. A short production life meant it became a sought-after model among

Above Mick spends his days sourcing and restoring some of the world's rarest and most valuable air-cooled Porsches, but his personal ride is this gorgeous brown Carrera 3.0

collectors, even though the SC it spawned bore all the same physical attributes and running gear. Introduced in late 1983 for the 1984 model year, the Carrera 3.2 went on to replace the SC, though used the same body-chassis unit with a few detail improvements. The major alteration to 3.2 specification was the substitution (in 1987) of the Getrag G50 gearbox for the long-in-the-tooth 915 unit. Like the SC, there were Coupé and Targa body styles, plus Cabriolet, Club Sport and Speedster versions — the stage was set for Porsche's multi-platform 911s, which have burgeoned into the present day.

SILVER BULLET

In 1975, the company also marked its twenty-fifth anniversary of big-scale production with 1,063 special edition Carreras, a handful with Carrera RS 2.7 engines. These cars are known as the 25th Silver Anniversary specials, kitted out and badged at the factory to mark the firm's silver jubilee and are the earliest examples of Porsche's commemorative special editions. Zuffenhausen produced 664 Coupés and 399 in Targas in this guise. All were finished in Diamond Silver Metallic, with cockpits and cabins upholstered in an extraordinary silver-and-black tweed, with a numbered plaque fixed to the glovebox lid or passenger dashboard. A large percentage of both body styles were made to US-satisfying spec (510 and 249 units respectively), based on the regular 2.7-litre, 150bhp 911 and the 175bhp 911 S. Quicksilver Messenger Service? A handful received the by-now deified Carrera RS 2.7-litre flat-six, enabling a very healthy 210bhp. In the case of the Targa, sixteen cars were fitted with RS motors, and close to thirty Coupés ran the RS powertrain. Crucially, the *I-Programme* saw quarter-light and rear three-quarter windows no longer opening, but electric windows were standard across the range instead. The previously hardcore S was becoming more civilised, and this was the last incarnation of the 911 S until the once much vaunted S-suffix was revived on upgraded versions of the turbocharged 964, 993 and 996 models, including the 996 Carrera 4S. By this time, however, so many other Porsche performance embellishments existed, the formerly significant S moniker had become rather overlooked.

Today, the Carrera 3.0 contrives to look newer than its forty-five years, and that's due, partly, to the impact bumpers, which are more readily associated with the 911 SC and Carrera 3.2 (last produced in 1989 prior to the arrival of the 964) than classic long-bonnet 911s. Considering model lines encapsulating the 356, 911, 912 and 914, it does seem incredible Porsche had only been

Above It might not be as powerful as later impact-bumpered 911s, but the Carrera 3.0's low production volume affords owners an air of exclusivity

Above Cinnamon interior is the perfect match for the paintwork — we wouldn't change a thing about this car

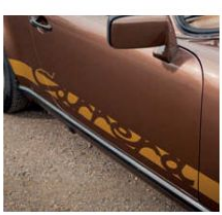
going twenty-seven years when the Carrera 3.0 was launched. One could be tempted by the rarity factor, but, as I say, this air-cooled 911 is getting on for half a century old and, inevitably, surviving Porsches of this age will have gone through the corrosion-stemming process. The upside is that someone else has likely paid for the privilege, but it's important — as well as interesting — to learn where that restoration work was carried out, and how extensively. You want to know if it was a full, back-to-bare-metal nuts-and-bolts job, or a hand-to-mouth superficial makeover. A renovation done in the 1990s may already need re-doing. The upside is that cars like these usually belong to enthusiasts, so there's every likelihood everything is mechanically sound — you'll know immediately, primarily because a neglected 911 drives like a bag of nails. If shopping for a Carrera 3.0, you need to see the bills and receipts for engine and gearbox maintenance (e.g. worn second-gear synchro replaced), fresh clutch, fuel and brake lines, silencer and heat exchangers, reconditioned Fuchs and appropriate tyres, the correct Bilstein dampers, new brake discs and calipers, suspension and roll-bar bushes, wheel bearings and so on. Maybe the upholstery is worn or split? Budget accordingly. High miles needn't be a deterrent, providing the engine has been looked after and serviced properly.

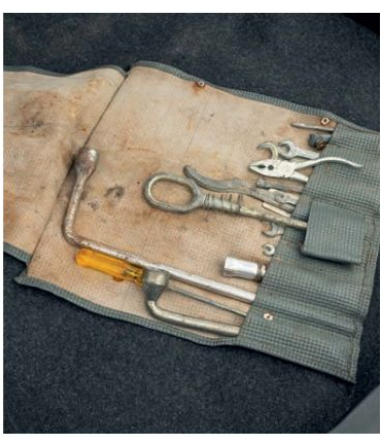
The feature car on these pages belongs to our old friend, Mick Pacey, head of classic Porsche sales and restoration specialist, Export 56, located in rural Bedfordshire. Mick bought his Carrera 3.0 three years ago. He'd gone to auction to buy a Carrera RS 2.7 for an Export 56 customer, but the car he'd set his sights on was "in pretty awful condition" and, instead, his eye

was taken by the Copper-Brown Metallic Carrera 3.0 in attendance. "I thought it was absolutely stunning and spent twenty minutes looking over it," he recalls. "It's not really a car I wanted, but I loved the colour combination, the Cinnamon interior, the fabulous history and the original service books. The late Chris Turner had carried out most of the engine work. The flat-six itself was good, as was the body, though I've just had it detailed and changed the tyres. It's such a fun 911 to drive, and I've always used it at weekends, for shopping, going down to Goodwood and the like." The brown beauty augmented a collection Mick had built up, including a 1974 Carrera 2.7 Targa and a 1976 930. "This is a really cool window for Porsches," he reckons. "It's quite overlooked. Put it this way, everyone goes bonkers over pre-1973 stuff, but there were some really good 911s built between 1974 and 1977. Experimental stuff, obviously. Homologating three-litre Turbos for the first two years, low production numbers and a range of cool colours." And his Copper-Brown car, complete with Cinnamon interior, doesn't get more 1970s.

Mick reckons he's owned eight Carrera 3.0s over the years. I wanted to hear where he thinks the model fits in the grand lexicon of air-cooled 911s. "They're huge value for money," he replies. "The Carrera 3.0 is effectively a narrow-bodied, naturally-aspirated 930 with the turbocharger taken off. This model runs on the same block as a three-litre Turbo and is equipped with a 915 gearbox, which makes it an incredibly great package to drive. It's a very torquey, very revvy engine. It's worth saying, I think you get more out of the turbo block in a Carrera 3.0 with a five-speed box than you do with a four-

Above Though Mick's car is a rare right-hand drive Carrera 3.0 coupe, buyers are afforded a choice of Targa body style and left-hand drive





Above Fabric-centred 'tombstones' are very comfortable, making the Carrera 3.0 an ideal tourer

speed Turbo cog swapper, primary because you never quite know when the turbocharger is going to kick in. Moreover, UK market cars qualified for Porsche's Sport package, which gave you Turbo enhancements, including the whale-tail wing, a smaller three-spoke steering wheel and upgraded upholstery. Only ten percent of Carrera 3.0 buyers optioned the kit, but his particular car has it."

THE WILD WEST

I've a soft spot for the Carrera 3.0, too. My first acquaintance was in Devon, more than two decades ago, when I went to see an example I'd thought of buying. It had been imported from Europe and was a high-spec Sport-optioned car equipped with air-conditioning, though I can't recall if it was original factory equipment or installed at the dealership. The black Blaupunkt rear speakers were quite unusual, and the seats featured perforated black leather centres. Bilstein Sports shocks and fifteen-inch Fuchs shod with Pirelli P6000s formed part of the package — later examples of the Carrera 3.0 sometimes rolled on 'Cookie Cutter' wheels. There was a 380mm competition steering wheel, headlamp washer nozzles on the front impact bumper, power windows, an electrically operated sunroof and black window trim instead of chrome. I also recall *Carrera* sidewinder graphics along the lower flanks. The headlamp bezels were colour-coded as opposed to chrome, but there were no driving lamps beneath the bumper (these would come as standard kit with the arrival of the SC). There was also a novel cruise control arrangement, dubbed *Tempostat* in European cars and, more logically, *Automatic Speed Control* in the United States. Not my cup of tea.

HIS COPPER-BROWN CARRERA 3.0, COMPLETE WITH CINNAMON INTERIOR, DOESN'T GET MORE 1970s

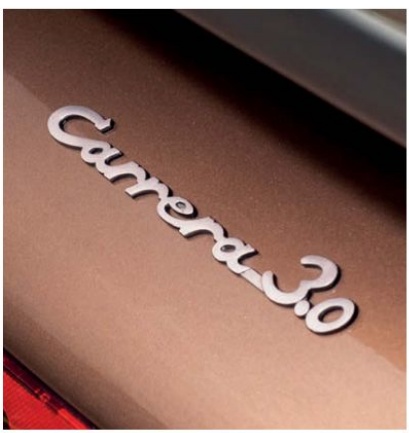
And the reality? In a Dartmoor village setting, I eased myself aboard to take a turn behind the wheel. It immediately it felt like a modern – let's say, mid-period — 911. Previous (unfulfilled) attempts at 911 ownership had involved raucous 2.2-litre models, loaned to me by Josh Sadler, founder of independent Porsche maintenance and restoration specialist, Autofarm. The Carrera 3.0's high-back tombstone seats with their integral headrests and longer seat squabs provided better leg and back support every which way, and the Carrera 3.0 cabin is thus a more relaxed and better composed environment than that of any previous air-cooled 911. Inertia-reel seat belts were standard by now, too, while door handles and bins took on the modern aspect.

The object of my desire had covered a modest 69,000 miles. Personally, I loved the fact it was a left-hooker. Even the way the doors shut and the more opulent door furniture impressed, as did the delicacy of the 915/44 gearshift, while the three-litre flat-six seemed flexible and torquey, able to dispense power at lower rev range than its 2.7-litre ancestors. Gearing seemed longer, too. The car felt hunkered down, well planted compared with earlier 911s. The steering felt nicely weighted, light, with good turn-in on the Dartmoor backroads, the blaring boxer providing decent acceleration when getting off the line at crossroads. I thought it was a well-rounded,

relatively lively car which hung onto some of the sprightlier aspects of its 2.7-litre predecessors. Having driven a few of those over the years, it's worth recalling the 2.7's 175bhp engine delivered brisk performance, excelling in the 4,000-5,000 rev band. It seemed livelier, taut, vivacious, well-balanced and more planted than the even daintier Carrera RS 2.7, with a lovely weight to the steering, even though it's non-assisted, and easy to control in a tight turn-in situation. By comparison, the Carrera 3.0 is a wee bit more stolid, though that's not meant as a put-down, just an observation.

My Dartmoor drive was educational — it helped me choose my first 911, and it wasn't the Carrera 3.0. My mind was made up on that score during a subsequent visit to see Adrian Crawford over on the other side of the Moor, when he introduced me to a Prussian Blue Carrera 3.2. At the time (before the founding of Adrian's dealership, Williams Crawford, in Saltash), he was importing many cars from Europe when the pound was stronger than the euro, and so my Carrera 3.2 was left-hand-drive. I loved it dearly and it did several runs from Norfolk to Portugal until the car was stolen and I swapped the repaired 'cherished salvage' for my 'Peppermint Pig' 964, which is a whole other story. Should I have bought the Carrera 3.0? I don't think I'd have been disappointed, but I would have soon moved on to something quicker and less mild-mannered. And that, in conclusion, makes it an agreeable introduction to air-cooled 911s — the Carrera 3.0 is out there if you look hard enough, and it's a brilliant 911, especially if you don't mind settling for left-hand-drive or a Targa top. Exclusivity awaits. Enjoy! **CP**

Above The perfect stance and that exaggerated rear end give Mick's car a serious amount of road presence



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45 YEARS OF CARRERA 3.0

DRIVING AMBITION

Enabled by the turbocharged 930, but sharing plenty in common with the Carrera RS 2.7, the Carrera 3.0 is, in many respects, the perfect air-cooled 911…

Words **Shane O'Donoghue** Photography **Michael Ward**

Building on what's been said elsewhere in this magazine, it's not difficult to make a case for the Carrera 3.0 being the 'just right' air-cooled 911. For the most part, this three-litre Porsche has an unadorned classic silhouette and great performance without the spikiness of the 930. It's also quite a rare car, though not too rare. But how did it come about? More specifically, what's so special about that three-litre boxer in the tail?

Before we get to the engine, it's probably worth taking a moment to remind ourselves of the history of the Carrera badge. The word loosely translates from Spanish as *racing* and was first used by Porsche as the name of the fiendishly complex Type 547 flat-four. This engine was used in the 550 Spyder and the name came from the gruelling Carrera Panamericana endurance road race, running in Mexico from 1950 until its cancellation on the grounds of safety in 1954. A year earlier, in 1953, two competing privateer 550s were powered by the Type 528, a version of the Type 546 flat-four commonly referred to as the 1500 S. It produced 68bhp and scored the Guatemalan pairing of José Herrarte Ariano and Carlos González the Small Sports Car class win. Two advanced developments of the 550 featuring the then unproven Type 547 showed promise, but ultimately resulted in regrettable DNF — the works 550 Spyder driven by Karl Kling suffered a broken driveshaft, while the sister car,

driven by Hans Herrmann, bowed out in an accident caused by steering arm failure. Herrmann and the 550 would perform better in 1954, scoring third-place overall and first-in-class.

FOUR TOPPER

The 547 engine is now nothing short of iconic. It's referred to as the *Fuhrmann* engine due to its advanced-for-the-time valvetrain being the brainchild of Porsche engineer, Ernst Fuhrmann (later, chairman of Porsche between 1972 and 1980), though many will know it simply as the *Carrera* engine. It used a series of bevel gears and shafts to drive the double overhead camshaft valvetrain. Dual ignition and dry sump lubrication featured, too. Output was quoted as 109bhp at 6,200rpm and 86lb-ft, with the design allowing for much higher revs than previous flat-fours were capable of. A 133bhp variant was developed for the 550, evolving into 148bhp for the 718 race car, but these were specialised racing engines taking a long time to build, which is why they didn't have a significant effect on the specification of Porsche's production cars.

Of more significance to the engine's further development was the decision, taken in 1954, to design a completely new crankcase for the flat-four, finally replacing the borrowed Volkswagen component, which had become too limiting. Porsche designed its own three-piece aluminium case with a much larger oil sump. From thereon in, it became easier to engineer larger capacities with significantly increased performance, and Porsche engines moved further and further away from their humble beginnings.

The Carrera tag was subsequently used in the 356 A 1500 GS Carrera and then in a series of special models, including the Abarth-built Carrera GTL, the 904 Carrera GTS and the 906 Carrera 6. The latter morphed into the 906/10 in 1967, sometimes referred to as the 910 or Carrera 10, and, so it seemed, came the end of Porsche's use of the Carrera nameplate. The Stuttgart squad had other ideas, however, reviving the motorsport-derived moniker for the 911 Carrera RS 2.7 road-going homologation special in time for the 1973 model year. And the RS's conception and development were instrumental in the eventual creation of the Carrera 3.0 we're celebrating today.

At the time of the Carrera RS 2.7's arrival, the regular 911 flat-six was a 2.4-litre unit, but Porsche needed an engine of at least 2.5 litres for the homologation model, allowing freedom to increase displacement for the corresponding race car within the definition of the FIA rules for the 'under three-litre' class. The road car therefore made use of a 90mm bore. At the time, this was the largest bore size used in a 911. That's six millimetres more than that of the 2.4-litre engine, though its 70.4mm stroke was retained, the result being a swept capacity of 2,687 cubic centimetres. Otherwise, it was remarkably similar to the series 911 engines, retaining Bosch mechanical fuel injection and a compression

Above Forging a path for the big-selling 911s to follow, whilst maintaining a link to the Carrera RS 2.7 of yore

ratio of 8.5:1, despite what must have been temptation to alter it. Knock — also known as detonation or pinking — occurs when the fuel-air mixture in a combustion chamber ignites in a different location to the flame front started by spark plug ignition. It can lead to catastrophic damage to the piston crown and other components. Reducing the compression ratio of the engine (the ratio between the volume of the cylinder when the piston is at the bottom and when it is at the top) helps stave off knock, but also reduces volumetric efficiency. A balance needs to be found. Of course, retarding ignition timing helps reduce knock, but doing so affects performance. And, though a higher octane rating would mean fuel could withstand higher compression before detonation, Porsche wanted the Carrera RS 2.7 to run on regular pump gas. Ultimately, factory engineers left compression ratio alone. This is why the RS 2.7's peak outputs of 210bhp at 6,300rpm and 188lb-ft torque at 5,100rpm weren't drastically higher than what was achieved by the 2.4-litre engine in the 911 S (then the fastest standard showroom model). Nonetheless, the RS 2.7's extra torque required an uprated clutch and the 2.7-litre engine benefited from Nikasil-coated bores, as used on the 917 racer. This process reduces friction and wear for better performance and longevity.

As is well-documented, though the sole purpose of the Carrera RS 2.7 was to homologate the Carrera RSR, the road car was a massive success. Only five-hundred units were required for homologation purposes, but Porsche ended up manufacturing more than 1,500 examples. The series production Carrera 2.7 followed, using the same engine, and the template was set for race-inspired Porsche sports cars, but there was still a lot to happen under the engine lid before the Carrera 3.0 surfaced.

The next stepping-stone is the RSR's engine. It took the 2.7 as its basis, but the bore was further increased, to 92mm, which was understood to be the absolute maximum within the confines of the original spacing of the retaining studs and the strength of the lightweight magnesium crankcase. The resulting capacity was 2,807cc. To suit the wider bores, new cylinder heads were fitted, with larger valves and enlarged inlet ports, too. Though the series production crankshaft and connecting rods were utilised, a vibration damper was added, while the racer's camshaft was supported by an extra bearing. Nikasil liners were used and the flow rate of the injection system increased. Not that it's relevant to the road cars, but this engine is the first 911 boxer to top 300bhp. So equipped, the Carrera RSR was a successful race car, but, of course, in motorsport, there's no such thing as 'enough' power, which is why Porsche worked on an even larger version of the flat-six, this time opting for three litres of displacement. Using the same 70.4mm stroke

PORSCHE'S ENGINEERS HAD PROVEN THE CONCEPT OF TURBOCHARGING A 911'S ENGINE FOR ROAD USE

Below Three-litre flat-six power was slightly down on the outgoing 2.7, but maximum torque was now available at 4,200rpm

Above Erm, your luggage goes in the other end, mate

(and the same crankshaft), the bore was increased to 95mm for a swept capacity of 2,994cc. As alluded to above, this wasn't easily achieved, and a new crankcase was required with the placement of the retaining studs moved outwards. In turn, this meant new cylinder heads, which gave Porsche the opportunity to redesign the combustion chamber and ports. Factory engineers also switched to aluminium from magnesium for the new crankcase — the reduction in the amount of metal between the cylinders (due to the wider bore) was found to cause durability issues.

MORE RELAXED DRIVING STYLE, ALTERING THE PERSONALITY OF THE 911 TO SUIT A WIDER CROSS SECTION OF BUYERS

THREE CHEERS

Having proven this engine in its own 'prototype' racers in 1973, Porsche went about homologating it for customer use in 1974. Somehow, the FIA was convinced only a hundred equivalent road cars were required, and the Carrera RS 3.0 was born. It was substantially different to the 2.7 road car in that its chassis was more or less race-ready, and it even came with the 917's braking system. It was also horrendously expensive! Nonetheless, while based on the new large-bore three-litre flat-six, the road car's engine was detuned from that of the racer's, with a single plug per cylinder, tamer cam profiles and a regular mechanical fuel injection setup. With 230bhp and 203lb-ft torque, this lightweight coupe was a serious piece of kit. As the production run was so limited, Porsche took the decision buyers wouldn't mind having to seek out high-octane fuel and used a high compression ratio of 9.8:1 accordingly, stipulating the use of premium-grade petrol only.

At this stage, the engine code of the three-litre boxer continued to started with a '911', as it had since 1970, when the last of the Type 901 engines (a two-litre unit) was replaced by the 2.2. A new era in the 911 was about to begin, however, with the introduction of turbocharging. Ahead of the 1974 Frankfurt Motor Show, Porsche's engineers had proven the concept of turbocharging a 911's engine for road use. The initial development work was carried out on a 2.7-litre version of the proven flat-six and, when Porsche whipped the covers off the prototype 911 Turbo in Germany, the manufacturer's marketing men told the world the 2.7-litre unit made nearly 280bhp at 6,500rpm and that it could hit 160mph. Remember, the most powerful version of the naturally aspirated 2.7-litre 911 of the time made near

Above As exquisitely furnished as any of the impact bumper 911s which would supersede the Carrera 3.0, as demonstrated by full leather and deep-pile carpets

210bhp and would have had considerably less torque than the turbocharged equivalent.

During development, however, while performance was strong, so too was turbo lag. Lag, as many of you will know from personal experience, is the delay in full acceleration after the driver puts their foot down — it takes time for the flow of exhaust gases to accelerate the turbocharger up to speed. Porsche changed tack for the production Turbo and went for a three-litre boxer instead. The larger engine's low-speed torque would have helped offset the inherent turbo lag to greater effect, meaning a less obvious surge in acceleration as the turbocharger spooled up. As developed for the Carrera RS 3.0 and RSR, the new engine used a 95mm bore with widely spaced studs and the Nikasil cylinder liners. This, then, was the beginning of the evolution of the Type 930 engine, which effectively signed the death warrant for the air-cooled 2.7-litre flat-six.

Development of the turbocharged version of the engine is a story for another day, but the first naturally aspirated variant of the 930 engine was that of the Carrera 3.0, launched a year after the 911 Turbo. It shared the force-fed 911's aluminium crankcase and Nikasil liners and had the same 2,994cc capacity, but without the increased intake air temperature and pressure of the Turbo's engine, it was possible to use a higher compression ratio. Domed pistons were fitted to raise this to 8.5:1 (versus 6.5:1 for the Turbo) and the free-breathing cylinder heads of the Carrera RS 3.0 were drafted in, with larger intake ports than Porsche used in

the Turbo's engine. The Carrera 3.0 also used Bosch's relatively new Continuous Injection System, known as K-Jetronic (K for *kontinuierlich* in German, meaning *continuously* in English). This was a mechanical setup, but of far more sophistication than previously used. However, pressure waves in the inlet system could affect the movement of the air low sensor plate, reducing its accuracy. This, unfortunately, limited the amount of valve overlap which could be used (read all about camshaft design and valve overlap on page 88), thereby reducing the advantages of the scavenging effect in the cylinder. Consequently, the Carrera 3.0's valve timing was less aggressive than that of the limited-run RS 3.0 and, more well recognised, its engine output was lower. Nevertheless, it developed 200bhp at 6,000rpm and 188lb-ft of torque at 4,200rpm. Both very respectable figures in the Carrera 3.0's day, enabling a claimed sprint to 62mph from rest in 6.5 seconds and a top speed of nearly 150mph.

Sure, the RS had higher peaks of power and torque, but the Carrera 3.0's engine produced its output at lower revs. This made for a more relaxed driving style, altering the personality of the 911 to suit a wider cross section of buyers. This increased appeal was emphasised by the overall specification of the vehicle, too — this was no stripped-out, track-ready 911. Buyers could even have the Carrera 3.0 with a semi-automatic Sportomatic gearbox if they wished (very few did) and the Targa body was offered alongside standard coupe styling. Subtly flared rear wheel arches were standard, while the distinctive 'whale tail' rear spoiler was optional.

The Carrera 3.0 was in production for less than two years, but more than 3,600 examples were assembled during that time. It's not a 911 often seen, but it's by no means what you'd describe as a super-rare Porsche. What it should be recognised for is effectively defining the next generation of 911, the huge-selling SC, linking it to the fabled Carrera RS 2.7 of just a few years before. And, in its forty-fifth year, while undoubtedly desirable, the Carrera 3.0 is odds with other classic Porsches, insofar as pricing has remained relatively stable over the past few years — this is a rewarding air-cooled classic you won't be afraid to use regularly. Make sure you hit the classifieds before everyone else tries to secure a surviving example of one of the Porsche scene's best-kept secrets. **CP**

Above Staggered Fuchs, purposeful arch flares and a bewinged rear end set a template for the 911's dominance of the yuppie era

911 GT3RS (997)

Orange • Black Nomex Bucket Seats Porsche Ceramic Composite Brakes Sport Chrono • 19" Black GT3 Wheels Porsche Certificate of Authenticity 21,947 miles • 2007 (56)

£149,995

911 GT3RS (996)

Carrara White • Black Nomex Bucket Seats • Schroth Harnesses • Full Roll Cage • One of 113 UK-Supplied Cars Previously Sold & Serviced by Paragon 33,110 miles • 2004 (04)

£149,995

911 Turbo (993)

Arctic Silver • Black Leather Sports Seats • 18" Turbo Wheels • Cargraphic Sports Exhaust • Electric Sunroof • Air Conditioning • Factory Vented Wheel Arches • 49,402 miles • 1997 (P)

£149,995

911 2.2 E

Silver Metallic • Black Leatherette Seats 14" Fuchs Wheels • Left-Hand Drive Tool Kit & Jack • Matching Numbers Professionally Restored • Previously Sold & Serviced by Paragon • 1971 (J)

£134,995

911 Carrera 4 S Targa (991)

GT Silver • Bordeaux Red Leather Sports Seats • PDK Gearbox • 20" RS Spyder Design Wheels • Sport Chrono Switchable Sports Exhaust • 26,057 miles • 2017 (17)

£94,995

911 Carrera 2 S (991 GEN II)

Basalt Black • Crayon Leather Sports Seats • PDK Gearbox with Paddles 20" Black Carrera S Wheels • Glass Electric Sunroof • Rear Axle Steering 9,218 miles • 2018 (18)

£84,995

911 Turbo S (997)

Carrara White • Black Leather Adaptive Sports Seats • PDK Gearbox with Paddles • Porsche Ceramic Composite Brakes • 19" Centre Lock Wheels Sport Chrono • 37,682 miles • 2011 (11)

£79,995

911 Carrera 2 S (991)

Carrara White • Black Leather Sports Seats • PDK Gearbox with Paddles Factory Aerokit • 20" Black Carrera S Wheels • Sport Chrono • Glass Electric Sunroof • 1,404 miles • 2015 (65)

£79,995

911 Carrera 4 (993)

Arctic Silver • Classic Grey Leather Sports Seats • Air Conditioning • 17" Cup Wheels • Blue Power Hood with Tonneau • Previously Sold & Serviced by Paragon • 1997 (P)

£59,995

911 Carrera 4 (997 GEN II)

Aqua Blue • Dark Blue Leather Seats PDK Gearbox • 19" Sport Design Wheels Touchscreen Satellite Navigation • Rear Parking Sensors • Heated Seats & Steering Wheel • 51,574 miles • 2010 (10)

£44,995

911 40th Anniversary (996)

GT Silver • Natural Grey Leather Seats Manual Gearbox • 18" Carrera Wheels No. 1259 of 1,963 Cars Built • Satellite Navigation • Factory X51 Power Kit 45,913 miles • 2004 (04)

£41,995

911 Carrera 2 S (997)

Atlas Grey • Black Leather Adaptive Sports Seats • Tiptronic Gearbox • 19" Carrera Classic Wheels • Sports Exhaust Previously Sold & Serviced by Paragon 72,276 miles 2005 (05)

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GRAND DESIGNS

More than just a maker of sports cars, Porsche has exercised flair in many arenas of design, including the use of technology and skills earned in motorsport and road car development to present the brand's take on alternative travel…

Words **Dan Furr and Emma Woodcock**
Photography **Porsche**

Think of a Porsche. Any Porsche. 356? 914? Arova-Porsche 212 Skibob? You know, for when you need to jump out of your 911 and evade baddies giving chase across snow-covered scenes in the Alps. Hang on a second — firstly, you're probably not James Bond, and secondly, the 911 isn't renowned for being a cargo carrier. How on earth does a skibob fit inside a classic Porsche? And what exactly is a skibob, anyway?

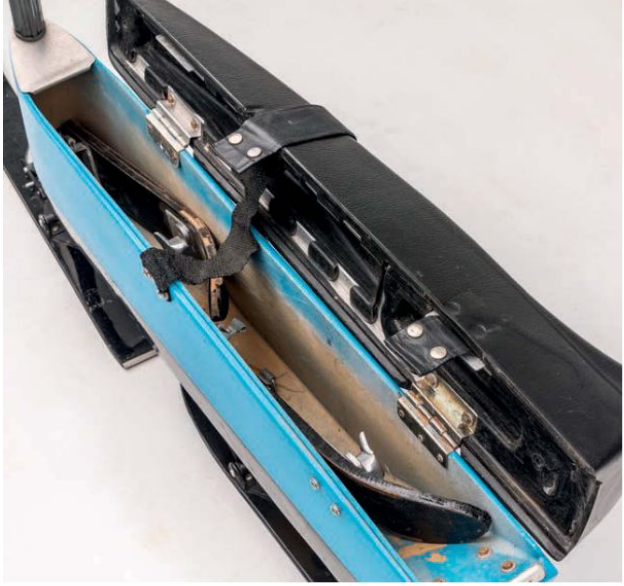
You might know a skibob (a portmanteau of *ski* and *bobsled*) as a 'snowbike'. We'll admit, the latter term of reference is a tad more self-explanatory than the former, but bear with us. Essentially, a skibob is a bicycle-like frame with a bicycle-like seat and bicycle-like handlebars, all atop decidedly un-bicycle-like skis in place of very bicycle-like wheels. Skibob purists (yes, they exist) will tell you a skibob shouldn't ever be referred to as a snowbike, primarily because doing so fails to recognise bicycles developed specifically for travel across snow. So now you know.

The original skibob patent was filed in 1892, developing on what had become a popular way for locals to make their way around the Alps during snow season. By the mid-1950s, with international travel and tourism on the rise, skibob races were being held, leading to the Skibobbing World Championship, established in 1967 and hosted annually. Drawing attention to the possibility of skibobs to satisfy thrill seekers, Austrian downhill skibobber, Erich Brenter, set a recorded top speed of 102mph in 1964, an achievement not bettered for three decades. And, yes, he lived to tell the tale.

By the time the Skibobbing World Championship was founded, the 911 had become a regular sight in the parking lots of hotels dotted around the Alps. In 1970, skibob manufacturer, Arova, was commissioned by Porsche to produce a skibob which would fold down and fit inside the 911's 'frunk'. The design was authored by Porsche, which explains why the resulting skibob is somewhat advanced when compared to period's traditional designs — the Arova-Porsche skibob features front and rear strut-damper suspension and enough seat space for a secret agent (that's you, right?!) and their sidekick, whereas regular skibobs have no suspension and are only suitable for a single rider. Furthermore, the Arova-Porsche skibob features a lightweight hollow frame, aluminium legs and fibreglass skis. Complete with luggage compartment (to store a disassembled sniper rifle, no doubt), it's a larger-than-average skibob, but this is Porsche we're talking about, which is why it should come as no surprise to learn overall weight is only a shade over fourteen kilos.

Only a few hundred Arova-Porsche 212 skibobs were manufactured. It's not an item often seen at auction,

Above Arova-Porsche 212 skibob was designed for two riders and folds down to fit inside an air-cooled 911 'frunk'



Above Unlike conventional skibob design in period, the Arova-Porsche features luggage space and lightweight suspension

but collectors (and, presumably, MI6 operatives) are prepared to dig deep when the opportunity to grab hold of this Porsche anomaly presents itself. As a case in point, the very Arova-Porsche skibob pictured here sold for $4,500 when it went under the hammer at RM Sotheby's Taj Ma Garaj Collection sale in September 2019. Less valuable, but by no means any less fascinating, Porsche's other similarly aged non-wheeled take on snow travel, the PAM Sled, also fetches strong money at auction, with surviving examples of the aerodynamically optimised fibreglass winter whizz — complete with grab handles and Recaro Rallye Bitter cushion — attracting bids upward of $1,000.

MINUSCULE MARVEL

The 911 Junior enjoys similar adoration from discerning Porschephiles. Styled in the image of the contemporary G-series Cabriolet, the Junior and its single piece bodyshell look strikingly true to life. The Guards Red shape boasts the same upright headlights, robust wheel arches and sloping rear as the real deal, yet it's the smaller details that really sell the illusion: rubber strips and bellows ensure both impact bumpers are true to life, square-textured light covers evoke the originals and the chunky three-spoke steering wheel will be familiar to many a period Porsche driver. A genuine rear Carrera badge is the cherry on the cake on each of what's thought to be less than 250 units built in the mid-1980s. Few examples survive to the present day, which is why available Juniors command a pretty penny at auction. In May of this year, for example, online auctioneer, Collecting Cars, sold a one-owner 1984 911 Junior in Australia for close to $25,000.

Unlike many modern battery-powered ride-on cars, the similarities between Porsches little and large run more than skin deep. Lift the small-scale engine lid and you're greeted by an air-cooled engine sitting behind the rear axle and singing through a single exhaust jutting diagonally left through a curved bumper cut-out. Expect a shrunken flat-six, however, and you'll be disappointed. Power comes instead from a single-cylinder Honda G100 K1 engine, displacing a mere 83cc. More usually seen

Below Fibreglass Porsche PAM sled promises high speed and is trimmed by Recaro

in gardening and construction equipment, the Japanese unit sucks through a single carburettor to produce 2.2bhp at 4,200rpm and a mighty 2.8lb-ft torque.

A two-speed manual transmission makes the most of what little power is on offer, helping the Junior rocket as high as 15mph. Young drivers (or svelte adults able to squeeze into the cockpit) have to work for that performance, though, using a centre-mounted shift lever and foot operated multi-disc wet clutch. The brake and accelerator pedals sit alongside in conventional order, making the Junior an 'early years masterclass' in control coordination.

Those aren't the only skills the Junior can teach a budding petrolhead. The diminutive Porsche starts with a twist of the dashboard-mounted key and is held in place with a manual handbrake, while a twist of a switch turns on the headlights. All the other lamps work, too, with the indicators and their binnacle-mounted repeaters flashing on request. Additionally, the brake lights illuminate with each pedal application. The Junior even has a functional horn.

Take it for a drive and you're rewarded with fluent, Porsche-like road manners thanks to the sophisticated running gear. Coil springs at all four corners smooth out the ride (with the help of rubber Goodyear Terra Tyres) and, though you'll only find them on the back axle, plain discs and calipers take care of stopping. It all adds up to a remarkably conventional drive.

Collecting Cars was busy with Porsche curios in May. Just two days before selling the 911 Junior mentioned above, the company shifted an Evolution variant of Porsche's 1990s FS mountain bike. Noted for its lightweight construction, exotic-for-the-time materials and full suspension (as well as being supplied with its own logbook), the FS Evolution features a carbon-fibre crank set and eight-speed Shimano cassette, along

Above It might be small, but the price tag isn't — expect to pay big money for a surviving 911 Junior in mint condition

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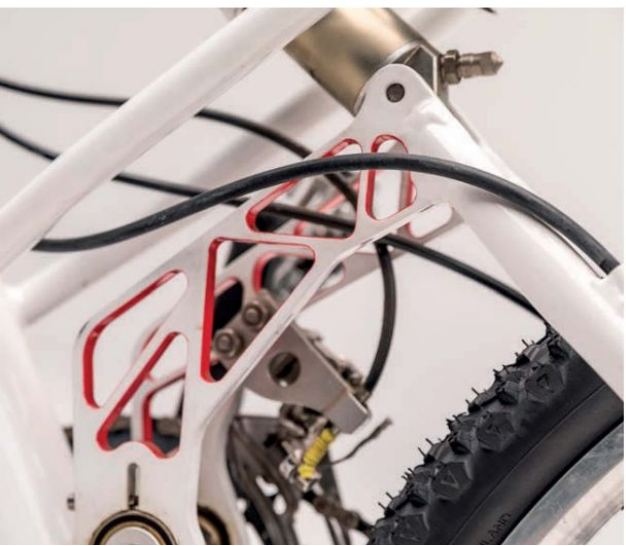
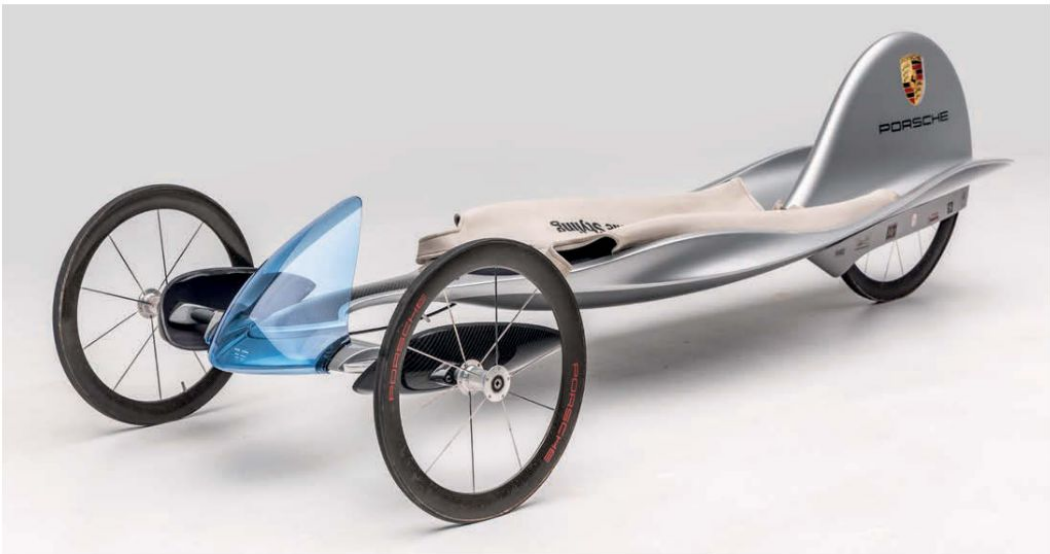
with a Sachs Plasma gear system with quartz inverse derailleur for precision shifting in all conditions. Full damping (a Risse Racing Astro shock absorber works hard at the rear) made Porsche bicycles stand out in a crowded mid-1990s marketplace, and though pitched at a premium price point (at the time of manufacture, an FS Evolution would have set you back around $10,000), a wedge of your hard-earned cash bought you a TIG-welded aluminium tube frame with inverted aluminium Vortec forks, a bespoke double carbon-fibre triple clamp, a carbon-fibre saddle post, custom-crafted bar ends, Spengle carbon-fibre three-spoke wheels and a Flite Kevlar saddle. Braking was supplied by huge Hope Hydro discs.

Various limited edition FS bikes (such as the Mobil 1 Pikes Peak Special pictured here) were offered, setting the tone for today's Porsche bicycle product line-up, which features the evocatively named RS range and the fully carbon-framed eBike. The latter is Porsche's collaboration with luxury bicycle manufacturer, Rotwild. Fitted with a new Shimano motor assisting pedalling speed up to 25km/h, the cables of the eBike's electronic gear shift, as well as the accompanying Magura brake system's cables, are hidden in the handlebars. A hydraulically adjustable saddle post comes as standard equipment. Prices start a shade under $11,000. Of course, what all this demonstrates is how Porsche is, in fact, more than just an automobile manufacturer.

Above Advanced for its day, the Porsche FS bike is still a force to be reckoned with





Above Gravity Racer was an experimental exercise in aerodynamics and made use of Formula One technology

Sure, we've all seen Porsche Design watches (can you buy a new 911 without being offered a $29,000 timepiece?!) and Porsche Driver's Selection apparel seems to clothe every other enthusiast you see at shows, but the brand's engineering and design services stretch back far beyond the formation of the Porsche sports car company, to a time when Ferdinand Porsche was experimenting with all-electric vehicles. Sounds familiar, huh?! We'll be delving into the archives for the next issue of *Classic Porsche*, a 148-page bonanza celebrating nine decades of engineering excellence. For the time being, however, we'll tease with this, the awe-inspiring carbon-fibre Porsche Styling Gravity Racer.

SWEET AS HONEY

This oddball in the Porsche portfolio can reach speeds in excess of 50mph and is constructed using the same materials and technology as the period's Formula One cars. Essentially, it's an early 2000s take on the classic American soapbox derby vehicle, but produces road car speed with the momentum of gravity serving as power (does this qualify it to be described as *air-cooled*?!). Porsche's 2003 entry, pictured here, was competitive enough to win the competition. It finished second in 2004. How do you 'drive' it, though? Balls of steel, that's how — the driver lies flat, as though on a surfboard. In fact, West Coast surfing culture provided much inspiration for the design and development of the Porsche Gravity Racer, as demonstrated by the vehicle's pilot being zipped-up inside a Porsche Styling-branded neoprene harness, which can be compared to a modern wetsuit design, serving to smooth airflow over the occupant's body. A blue-tinted vacuum-formed acrylic windscreen protects the driver from bugs, sun glare and flying stones at the same time as serving to channel air around their body, thus further aiding aerodynamics.

A honeycomb-cored carbon-fibre monocoque riding on super-thin lightweight carbon-fibre wheels and rubber bands for tyres (Porsche claimed them to offer the lowest rolling resistance of any tyre in the world) makes for a harsh ride, especially when compared to offerings from competition rivals, such as Nissan North America, which produced a carbon-graphite Gravity Racer with a conventional legs-forward layout, four-wheels and a seat allowing the driver to sit upright. A traditional steering wheel also featured. The Porsche three-wheeler, on the other hand, requires the driver to steer by way of holding the front axle, as though a set of handlebars. Cut-outs house brake levers behind protective carbon-fibre shrouds. Yep, soapbox racing never looked so good. **CP**

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RETRO RIVALS

The three finalists in Porsche Classic's latest restoration competition have been announced, and though each car is a worthy winner, many of the runner-up entries are also wonderful examples of how a tired air-cooled classic can be sympathetically saved from the scrapyard...

Words **Dan Furr**
Photography **Tyler Clemmensen, Porsche Ontario, Porsche Warrington, Porsche Dallas**

Across its numerous sales territories, Porsche has hosted numerous restoration competitions, pitching Porsche Centres against one another in a battle to see who can deliver the best presented Stuttgart-crested sports car. These competitions encourage centre managers and their staff to demonstrate their skills bringing an unloved classic Porsche back from the brink, thereby advertising themselves as 'a safe pair of hands' to take care of customer cars in need of a new lease of life. While it's true to say the focus of these contests has largely been on resurrecting air-cooled 911s, the theme of the competition held across the UK's Porsche Centres in 2016 celebrated the fortieth anniversary of the manufacturer's transaxle family of products, encouraging participating dealers to strip, restore and rebuild a 924, 928, 944 or 968. A subsequent UK-hosted Porsche Classic competition saw each centre resurrect a 986 Boxster, before decorating the resurrected

roadster in classic motorsport livery and competing with it in the Classic Boxster Cup, hosted by Porsche Club Motorsport and offering centre technicians exposure to a part of the Porsche scene they might otherwise miss.

Across summer 2021, Porsche Classic hosted a highly anticipated restoration competition in the United States, inviting forty dealerships to transform the same number of sports cars from zero to hero. Entries run the gamut from the 1950s to the 2000s, from 75bhp to 612bhp, and include cars with their engines positioned front, middle and rear. The USA is an obvious choice for such a competition — North America is home to more classic Porsche sports cars than any other market.

The forty competing cars reside in all parts of the USA and include numerous examples of the 356, five generations of the 911, transaxle models and the first-generation Boxster, currently celebrating its twenty-fifth anniversary and widely considered a modern classic. Rarities are also represented, not least in the form of a 1988 911 Turbo (930) Flachbau, a 1989 Carrera 3.2

Speedster and the youngest car entered — a Carrera GT, one of the greatest sports cars of all time.

Other than offering Porsche Centre technicians the opportunity to get involved in fun projects exposing them to the kind of work they don't necessarily deal with on a regular basis, the competition and resulting publicity serves to promote the availability of more than 60,000 unique genuine parts for legacy models through Porsche Classic. In fact, nine of the participating dealerships are designated Porsche Classic Partners, going above and beyond in their commitment to keeping vintage Porsches on the road in the same operating condition as when they left the factory.

Billed as the 2021 Porsche Classic Restoration Challenge, the competition ran until mid-August, when three finalists were picked, each judged to be the best restoration in their territory: east, south-central and west. The tip-top trio has now progressed to the final, with the overall winner to be revealed in the next issue of *Classic Porsche* after being unveiled at Sportscar Together Fest at Indianapolis Motor Speedway on September 12th. Final judging will be carried out by Porsche Cars North America's Executive Vice President and Chief Operating Officer, Joe Lawrence, as well as Vice President After Sales, Glenn Garde, and Technical Support Manager, Doug House. Judging panels throughout the competition have included Porsche Cars North America area managers and experts from Porsche Classic, and scoring was based on a rubric which evaluated authenticity, craftsmanship and, most importantly, the operating condition of each car's engine. Porsches are meant for the road, after all.

After months of diligent work, documentation and check-ins, the three finalists vying to be the overall winner of the 2021 Porsche Classic Restoration Challenge are revealed across the following pages.

Above and below Judges had a hard time narrowing the forty entries down to a shortlist of three finalists

AREA EAST

When Porsche Warrington acquired its 1990 964 Carrera 4, the car was in need of a total makeover down to the carpet. Most pressing, however, was the neglected Marine Blue Metallic paintwork, which was peppered, burned and scratched from front to back. The high standard of the car's respray was one of many details elevating the restoration to Area East winner.

"The 2021 Porsche Classic Restoration Challenge was a great experience for our dealership. As well as encouraging collaboration between our parts, service and sales departments, it also brought all of the our company's supporting staff together around a vision demonstrating our collective passion and enthusiasm for the Porsche brand," said Marc Brenner, Porsche Warrington's General Manager. "We look forward to showcasing our finished 964 project to a wider audience, including existing and new dealership customers, plus the wider Porsche enthusiast scene."

Above and below You don't often see a 964 with Pasha-trimmed tombstones, but that's what we've got here

AREA SOUTH-CENTRAL

Yes, it's another 964! This example from Porsche Dallas captured the eye of judges at Porsche Experience Center Atlanta, where south-central finalists were being inspected. Pebbled leather on the roof and side mirrors looks factory-fresh, as does the navy leather interior.

"We were given the opportunity to compete in the 2021 Porsche Classic Restoration Challenge with a customer's 1990 964 Carrera 4 Targa finished in *Dunkleblau*," said Patrick Huston, General Manager of Porsche Dallas. "We really enjoyed getting to know the owner and his history with this special 911, which happens to be the ninetieth 964 assembled. His initial plan was to carry out a light recommission of the semi-open drop-top, but when my technicians carried out an inspection, it became apparent much more work was required." Contrary to what many might think, Huston tells us the most rewarding part of the competition wasn't being shortlisted for the final. "We got most enjoyment out of how pleased our client is with his restored 964. All our hard work paid off when he hit the road for the first test drive after completion of all mechanical and cosmetic work. He was thrilled at finally being able to feel his 911's true performance, which is in stark contrast to how the car performed when it was first handed to us. It really is as good as new."

Above and below Porsche Dallas restored a customer's gorgeous 964 Carrera 4 Targa to its former glory

AREA WEST

The bold red *Carrera* script down the side of this 1989 Carrera 3.2 Targa tips a hat to the work Porsche Ontario's technicians conducted under the rear lid of what was judged to be the Area West winner. With an engine-out restoration underway, the team decided to upgrade the performance and aesthetics of the 117,000-mile sports car into an RS-inspired ride. The results are stunning.

"A few years ago, if you'd you told me I would be re-building a 3.2-litre flat-six as part of a Porsche Classic competition, I would have thought you were crazy!" said Manni Viana, Porsche Ontario's Service Manager. "This project was a culmination of all the love and passion for the brand I've had since childhood. I've been with Porsche for over thirty years, first as a technician in motorsport and now as Service Manager at the newest Porsche Centre in Los Angeles." He credits his colleagues with helping to make the restoration a reality.

"It wouldn't have been possible without the support of dealership owner, Steve Kienle, General Manager, Mark Marchant, foreman, Matt Esber, and, of course, everyone else at Porsche Ontario. Being able to put my skills to the test and to be competing with the best Porsche restorations in the USA is one of the greatest achievements I've had in my career with Porsche. It's no exaggeration to say I've have never been prouder. Metal sharpens metal, and to be a finalist in Indiana is nothing short of an absolute honour."

Above and below Though straying from original specification, this RS-inspired Carrera 3.2 Targa won favour with the judging panel

DELVE DEEPER

It's all too easy to focus only on the finalists, including, of course, the eventual winner of restoration competitions, but in our experience, regardless of the popular vote, every entrant has its merits. As a case in point, we were bowled over by the 1955 356 Speedster restored by Porsche Santa Clarita, a dealership of the Galpin Motors group, which has been operating since 1946. The car was acquired from a California local who had modified the air-cooled classic for racing during his fifty years of ownership. With coachwork by Reutter Karosserie, the race-oriented roadster was originally imported to the United States by famed New York-based European sports car dealer, Max Hoffman.

When approaching the restoration, Galpin Motors President and COO, Beau Boeckmann, opted for a full restoration with period-correct modifications, reimagining the Speedster as if it had been *Galpinized* (groan!) when new. Porsche Santa Clarita technician, Nicolas Briseno, carried out the mechanical work, while Dave Shuten of Galpin Speed Shop completed the body and paint modifications. Galpin Auto Sports assisted with the remaining restoration.

The car's body was modified with shaved rocker mouldings and rear reflectors, a louvred decklid, and filled, smoothed and chromed bumpers. Underneath six layers of clearcoat, a custom-mixed Blue-Green paint from PPG Industries accents the tailored body, as does a set of six-inch-wide Halibrand-style wheels wrapped in Avon tyres and finished in a shade of gold lifted from the House of Kolor colour catalogue. The aggressive rims measure sixteen inches in diameter at the rear, fifteen at the front. Meanwhile, under the rear decklid lies an upgraded 1.6-litre SC-specification flat-four pushrod engine mated to a 519 transaxle and finished with chrome tinware and chromed exhaust manifolds. The chassis is mainly standard Speedster, though fully restored, and makes use of Koni dampers. On the inside, red leather with tartan inserts wrap around factory Porsche buckets, while PPG Blue-Green trim colour-codes to the body. It's nothing short of a triumph.

We don't envy the judges — there will be critics who argue having three finalists manufactured a year apart from one another, not to mention two examples of the same model (irrespective of body style), fails to represent the wide variety of classic Porsche projects entered into the competition. As mentioned earlier, however, notwithstanding the fact Porsche Classic representatives deemed each finalist to be the very best restoration from its respective area, the purpose of the contest is to highlight the skills Porsche Centre technicians possess, as well as to promote the availability of a wide range of parts through Porsche Classic. In this regard, every one of the forty entries is a winner, regardless of whether they're heading to Indiana. We look forward to bringing you details of the victorious restoration next month. **CP**

Above Porsche Santa Clarita's 1955 356 Speedster restoration is one of the runners up, despite being one of the Porsche Classic contest's strongest entries

A NEW DIMENSION IN POWER

Claimed to be the first design of its kind since Mazda popularised the Wankel rotary engine, this radical radial powerplant has been designed, developed and successfully tested, and is now in production in Australia…

Words and photography **Richard Holdsworth**

One of the strangest Grand Prix race cars ever assembled is the exotic 1935 Monaco-Trossi, a front-wheel-drive, open-cockpit single-seater powered by a supercharged, air-cooled, sixteen-cylinder, two-stroke radial engine. In truth, the Monaco-Trossi was as odd at its time of manufacture as it is today, boasting a front-mounted powerplant with cylinders (and spark plug) pointing in an outward fashion from a centrally positioned crankcase. It's a configuration commonly used in vintage aircraft prior to the widespread adoption of gas turbine engines for aviation, but we'll wager all but a small minority of our readers know the design was ever used in an automotive application.

Seventeen years ago, Adelaide inhabitant, Nick Mebberson, revisited the idea and, along with friends, Loui Burke and Scott Pearce, decided to bring an efficient radial engine design for classic sports cars to fruition in the present. The talented trio formed Radial Motion and, with a sizeable investment of $3,000,000 Australian dollars, their associated manufacturing company, Bespoke Engineering, is now putting this impressive engine design into production following a period of solid development and testing.

Inspired by the radial aircraft engines of the 1920s, the petrol-powered Radial Motion unit is currently a four-stroke radial configuration of three cylinders. It can either be developed as air-cooled or water-cooled and will eventually be offered in a choice of three, six or a humongous twelve cylinders, as well as in electric-hybrid format. Compact in design, lightweight and making use of many already available components, Mebberson and his colleagues claim their unorthodox design to be low-maintenance and, crucially, inexpensive to maintain.

It can also be heavily tuned by specialists and enthusiasts — the three-cylinder launch engine is available to order in either two-litre or 2.1-litre variants with performance in the region of 100bhp per litre. Take it from us, the raucous sound of the exhaust is compelling, but we're getting head of ourselves. Let's get back to the basics.

IT MIGHT HAVE CURBED THE DESIRE OF MY 356 SPEEDSTER TO DEPART A RACE TRACK BACKWARDS

Unlike the aviation engines of yesteryear, Radial Motion's design doesn't use the master/slave rod layout favoured back then. In place of this rather complex arrangement, the engine you see on these pages uses a common journal, much like those used in V-twin engines, delivering a more compact design. This concern for packaging makes the three-cylinder offering perfectly suited to a Volkswagen Beetle, Kombi van or diminutive Porsche. It also maintains strong ground clearance when compared to standard Porsche or Volkswagen engines and is said to offer better weight distribution. I can't help but observe, had this potentially revolutionary engine been around many moons ago, it might have curbed

Above Radial Motion three-cylinder engine is perfectly suited to older classics with limited engine bay space

the desire of my 356 Speedster to depart a race track backwards. Ahem.

There are other advantages, not least the aforementioned use of readily available engine components, such as pistons, connecting rods and valvetrain equipment lifted from the legendary GM LS-series of V8 engines. Featuring an integral dry sump oil system, the motor also has a low centre of gravity.

Bespoke Engineering has been providing a variety of engineering services — from invention to production — ever since the firm was established a few years ago. The small design team includes industrial and mechanical engineers, machinists and technicians, with commissions varying in size and complexity. With Radial Motion's project, Bespoke Engineering was in a prime position to assist with full production. Mebberson says the initial aim is to produce engines for specialist use, including keen enthusiasts who own a classic car and want to create something unique. "Obviously, our radial engine suits rear-engined Volkswagens and Porsches perfectly, but we're receiving much interest from commercial operators enquiring about the potential for use of a modern radial engine in special vehicles or even industrial powerplants. We've also had interest from the Australian military, affording us the opportunity to work on a number of offshoot projects in this exciting space."

All of this sounds brilliant, and we applaud Mebberson, the Radial Motion team and everyone at Bespoke Engineering for turning dreams into reality, but the application which we thought might make *Classic Porsche* readers salivate is the special 356 race car fitted with a Radial Motion engine and owned by Australian motorsport legend, Ron Goodman.

The first of Ron's 356s to be fitted with one of these engines (yes, he plans to install more) is now running road tests before intended motorsport use. Fittingly, the car carries the name *Aero 356* and is being prepared for participation in the Shannons Adelaide Rally, the largest tarmac rally event held in the southern hemisphere. Hosted annually and offering a $25,000 prize pool ($10,000 handed to the outright winner), this massively popular three-day motorsport event attracts wild four-wheeled participants, including heavily modified 911s, Super Touring BMWs, classic Fords, Ferraris, Holdens and much metal from the Land of the Rising Sun, including plenty of specially prepared rally cars (chiefly Toyota Celicas, Subaru Imprezas and Mitsubishi Lancer Evolutions). In total, the event attracts close to 450 entries each year.

Ron is well-known in Australia, but he has also forged a reputation as a capable race in the Americas and mainland Europe. Put it this way, his 1954 356 — built

Below Beautifully engineered, the unit promises near 100bhp per litre and will soon be available in three, six and twelve-cylinder variants, as well as the option of hybrid-electric power

Above Ron Goodman on his way to victory at the Monterey Motorsports Reunion

in accordance with historic racing regulations — has brought him across the line in first-place at Monterey Motorsport Reunion, said to be the Holy Grail of historic race car action in the USA.

Amazingly, he beat back a gaggle of more expensive machinery, including wide-bodied 911s and purpose-built weaponry from Maranello. With this background, he couldn't resist the invitation to test a new Radial Motion engine. In fact, he was so impressed, he was one of the first enthusiasts to place an order for one of his own cars. "I tried a Beetle fitted with one of these new radial engines and was blown away by the performance. I immediately recognised the potential for enhancing the power of a 356 and wanted to try a Radial Motion engine in one of my own Porsches, primarily in the interests of offering the conversion to customers of my own maintenance, restoration and tuning business, Exclusive Body Werks, a certified Porsche Collision Centre. Installation is very easy. In truth, it'd be an easy fit in any swing-axle, rear-engined vehicle, classic Porsche or otherwise."

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UNLEASH THE BEAST

His Radial Motion engine is fitted to no ordinary air-cooled Porsche (if *ordinary* is a word one can ever use to describe these cars?!). He found the car in Queensland, brought it to his workshop in Sydney and began modifying. *Aero 356* started life as a basic 356 B T5 built in 1960, but now carries an aluminium floor pan in place of standard steel. In fact, pretty much everything has been lightened. For example, the windows are made from Lexan, a polycarbonate resin thermoplastic said to have impact strength 250 times greater than that of glass and thirty times that of standard acrylic. A purpose-built dashboard has been fashioned by Ron's in-house craftsmen, and though Porsche torsion bar suspension has been retained, the entire chassis has been strengthened and stiffened for race car duties.

The front spindles have been custom fabricated to allow optimised caster and camber, while disc brakes now feature in each corner. The standard 741 transmission has been retained (you'll be pleased to learn it's fully compatible with the Radial Motion engine), but makes use of a selection of different gear sets to suit different circuits and surfaces. A limited-slip differential keeps the car planted, equipment needed more than ever since the installation of the powerful radial motor, which Ron is testing to the limit by feeding the manifolds with a shot of nitrous injection whenever he wants his potent Porsche — clearly altered, but no Outlaw — to reach warp speed. When we said he was putting the new engine through its paces, we weren't kidding! We're delighted to report performance, reliability and durability have, thus far, proved bulletproof.

We'll bring you a more detailed look at the Radial Motion engine, not to mention Ron's real-world findings behind the wheel, in a forthcoming issue of *Classic Porsche*. Suffice to say, in a scene obsessed with alternative fuel types and a move toward electrification, and notwithstanding its origins in the days of early aviation, it's great to see serious investment of time and money in a new petrol engine aimed squarely at owners of cherished classic cars. And if Ron's early experiences are anything to go by, we have no doubt Radial Motion's order books will be busy before long. Stay tuned! **CP**

RACE ODDITY

When is a Porsche not a Porsche? Classic Porsche visits Germany to spend quality time with a KMW SP20, a little-known Porsche-badged rarity, but one which exerted big influence on the development of Stuttgart's legendary Group C sports prototypes...

Words and photography **Robb Pritchard**

Over the years, countless small teams have entered the crucible of professional motorsport, only to fail and fold. In the early 1970s, one of these brave outfits was McNamara Racing. Only in existence for a few short years until 1972 and not progressing beyond Formula Three, the team's name is barely known outside those with hardcore interest in historic motorsport. And yet, contribution to the development of motorsport technology by team founder, Frank McNamara, and his talented technicians is nothing short of huge, not least because McNamara Racing was one of the first teams to experiment with riveted and glued aluminium monocoque race car chassis.

Frank McNamara was a former Green Beret who raced Formula Vee cars while stationed at Lengreis on the German-Austrian border in the wake of the Second World War. He went on to enjoy a fruitful working relationship with race car designer, Dan Hawkes, a time-served

engineer at Lotus who also doubled up as a professional driving instructor at Brands Hatch. In the 1960s, the two developed a string of successful Formula Vee cars. The resulting machines became immediately well regarded, in part due to McNamara's focus on driver safety, evident through the then new inclusion of fully plumbed-in fire extinguishers. By 1969, McNamara Formula Vee cars were the series benchmark.

Understandably, Frank's success producing championship-winning Formula Vee cars encouraged a desire to progress through the ranks of motorsport. Consequently, Hawkes designed the F3 McNamara Sebring Mk3 for the 1969 Formula Three season. Interestingly, notable drivers behind the wheel of McNamara's F3 cars include Formula Vee alumni, Niki Lauda. The Mk3 was further developed for 1970, but by then, the team had already set its sights set on other projects, including the design and construction

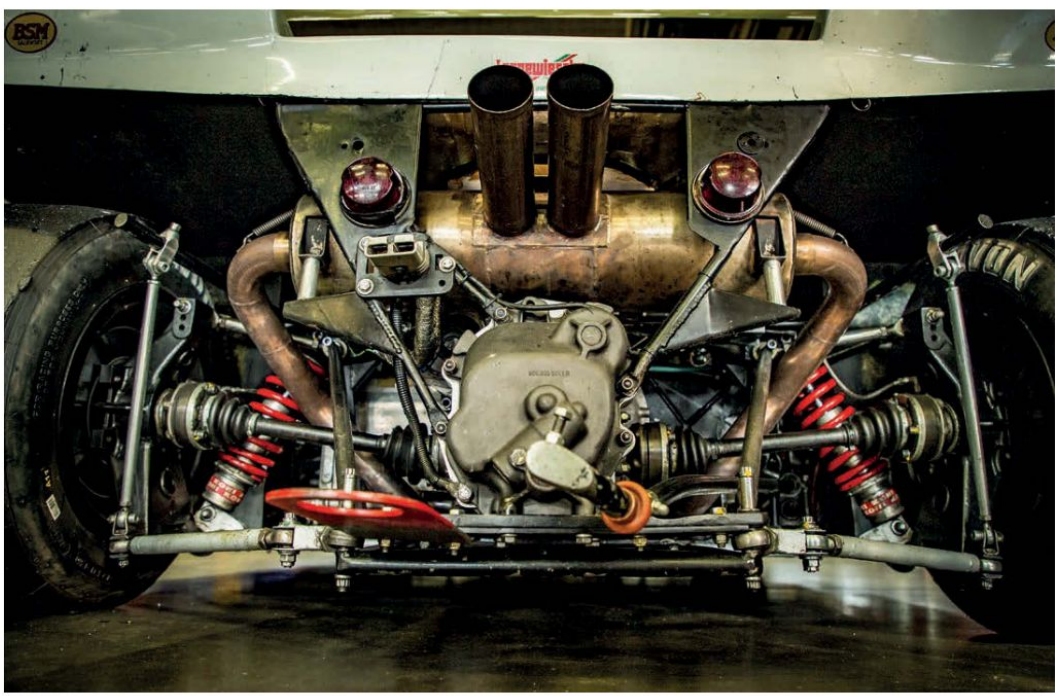
Above What's that coming over the hill? Is it a... Porsche? Well, no, it isn't...

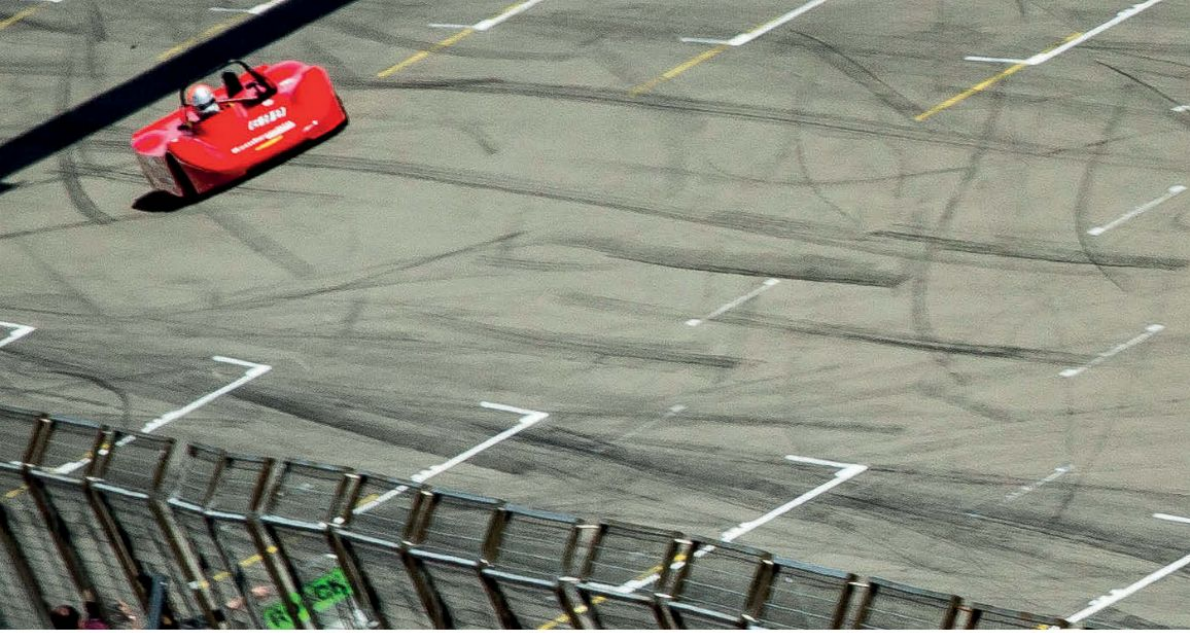
of a bespoke chassis for Mario Andretti to contest the 1970 Indianapolis 500. This valuable partnership with Andretti saw McNamara Racing branch out into Formula One — the team modified Andretti's Cosworth-powered March 701, a model debuting at the 1970 South African Grand Prix and driven in motorsport's top tier by Jackie Stewart, Francois Cevert, Jo Siffert and Ronnie Petersen for teams including Tyrell, Colin Crabbe Antique Automobiles and, of course, March itself. Perhaps an indication of 'too much too soon', neither of Andretti's McNamara cars proved successful. Worse still, their failure to demonstrate the kind of dominance McNamara's Formula Vee racers were known for threw Frank and his team into financial ruin. And as if things couldn't get any worse, in December 1970, Frank's wife was murdered.

In an unexpected twist to the McNamara story, Frank disappeared, not only leaving a broken business, but also an open investigation into his wife's death. The International Criminal Police Organisation (Interpol) put out a request for his arrest, but, to this day, he has yet to be found. McNamara Racing had gone bust in spectacular fashion, but all was not lost — novel work on the development of Hawkes' designs continued when German sports car racer, Hans Muller-Perschl, recognised a business opportunity in the generous sum of prize money available for successful competitors in Interseries, the European equivalent of Can-Am. A top-five finish in a single race, for example, could return enough money to cover the purchase and development cost of a participating car. Muller-Perschl reasoned a lightweight, easy-to-handle and reliable sports car based on a McNamara Formula Three chassis could present him with a full-blooded prototype racer costing significantly less than a Porsche 908 or 917. After all, even when these legendary beasts were newly obsolete for the works teams after being banned from the World Sportscar Championship, they remained prohibitively expensive for many privateers.

THREE OF KMW'S CREATIONS CAME TO BE FITTED WITH PORSCHE'S FIRE-BREATHING 911 RSR 3.0 RACE ENGINE

In 1971, Muller-Perschl convinced former McNamara engineers, Jo Karasek and Manfred Weiss, to join him in the new project, which revolved around acquiring and developing McNamara Racing's surviving race car equipment an tooling. At the time, there was another racing driver named Hans Muller, so to differentiate the two, Muller-Perschl added his mother's maiden name to race entries, but for the team name, he used the M for Muller. The initials of the project's involved parties





combined to give us KMW. The axles and suspension assemblies came from the abandoned McNamara F3 car. While the first KMW, launched with model name, SP20, ran with a two-litre flat-six derived from a 911 road car and tuned to 911 R specification, the next was equipped with a more competition-oriented 1.8-litre Ford BDA (Belt Drive, A-type). Although the Blue Oval powerplants were built specifically for privateers working with modest budgets, they proved anything but cost-effective, demonstrated by the need for an extensive rebuild after every few hours of operation. The young KMW squad hadn't experienced the same when running the air-cooled Porsche boxer, which is why Muller-Perschl decided to switch back to a 911-sourced flat-six, though the unit was heavily modified to develop close to 230bhp. This was more than adequate in a car weighing roughly 500kg — power to weight ratio was fantastic and, thanks to the McNamara chassis, handling was on par with that of the 908 and other factory race cars commanding a premium price tag.

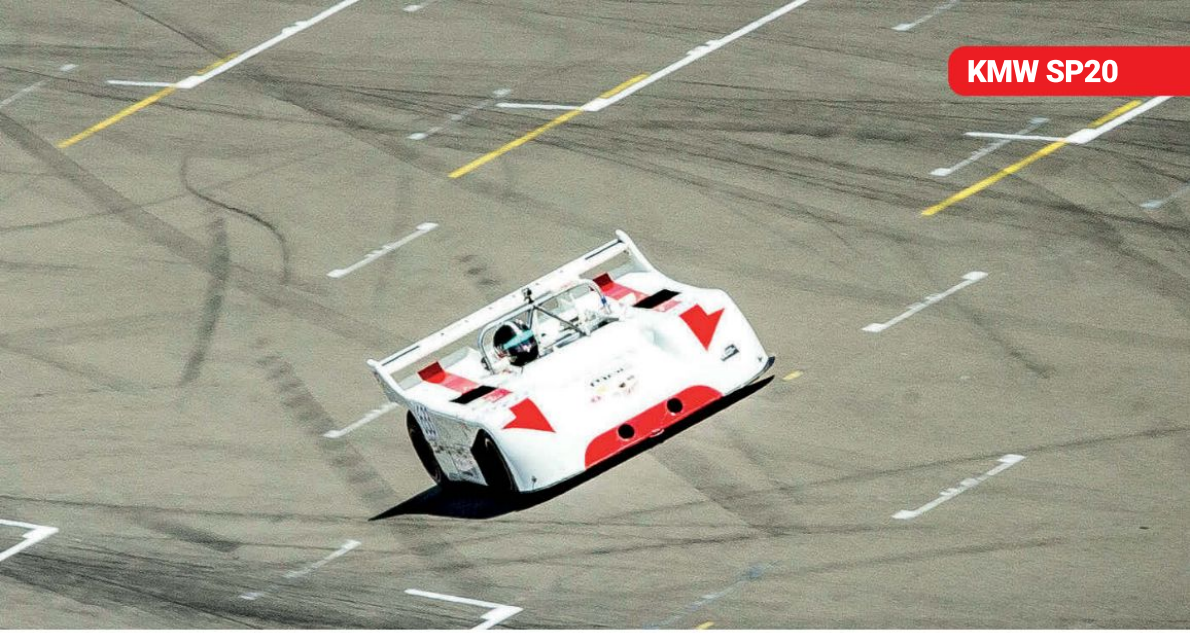
PORSCHE PUNCHING

KMW pitched its cars against significantly faster, quicker and more powerful Porsches, as well as eight-litre McLaren V8s and track monsters manufactured by Lola, BRM and March. Needless to say, the SP20 was regularly beaten back, but where it lacked outright pace, it possessed rock-solid reliability — with its 911 road-car-based engines, the KMW crew could keep going at full chat for long periods without fear of mechanical failure. It was this lack of lengthy pitstops which enabled KMW to regularly finish in the top ten against much faster rivals, achievements which didn't escape the attention of Porsche's then head of research and development, Helmuth Bott.

Until KMW's emergence as a serious contender for Interserie points haul, top-flight sports cars had utilised tubular spaceframes. Porsche took this method of construction to extremes by famously making the winning 1971 24 Hours of Le Mans 917 (917-053) chassis from magnesium. Understanding what could be achieved with the KMW car's riveted aluminium monocoque if further developed under competition conditions, however, Bott approved what was essentially a cut-price research and development programme by offering to supply the small team with engines and gearboxes at cost price — or even without charge — in return for valuable development data. This is how three of KMW's creations came to be fitted with Porsche's fire-breathing 911 RSR 3.0 race engine. In addition to bumping KMW high up Porsche's list of customer teams for procurement of parts, however, Bott afforded Muller-Perschl an arguably more valuable olive branch: he allowed KMW to display the Porsche crest and company name on its cars.

Depending on who you ask, the number of KMW cars assembled ranges from single figures up to twenty units,

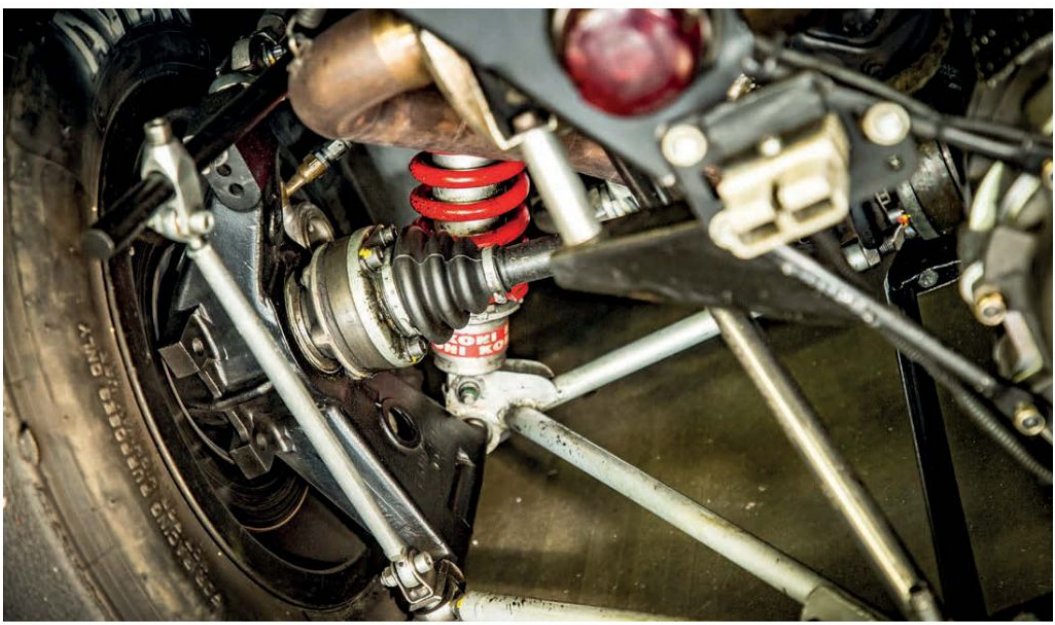
Below The car is regularly used by Langewiesche for historic racing, though he competes for fun, not to win



Above McNamara chassis coupled with Porsche power provided Norbert Singer with plenty to think about

though official records state only six cars were built. As we know, a trio of these cars made use of Porsche's awesome RSR three-litre flat-six, with their designation changed from SP20 (Sports Prototype two-litre) to SP30 (you can work it out!). In truth, engines were interchangeable, and KMW cars raced with whatever a particular event, class or driver required. Indeed, the last SP was kitted-out with a turbocharged four-cam 911 R engine after Porsche sold its remaining stockpile to Muller-Perschl in 1972, the units considered obsolete following their experimental use with Vic Elford and Gerard Larrousse behind the wheel for the 1968 Tour de Corse and various rallies in 1969. Forced induction at the track was in relatively embryonic stages when KMW slapped a snail-shaped bhp booster onto the boxer, however, and when mechanical reliability proved predictably problematic, the team switched to the three-litre RSR unit. Not long after, KMW's parts stock from McNamara's Formula Three programme ran out and Muller-Perschl pulled the plug.

Fast-forward to 2010, and Bernd Langewiesche, head of Langewiesche Fleischwaren, one of Germany's biggest meat processing plants (the reason he decorated his classic 911 RSR replica with the famous



'Pink Pig' livery) was walking around a motorsport-themed classic car show. From its familiar wedge shape and standing just seventy-five centimetres high, not to mention the prominent Porsche script painted down the side, he understandably assumed the on-sale race car he was drawn to was a 908. Moreover, because of the surprisingly low asking price (many tens of thousands less than he expected), he assumed it was a 908 lacking an engine and gearbox. Like many Porschephiles, even those seemingly well versed in race car history, Bernd had never heard of KMW, meaning the story the seller told him came as something of a surprise.

He'd indulged his love of speed with a 356, which he drove in regularity rallies, but soon replaced the flat-four-powered Porsche with a 1955 Lotus Mark IX and, later, a 1971 Lola T212, both of which he used to campaign classic sports car racing events. The opportunity to own a Porsche-propelled racer faster than the Lotus and easier to drive than the Lola was too great to pass up, especially considering McNamara-based prototypes were designed to afford drivers more space between the seat and pedals. "Like me, Muller-Perschl was a big man," Bernd explains. "If you're taller than six-foot, there are few race cars you can drive. Whether you can afford them or not is immaterial. The ability of an SP20 to accommodate a driver of my height is one of the reasons the KMW greatly appealed."

The car he'd encountered was KMW SP20-031. Reflected by the fact it isn't considered a 'real' prestige Porsche, it doesn't hold a particularly well documented history, though we know it was originally chassis SP20-03 and was raced by both Muller-Perschl and his fellow countryman, Harald Link, in the 1972 Interserie (the latter finished in tenth place come season end). Sadly, the car was crashed with such accident damage the subsequent rebuild encouraged the addition of an extra digit to its chassis number, hence SP20-031. Following completion of the work, the car was sold to hillclimb ace, Ludwig Schoberth, who kept his KMW for ten years and scored a raft of class wins before selling up in 1984. Little is known about the car from then until it reappeared at the 2006 Oldtimer Grand Prix, where driver, Ingo Zeitz, beat August Deutsch and his 1969 908/02, the very sports prototype previously owned by Steve McQueen, raced to a second-place finish at the 1970 12 Hours of Sebring and subsequently entered into the 1970 24 Hours of

Below Though most people think they're looking at a 908, the KMW SP20 never fails to attract crowds of admirers

Above Helmuth Bott granted KMW use of the Porsche crest, as well as Porsche script along SP20 flanks

Le Mans, where it served as camera car, capturing real-world track action for the King of Cool's motorsport movie magnum opus, *Le Mans*, released in 1971. You can read all about McQueen's 908, as well as the cars, stars, trials and tribulations of producing *Le Mans*, by ordering a copy of our June/July issue at *bit.ly/issuescp*.

At some point in the distant past, SP20-031 was loaded with an RSR 2.8 engine, but paperwork alluding to who made the change and for what purpose is missing. This particular flat-six is, of course, beyond the car's original specification, but Bernd doesn't mind. He certainly has no complaints about the extra power and doesn't intend to downgrade to a smaller displacement two-litre boxer any time soon. The 915 transmission, on the other hand, is thought to be original to the car, which is eligible for the UK's Masters Historic Racing series and continues to qualify for entry into the Nürburgring's annual Oldtimer Grand Prix. Even so, contrary to the joy these events bring to owners and drivers of historic metal, Bernd's first few years of KMW ownership weren't exactly a bed of roses. The first problem was the brake linkage from the pedal to the servo. It runs under the seat, and Bernd, one of the aforementioned *larger* gentlemen, was experiencing weak brakes, seemingly without a solution. Parts were swapped time and again, but nothing seemed to work. Then, two seasons in, one of his mechanics realised Bernd's extra weight was bending the linkage rod beneath the seat! A switch to a cable-operated system finally fixed the problem.

The second major complaint concerned the throttle linkage — it kept snapping and, for three years running at the Oldtimer Grand Prix, it broke at the exact same corner of the first lap. "The same marshal was at that spot every year," Bernd laughs. "We've become good friends, proving how familiar and predictable the problem was!" Modification to the cable now means it doesn't have to bend through such a sharp angle, finally remedying this frustrating fault.

Now in his early seventies, Bernd remains a serious driver, but doesn't compete for silverware. He certainly doesn't fret about configuring the car to shave fractions of a second off lap times. "A youngster could easily beat me by five or six seconds driving the same car," he says. "A professional once told me I needed to correct my line through corners, which saved a second here or there, but these days, the best way to get me to drive faster is to fill me with Red Bull before I get to the start line. Surely, that's worth at least a second per lap?!" he roars.

SCHOBERTH KEPT HIS KMW FOR TEN YEARS AND SCORED A RAFT OF CLASS WINS BEFORE SELLING UP IN 1984

Although Muller-Perschl scored no truly outstanding race results, and despite the fact hardly anyone outside those of you reading this magazine knows anything about McNamara Racing or KMW's efforts, the cars to evolve from these teams are valuable to Porsche's motorsport story insofar as they became the running start for the manufacturer's successful Group C race cars. And though the Le Mans-winning 956 would go on to become one of the most successful motorsport machines of all time, it's worth remembering KMW's SP chassis, of which the Porsche took heavy influence, pre-dated Norbert Singer's finished design — Porsche's first glued and riveted aluminium monocoque — by more than a decade. **CP**

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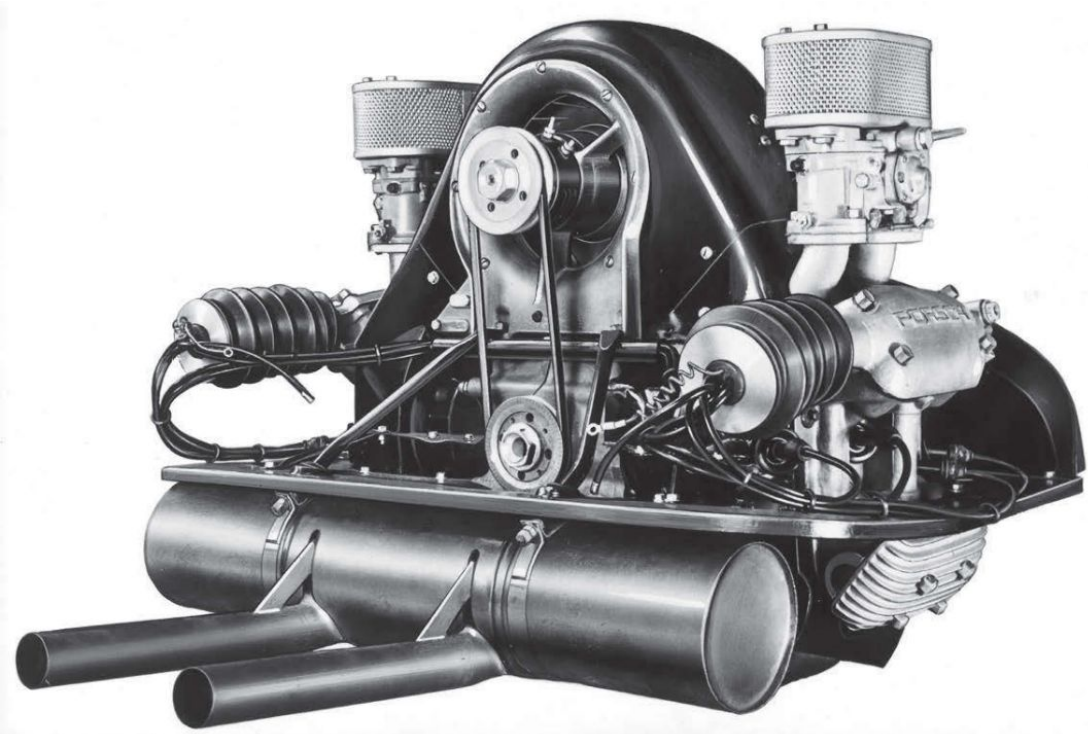
FOR THE DURATION

***Classic Porsche* takes a look at camshafts, what they do, how they work and what effect they have on your car's ability to perform at its best…**



When pulling together a list of upgrades to increase engine power, changing camshafts should be a job you prioritise. 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.

Forget ECUs — many specialists consider a camshaft to be the 'thinking' part of an engine. Irrespective of which air-cooled Porsche you own (or perhaps you own a completely different make and model), the design of the camshaft determines how long and how far valves open and close relative to piston behaviour. When you hear people talk about 'cam profile', they're talking about the shape of the camshaft lobes. Ultimately, different shapes deliver different types of motion. Read through the following pages to get a more thorough understanding of what a camshaft is, what it does, how it works and what effect it has on your car's engine.

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

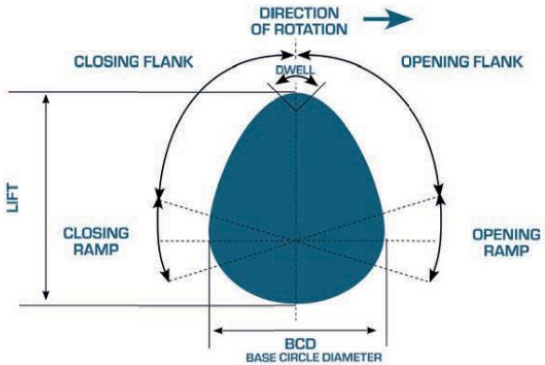
You've probably heard people talk about high-lift camshafts when discussing engine tuning, but what does this term actually mean? In essence, it refers to the increased distance the valve is lifted from the valve seat when fully open. The further it happens to be lifted, the more room there is for the 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 lifting the valve any further. There are simply no further gains to be had.

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 parts of the camshaft profile. It must accelerate and decelerate the valve within the working limits of the valve spring, which is why it's crucial to use the correct valve springs for the camshafts you've chosen, not to mention 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 the engine's performance and its reliability. If in doubt, speak to a specialist who knows how to tune the engine in your Porsche.



DWELL

All camshaft designs feature what we refer to as 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 a couple of degrees of cam turn. Correct cam fitment and timing is absolutely essential for dwell to be correctly realised — 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.

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. In other words, setting the correct timing is crucial to reliable engine operation and achieving optimum performance.

On modern cars, you may gain as much as 20bhp simply by altering cam timing, and that's 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. On conventional engines, a set of adjustable cam pulleys allows cam timing changes to be made. The pulleys enable rotation of the cam while the crank remains motionless.

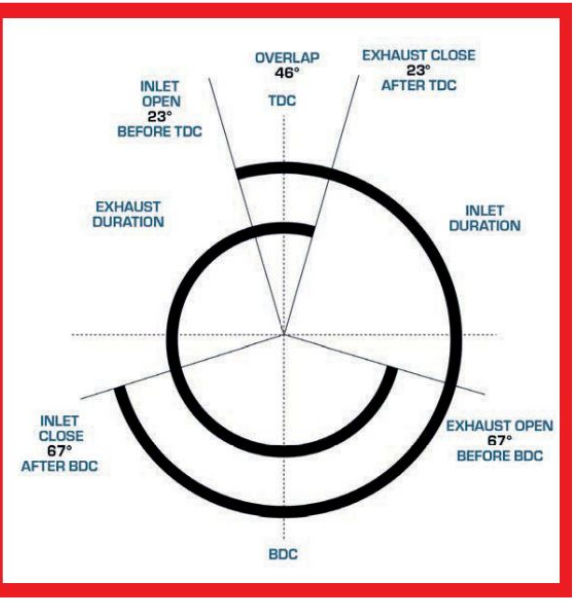
Modern performance engines feature Variable Valve Timing (VVT). Porsche introduced its take on the technology as VarioCam, first on the 968. VVT is a process which alters cam timing while the engine is running. Cam timing can be set for best idle conditions at low rpm while retarding to suit high rpm performance, usually through the activation of hydraulic pressure or an electronic actuator. Obviously, there's 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.

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 the 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's 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 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.



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) so that 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, then the engine will almost certainly underperform. In unfortunate cases, it may even destroy itself.

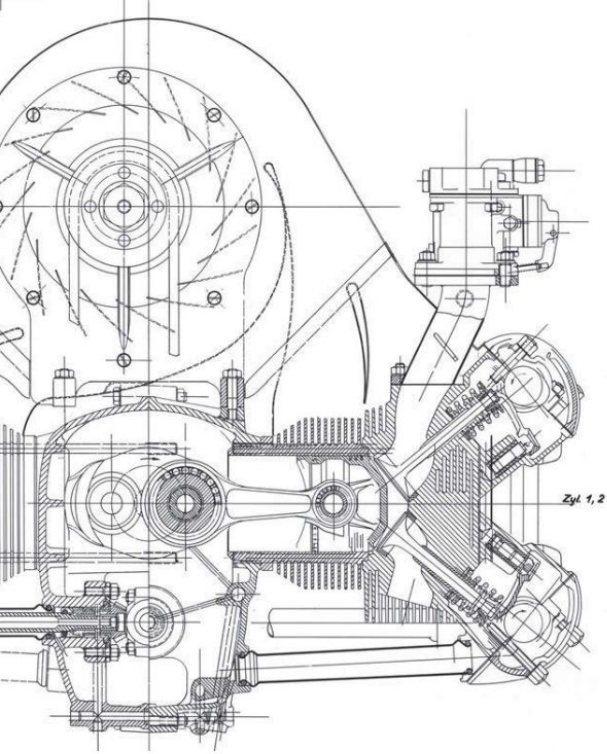
Valve springs with too much pressure for the application are just as bad. Overspringing can cause the valves to shut too aggressively, causing damage to the valve seat and cylinder head.

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, and the longer the valve is open, the more gases can flow through it.

The trade-off for 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 camshafts 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's 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.



NATURALLY ASPIRATED vs FORCED INDUCTION

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

With a naturally 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 air is already being forced in by the accompanying 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 that will make 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.

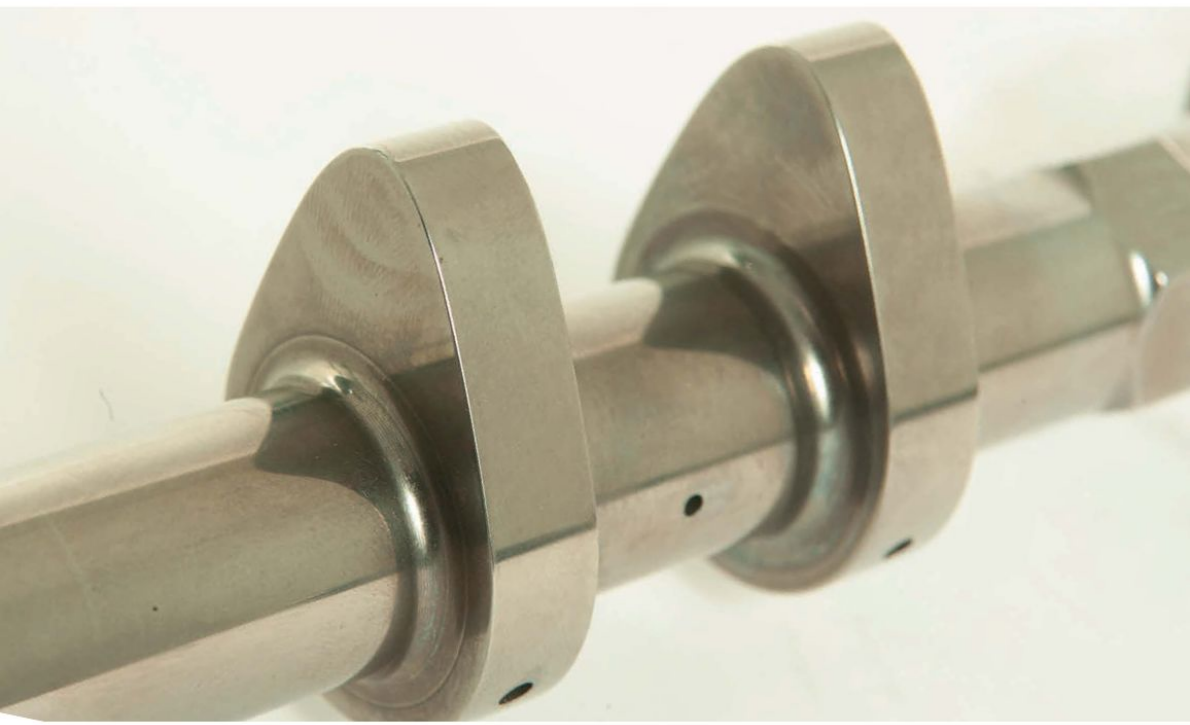
LOW-FRICTION COATING

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 be reducing heat. Simple, right?!

Perhaps unsurprisingly, low-friction coatings can be very expensive and therefore tend only to be used in professional motorsport environments, where maximising every last bit of power is essential.

MULTI-PROFILE CAMS

Many modern engines cleverly utilise multiple cam profiles machined into a single camshaft. Honda's three-stage VTEC system is a good example of what we're banging on about. 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 profiles to provide the best profile possible for the active operating conditions.



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 camshafts 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, hardwearing cam.

Billet cams are super-strong because, as the name suggests, 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.

Additionally, 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.

Billet cams are best suited to high-revving applications, but the expense involved in producing them means they're almost always only found in professional motorsport environments.

CAMSHAFT BEARINGS

Camshaft bearings are similar to crankshaft bearings, but camshaft bearings do not feature replacement shells, meaning — in a conventional engine — a new cylinder head is often required if the camshaft bearings have suffered excessive wear through the continued use of contaminated oil, or through oil starvation.

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. 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 one percent chrome to create between five and seven percent 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. Consequently, most aftermarket camshaft manufacturers only use this material for performance camshafts if the camshaft is splash-fed by a sump.

2. Spheroidal graphic cast iron (SG iron)

A material giving similar characteristics to hardenable iron. 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 one percent 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-specification performance camshafts.

4. Carbon steel: EN8/EN9

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

5. Alloy steels: EN351 AISI 8620 and EN34 etc.

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

6.Nitrading steel: EN40B

The best steel for camshafts. When nitrided, it gives a surface hardness and finish similar to chilled iron. Aftermarket

manufacturers use this material when replacing chilled iron camshafts in competition engines. Interestingly, this material is used on several recent 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, all of the above is a simplified explanation of what camshaft materials are and their comparable pros and cons, but we hope the information here will help you to ask the correct questions when purchasing performance camshafts on the aftermarket.

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ENIGMATIC MODEL

Only sixteen examples of the America Roadster were produced, setting the pattern for the 356 Speedsters to come. A little-known 356 Cabriolet-based private commission, however, set the blueprint in 1951…

Words **Karl Ludvigsen** Photography **Petersen Automotive Museum**

The America Roadsters rank among the most ephemeral automobiles ever to bear the Porsche name. They were never formally catalogued by the company and were utterly unpublicized in Europe. When *Auto Motor und Sport* journalists asked about an example they saw and photographed on the Autobahn in July 1952, they were told they were looking at a body style for export only — and not much more. From its birth, the America Roadster was an enigma to the world.

A hint of things to come was a spunky little roadster breaking cover in the spring of 1951. It wasn't built by Porsche, but by Hans Klenk's small workshop in the Stuttgart suburb of Böblingen. Driver as well as builder, Klenk, who participated in the 1952 German Grand Prix from behind the wheel of a two-litre Veritas Meteor F1, would form an onomatopoetic team with Karl Kling to race the then new Mercedes-Benz W194 300 SL, the pair famously winning the 1952 Carrera Panamericana Mexican road race, despite a vulture hitting the windscreen mid-event. Away from the track, busy modifying standard 356 components, Klenk built the bespoke 356-based roadster to the order of Stuttgart's Heinrich 'Heini' Sauter.

Heir to owners of Hahn & Kolb Werkzeuge GmbH,

a producer of tooling and equipment in nearby Ludwigsburg, Sauter was well placed (and well heeled) to realise his racing ambitions. His mounts included a Veritas and a Fiat-based special, followed by a 1.3-litre 356 coupe. Finding the Porsche enjoyable but heavy, he envisioned a lighter open-top version. Huddling with Klenk, who had good contacts at Zuffenhausen, the duo set to work modifying a 1951 356 Cabriolet 1300 into a unique racer.

Sauter attributed to Klenk the design of the resulting car. Spartan and lacking any weather protection, its steel body had a 356-like nose, a low and short rear deck and doors hinged at the rear — for easier entry and exit — with external door handles at the front. Bumpers were early style, mounted beneath (rather than outside) the body. Power for the 608kg two-seater initially came from an engine customised to near 1.5 litres of displacement. Sadly, Sauter had little luck with the car in 1951. After leading the first lap, he retired in both the 1.5-litre race at the Nürburgring Eifelrennen in June and the Liège-Rome-Liège road rally in August. He enjoyed better luck when competing in the year's Freiburg-Schauinsland hill climb, placing seventh, but this result was still some way off his self-set targets. Nevertheless, Porsche took an interest in his one-off 356, buying it from Sauter at the end of the 1951 season. In Zuffenhausen, serving as something of

a development mule, the car was modified with front-brake cooling apertures under the headlamps and fitted with an authentic 1.5-litre Type 528 flat-four.

In this trim, the unique roadster was eventually sold to French driver François Picard, who painted it blue and raced it at Agadir on January 27th 1952, scoring a victory. *Le petit tank*, as he named it, ran in a sports-car-only endurance race at Monaco in June 1952, but completed only three of the event's sixty-five laps. Undeterred, Picard went on to race the car at Bordeaux and also in the 1952 12 Hours of Hyères, in which he and Lucien Jean Bonnet placed fifth overall and second in class. For 1953, Picard switched up to Ferrari, to which he remained faithful through his retirement from motorsport in 1958.

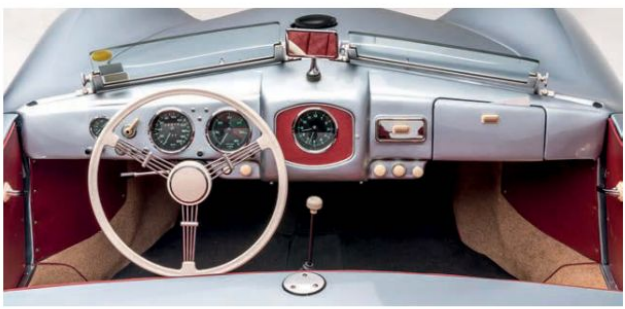
HOME AGAIN

California attorney, Stan Mullin, became the next owner of 'the little tank' thanks to the intervention of car-chaser Jack Armstrong, who discovered the unique Porsche languishing in one of the halls at Zuffenhausen following its return to Stuttgart. With Armstrong as entrant, Mullin raced the car at Santa Barbara, Long Beach and March Field in 1953 and, a year later, at Bakersfield. This was the end of the feisty little roadster's active in-period career, before the air-cooled anomaly went to ground in America. Records indicate that before its consignment to Crabtree's Junkyard in New Castle, Indiana, the Sauter Special had been owned by a family of Mississippi riverboat operators. Then, in 1982, the car was discovered at Crabtree's by Porsche enthusiast, Ray Knight. Amazed at what he'd uncovered, he acquired the car, restored it and raced it.

Wind the clock back and we discover Porsche had been designing, building and selling its own version of the Sauter-Klenk creation. Inspiration for this new model came not only from Sauter's roadster, but also the aforementioned availability of a full 1.5-litre engine for the 356. Made possible by a special Hirth roller-bearing crankshaft, the new 1,488cc flat-four proved itself during 1951 in rallying, racing and a sensational record run at Montlhéry in late September, powering a Gmünd aluminium coupe. Experimentally giving as much as 72bhp at 5,100rpm on the Zuffenhausen dynamometer, this new engine was manna from heaven for sporting Porsche drivers. Indeed, it took Porsches to the top of the 1.5-litre class, one of the most popular in both Europe and America for sports-car racing. As the Type 502, it was offered in Porsche cars from September of 1951, but changed the following month to the Type 527, sporting larger carburettors delivering 60bhp at 5,000rpm.

Customers made it clear to Porsche they were interested in a sports car which would do justice to this new engine for competition purposes. The appeal from America, where New York-based European sports car importer, Max Hoffman, was the primary Porsche

Above Sauter roadster's door hinges are at the rear, though the handles are at the front

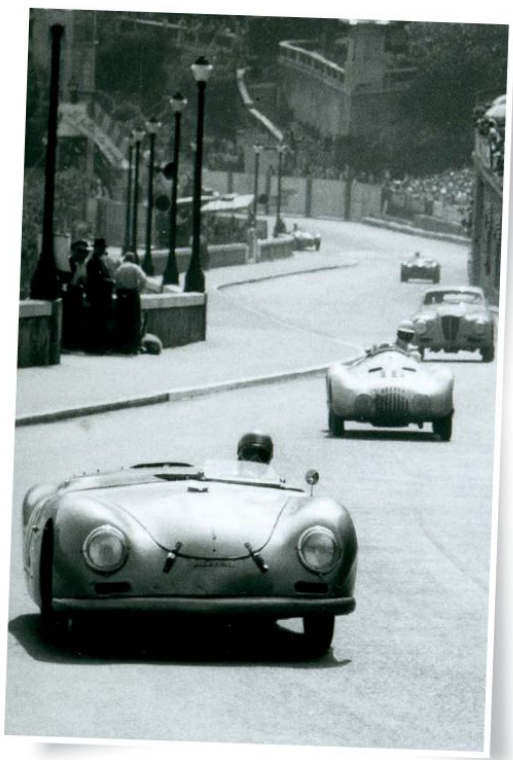


Right The Klenk-built roadster was heading a Gordini and Lancia up the hill at Monaco, but failed to finish the race

retailer, was sparked by John Von Neumann, Hoffman's motorsport-mad distributor in California. As early as October 1950, Porsche designer, Erwin Komenda, completed a drawing of a car to go with the new engine being readied for action. Designed to fit the 356 chassis, Komenda's Type 540 body was an open two-seater with a low, shapely belt line dipping down alongside the cockpit. Although his drawing showed the usual 356-type shrouded wheels, as the design evolved in discussions with coachbuilder, Erich Heuer, the new model featured narrowed flanks requiring fully cut-out openings for all four wheels. Additionally, the integral windscreen shown in the drawing gave way to a motorboat-style divided glass which could easily be removed for racing.

Designated Type 540, the new body was closer to the conventional post-war notion of what a sports car should look like. Ferry Porsche would gain confirmation of this new idiom during his visit to New York in December 1951. On the seventeenth day of the month, racing driver, John Fitch, took him to visit commercial artist, Coby Whitmore, who bluntly announced "racing cars, illustrating and smart clothes on good-looking women" were his three major interests in life. Whitmore sketched styles for Porsche cars, highlighting to Ferry alternative shapes suitable for his product line.

Heuer was nominated to make the America Roadster body at its base in Weiden, near Nuremberg. This was a West German offshoot of Dresden's Gläser, which remained in the East Zone. Heuer was already making cabriolet bodies for Porsche, twins to the Reutter-built models. The Type 540's frame was that of the 356 cabriolet, which was already reinforced to meet the added rigidity needed for an open car. The body material had to be aluminium because both Porsche and Hoffman, who was to take delivery of most of the resulting roadsters, considered the model to be a race car, not a tourer. To a chassis weight of 385kg, the body — together with its supporting structure — added 304kg for a total of 689kg dry. Without its framing, the body skin scaled 184kg against 268kg for a steel coupe. Weight distribution was forty-six percent front, fifty-four percent rear.



The new car's cockpit offered few frills, with an open cubbyhole in the simple three-dial dash, hollow doors and side curtains instead of roll-up windows. For competition use, the Roadster could easily be stripped. Its split windscreen and light canvas top were designed to be readily removable. Porsche offered aluminium-shelled bucket seats to replace the heavier coupe-type seats with which it was normally delivered. Other racing options were a small aero screen and rubber floor mats. Twin leather straps for the front deck lid (a carryover from the Sauter-Klenk racer) and stone guards for the headlamps gave the model a decidedly sporting accent.

POINT BRAKE

As supplied to Heuer, the new Porsche's 1,488cc Type 528 flat-four featured a higher compression ratio of 8.2:1. With freer-flowing Solex carburettors, this raised power to 70bhp at 5,000rpm. Peak torque, reached at 3,600rpm, was 108lb-ft. Initially, the drum brakes were the standard 230mm diameter, but soon larger 280mm brakes were available, wider at 40mm, rather than the previous 30mm. Early summer of 1952 found the new America Roadsters arriving in California. "There was one big problem with those cars," von Neumann recalled when asked about his first impressions by automotive historian, Randy Leffingwell. "The aerodynamics! Fritz Huschke von Hanstein, Porsche's baronial jack of all trades, came to California for a visit. He'd raced himself, but at that point, he'd become Ferry Porsche's racing director, salesman and public relations man, all rolled into one. Legendary sports car driver, Jack McAfee, joined Huschke von Hanstein and I on a trip up to Willow Springs. Trying the first Roadsters out, we found after a few laps, the cars lost power. When compared to the 356, the Roadsters had a different shape at the back, which had the effect of recirculating hot air from the engine. The cars were overheating to the point they didn't have any power. As Mr. Porsche once said to me about the air-cooled engine, *the problem is not getting cool air to the engine, it's getting the hot air away*! We had no choice but to change the back end."

As von Neumann discovered, when compared to the standard 356, the Roadster's shape was allowing hot air to recirculate to the cooling-air inlets. Although the body drawing of the Type 540 showed twin air-inlet grilles in the rear deck — a first for Porsche — the initial quartet of cars from Heuer featured only a single grille. All subsequent Roadsters had two rear-deck grilles as a step to improve engine cooling. Later, this became the visual hallmark of the 356 Carreras and other high-performance derivatives.

Lack of modern tooling and high labour costs at Heuer meant the America Roadster had to be priced at an eye-watering $4,600. For comparison, a Jaguar XK120 cost $3,050 and its C-Type racing variant only $4,190. Even so, early America Roadsters found friends

Above It is extraordinary to think this car was languishing in a junkyard for many years

Above Fully restored to its former glory, the Sauter roadster can be considered as an unofficial 356 Speedster prototype

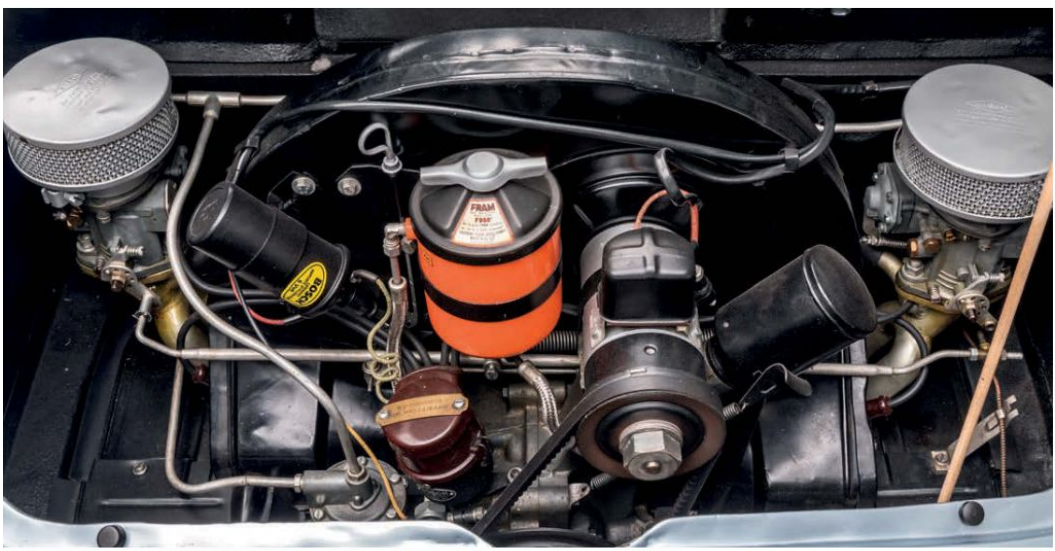
such as entrepreneur and American racing hero, Briggs Cunningham. His Porsche was built in April 1952 and processed through Hoffman in New York a month later. Cunningham's son, Briggs Jr, raced the car occasionally. Its most notable outing was at Wilkes-Barre, Pennsylvania, in the hands of the talented Phil Walters. Entries in the ten-lap main event on the tight three-and-a-half-mile Brynfan Tyddn circuit on July 26, 1952 were limited to cars with engines up to 1,950cc because previous races had shown the track's limitations. From a poor starting position, Walters and the Porsche blitzed all opposition to take the win by three seconds from a well-driven supercharged MG. It went down in history as Porsche's first outright victory in a main event.

The Cunningham car's next owner was author and racer, John Bentley. Tested for *Auto Age* magazine, his America Roadster accelerated to 60mph in 9.3 seconds, covered the standing quarter-mile in 17.9 seconds and reached a maximum speed of 110mph. This was scintillating performance for a 1.5-litre car and proved the America Roadster could win races in the right hands. "A typical example of the versatility of this power-packed mechanical marvel," wrote Bentley, "was the recent Cumberland 100-mile SCCA airport race. Carrying my wife, myself and a heap of baggage and spares, the Porsche breezed four-hundred miles to the event, won its class in both the Ladies and Main Event with only a change of spark plugs, then sped home as sweetly and effortlessly as when we started. Impressively, at cruising speeds of between sixty and seventy miles per hour, fuel consumption worked out at 29.7mpg."

McAfee competed in an America Roadster stripped to only 590kg. He had good memories of the car. "You could dive into a corner and, at just the right moment, come off the gas. Just a little flick with the wheel and, suddenly, the back end is doing the steering. You're on the line out of the corner before everybody else. Just lift quick, the back moves over and it's back down on the gas. Also, the America Roadster had the first set of real brakes on a car I ever drove!" he laughed. "You had no real stopping power on anything until this Porsche came along. With the minimum weight of the Roadster, you had excellent braking capabilities. You could out-brake anything on the road. And you could out-handle! The thing that upset everybody was the swing-axle suspension in the rear. When you came off the gas, the rear just got light in back. Boy, you could just drive the hell out of that thing!"

AMAZING SPECTACLE

In addition to McAfee, Bentley and Cunningham, America Roadsters were driven successfully in competition by Phil Walters, Bill Lloyd, Larry Kulok, Karl Brocken, Gordon 'Tippy' Lipe and John Crean, as well as John and Josie von Neumann. When the grid for the 1,500cc event was formed for the SCCA's inaugural race weekend



at Thompson, Connecticut, in the autumn of 1952, it included no less than three America Roadsters, plus that rarity, a Gmünd-built aluminium coupe.

Meanwhile, matters were not going so well at coachbuilder, Heuer. The small firm had underestimated the cost of building bodies for Porsche. In its bid for the job, it had estimated five-hundred hours for each body. As discovered, it was taking six-hundred and forty hours. As a result, Erich Heuer was losing money, not only on the Roadster — at a rate of DM1,600 per car — but also on 356 cabriolet bodies. Unable to obtain bank support, Heuer declared itself bankrupt after just sixteen Roadsters were completed. Efforts to shift the model to a new coachbuilder failed when Reutter declined to work with bodies in aluminium.

THREE FOR ONE

Even within this minuscule production volume, the America Roadsters were built in three series (significantly adding to Heuer's costs). The first series featured high rounded wheel openings and low bumpers. The second-series Roadsters had a longer engine lid to provide better fan-belt access. This series also featured a lower rear deck shaped to provide better engine bay cooling, squared-off wheel-well openings, higher bumpers, slightly longer cockpits and fully synchronized transmissions. The final series (if it can really be referred to as such) consisted of just one car, which was mid-build when Heuer closed its doors. This one-off used an all-steel body, a fixed one-piece windscreen and near conventional 356 wheel-well arches, although it retained the low sweeping belt line of the earlier America Roadsters. Marked as an America Roadster by its leather front-lid straps, this unique Porsche competed at Sebring in 1954 as an entry of Florida's Brundage Motors (BRUMOS). It sold at a Bonhams auction in 2009 — before values of air-cooled Porsches skyrocketed — for $529,500.

Corroborated by research published in *Panorama*, this seems to be the definitive account of the America Roadster, though John von Neumann recalled with certainty he took delivery of three America Roadsters built by Drauz, two of the cars fully trimmed and the third gutted for racing. Maybe more examples are lurking out there? Jack McAfee has the last word. "I think, years later, the America Roadster, this little Johnny von Neumann special, was really a prototype for the 356 Speedster. Von Neumann, through Hoffman, complained he needed something more competitively priced for racing in the American market. It makes sense to consider the America Roadsters a mockup for the Speedster." Supporting his theory, the Speedsters, too, carried factory codename, Type 540. And to think, it all started with a one-off Sauter-commissioned 356-based roadster in 1951. **CP**

Above The Sauter 356-based roadster is absolutely stunning from every angle

SILENT RUNNINGS

With more of us accustomed to working from home than ever before, our Porsches are covering less ground. Here, we present our top tips for car care when leaving your pride and joy static…

During April last year, the UK government recorded more than forty-six percent of people in employment were working from home. While many of us attempted to stay out of harm's reach by transforming kitchen works surfaces, dining tables and myriad other flat surfaces into makeshift working environments, the roads, for the most part, were far less busy than usual. Build-up of traffic was a distant memory, while travel through districts usually clogged by lines of stop-start drivers took a fraction of the usual seat time.

Where many companies were attempting to move toward a working environment incorporating home-working as the norm, the reality of changing the culture of 'doing things', even for a small business, was easier said than done. The pandemic forced this change, like it or no, and we now find the world of employment characterised by more remote working opportunities than ever before. Consequently, there's more interest from employers in the ability of their staff to be able to work efficiently (and, as research proves, more productively) from home. This is great news for those who of us who are able to take advantage of such working practices, but with the reduced need for regular transport, workers are using their cars far less frequently.

You might wonder how this affects the owner of an air-cooled Porsche. Surely, these cars are for high-days and holidays, not commuting?! Well, yes, on the whole, this is true, but if the sun is shining and weather is warm, many of us like to use our cherished chariots for whatever drive happens to be available, be it heading to a classic car show or commuting to the office. And with many workers able to enjoy fewer driving opportunities than before, the desire to put miles on a prized Porsche becomes arguably greater. However you choose to use your classic car, however, the likelihood is you're racking up less miles than you did pre-pandemic, which means you need to consider how to care for your car when it's laid-up for longer periods than usual. After all, lack of regular use can be detrimental to the health of your four-wheeled friend.

Across the following pages, we pitch key considerations and useful products to help you take care of your car while it's off the road and to ensure it's in tip-top condition (and can be used safely) when returning to the public highway after a period of inactivity.

BATTERY POWER

Even when parked, your Porsche will drain its battery. It might sound obvious, but the car still has to carry out essential work when the engine is switched off. Security systems (perhaps juice-hungry aftermarket alarms) and other sensors will need to be kept operational, and the rate at which your car's battery loses power will depend on the overall condition and age of the battery itself, as well as the efficiency of the electrical systems running on your Porsche.

A good, healthy car battery should be able to maintain charge for a couple of weeks before it needs to be recharged, but an older battery may need to be replenished much sooner. Taking your car for regular drives will ensure the battery remains topped up and electrical systems can operate uninterrupted, but with lockdown restrictions varying in frequency and severity from region to region, plus a lesser need for many of us to hit the road as often as we used to, we appreciate even getting out to drive a short distance might prove difficult. With this in mind, a battery trickle charger is an excellent idea.

Many of you will know Porsche offers its own battery trickle charger (the catchily named Charge-o-Mat) for twelve-volt lead acid and lithium iron phosphate (LiFePO4) batteries. It retails at around £140, but save your money and buy direct from CTEK, the unit's manufacturer, an OEM supplier to many German car brands and the global leader in battery management solutions. In fact, when we checked, the CTEK-branded version of the same unit retails for £50 less than you'll pay through Porsche.

CTEK's product range offers plenty of battery charging solutions to suit different needs and budgets. You can visit the company's website for the full line-up, but here are a couple of recent CTEK offerings we think will hold appeal for owners of classic Porsches. We've also highlighted a budget-friendly solution for those having to tighten their belts.

CT5 GULF BATTERY CHARGER

This Gulf-decorated CTEK CT5 battery charger features three key charging and maintenance stages to maximise the power and the lifetime of your Porsche's battery. Not only will this charger ensure your Porsche's battery is always in good condition through traditional trickle charge functionality, you can also use the CT5 Gulf to repair a discharged battery. Fully automatic, the unit can be left connected to your Porsche's battery for long periods of time and it won't overcharge or undercharge when left to work its magic. No specialist knowledge is needed for operation and the product is supplied with crocodile clips and eyelet connectors for maximum convenience. A unique countdown timer tells you when your car's battery will be ready for use. Tough, durable and expertly built, this attractive charger also comes supplied with a five-year warranty and is designed to cope with a range of different environmental factors, including temperature fluctuation. Retailing for a smidge under £100 at the More Than Polish online store, it's also competitively priced. Additional accessories, such as a wall mount, extension cable and bumper pack are available to purchase separately.

Price: £100

morethanpolish.com

CS FREE PORTABLE BATTERY CHARGER/MAINTAINER

This is the world's first multi-functional, fully portable charger and smart battery maintainer with Adaptive Boost technology. You can charge and maintain any twelve-volt lead acid or lithium battery anywhere in the world using mains, solar or leisure battery power. And if your car battery is completely flat, the award-winning CS FREE will work out the safest and quickest way to power up and get you going within fifteen minutes. This really is an amazing bit of kit requiring no connection to the mains and affording you charging freedom by serving not only as a useful portable battery pack for your electronic items (USB-C and USB-A ports make charging laptops, smartphones and tablets a breeze) when you're on the move, but also as an automotive trickle charger *and* jump pack. Indeed, you can

connect the CS FREE to your Porsche's dud battery while it's connected in situ and use the CS FREE's stored power — free of any mains connection — to immediately start the car. With no modes to select, simply connect the CS FREE to your battery and let the product do the rest. Ideal if you're stranded with a flat battery at the side of the road, in a car park or out in the wild. We're seriously impressed.

Price: £218

Search Amazon

DISCARNECT BATTERY IMMOBILISER

A simple alternative to a battery trickle charger is the Discarnect battery immobiliser from automotive accessories giant, Richbrook, allowing you to efficiently disconnect your classic Porsche's battery with the minimum of fuss. Simply unscrew the product's black control knob! Discarnect comes supplied with a fuse link, allowing low level current to pass to alarms, radios and clocks, but not enough current required for ignition. If the fuse isn't fitted, then all power can be connected or disconnected each time you hop in or out of your car — ideal for those who want to avoid the battery going flat on their laid-up Porsche. Suitable for all battery types with either square or round post terminals, Discarnect can be installed in minutes and is offered at a pleasing price point.

Price: £9.95

***richbrook.co.uk* or call 01328 862387**

STORAGE

Even when storing your car indoors (try to ensure a well-ventilated space), adequate protection from dust and dirt is a wise idea. Then again, not all of us have the luxury of garage or workshop storage for our Porsche. Parking in the street or on a driveway means extra steps need to be taken to maintain the condition of paintwork.

A car cover is an excellent way of protecting your vehicle's surfaces from bird droppings, damp, scrapes, scuffs and even watermarks. Obviously, you'll need to clean your car before putting a cover over it — you don't want to rub potentially harmful dirt particles between the fabric of the car cover and your Porsche's clearcoat — irrespective of whether you're keeping the car indoors or outside.

CAR COVER SHOP OUTDOOR BREATHABLE CAR COVERS

If you've invested time and money in making your car look its best, you want it to stay that way. Car Cover Shop supplies standard-fit or custom outdoor covers to suit every model of Porsche, from 356 to Taycan. Versions to accommodate large spoilers, wings and body kits are also available to order. Offered with either three-layer or four-layer breathable protection, these custom covers can be produced complete with a Porsche crest or a logo of your choosing and perfectly complement Car Cover Shop's range of soft-fabric, stretchy indoor luxury car covers. Visit the company's website to view the full range of products on offer, including air chambers and reveal covers, as used on the set of TV's *Top Gear* for many years.

Price: From £102 (£30 for added logo)
carcovershop.co.uk
or call 01780 654088

RICHBROOK INDOOR CAR COVERS

Your Porsche is likely to be one of the most important items you own, which is why you should make efforts to protect it wherever possible. Supplied to major manufacturers and classic car dealerships, these soft, stretchy and super-strong indoor covers from automotive accessories specialist, Richbrook, are carefully designed to deliver a snug fit. Available in blue, black or red, the 180gsm Lycra-blended satin fabric ensures the contours of your Porsche are clinged to, whilst the tightly woven fabric protects against dust and other pollutants. Importantly, these covers remain breathable, preventing condensation forming on your car during time it spends in storage and when laid up in cold weather. Supplied in a handy zip-up bag, this simple, easy to handle, lightweight protection for your Porsche is machine washable and can be tumble dried.

Price: £99
richbrook.co.uk
or call 01328 862387

PINGI CAR DEHUMIDIFIER

Over time, a car interior accumulates much in the way of humidity, fogging up windows and making it almost impossible to see the road. Foggy windows are a not merely a nuisance — every Porsche owner will agree driving under such conditions is extremely dangerous. The innovative PINGI in-car dehumidifier battles this problem valiantly, attracting and absorbing excess moisture like a magnet, ensuring the comfort and safety of starting your drive with a clear windscreen. The product will also eliminate any bad odours which may have accumulated in the interior while your car has been sitting between journeys. Reusable and capable of holding 120ml of water, PINGI's product features a moisture indicator to tell you when it's time to drain (by way of a spin in your microwave).

Price: £7.49
morethanpolish.com
or call 01780 749449

BASIC CHECKS

It's all very well considering the condition of paintwork, but there are essential checks you need to observe frequently, regardless of how often (or not) your Porsche is being used. For example, the brakes might be prone to sticking if left for a long time. Regular outings can, of course, help on this front and will make your car much safer on the road. The last thing you want is to head out and find key equipment not working due to avoidable lack of operation.

SWEATING HORSEPOWER

Get on all fours and take a good look under the car. Any signs of fluid leaks? Dip a finger or paper towel into any gathered liquid to determine whether you're looking at oil, brake fluid, transmission fluid or, in the case of those of you in possession of a water-cooled Porsche, coolant. When you've determined what you're looking at, check fittings around relevant hoses, inspect fluid reservoir tanks for leaks and/or look at oil and fuel transfer pipework (and the fuel tank itself) for signs of corrosion. You might be looking at nothing more than a previously unobserved slow oil drip, which might be nothing to worry about, but the position of the suspect fluid on the ground (relative to where the car sits), plus what's likely to be a clear path from fault to floor (before you fire up the engine), is likely to indicate where the problem lies. If in doubt, speak to members of an owners group or a respected marque specialist for advice. If you consider the amount of leaking fluid to be excessive, don't drive the car until the complaint is dealt with.

RODENTS

We all know people who have delved into the engine bay of their car after it has been laid-up for a while, only to find wiring, hoses, sound deadening material and other crucial components chewed by mice or rats. This will be of particular concern to those of you living in rural areas and keeping your cars outdoors or in barns. In some instances, when cars are left unattended for long periods, rodents will happily make their home in engine bays. If you're really unlucky, they'll have made their way into the cabin. Prevention is better than cure, which is why our advice is to ensure you check on your car regularly. Even occasional interaction will ensure any would-be squatters stay away for fear of being disturbed.

TYRES

If the car has been sitting for longer than usual, check its tyre pressures and overall tyre condition before setting off on a drive. A tyre with low pressure may appear fine at first glance, but could be dangerous when out on the road. Tyre sidewall strength and overall quality of construction can vary wildly when it comes to budget and mid-price rubber, which is why we also recommend you climb under the car and check for any bulges in sidewalls and, when dealing with older tyres, cracking in tread. To check the age of your Porsche's tyre, look for a four-digit identifier on the sidewall (e.g. 1921) indicating time of manufacture, where the first two digits represent the week and the last two digits represent the year. If you're expecting to leave your car for long periods between journeys, it's also a good idea to invest in a tyre trainer, a useful tool designed to prevent flat spots on car tyre's when not driven regularly. Visit *morethanpolish.com* for further information.

OIL LEVEL

This may be the most basic check of all. It's certainly one which will ensure a long and happy service life for your Porsche's engine, and yet checking the oil level is the single most ignored aspect of routine maintenance. When inspecting the dipstick, you're also checking for condition of oil, but don't be alarmed if you've left the car for a long time and now discover a mayonnaise-like substance on the inside of the filler cap. An engine left motionless may well attract condensation in the crankcase, resulting in the creamy mess you've found, which may have extended down the filler neck. While it's tempting to scream in panic,

simply wipe the cap clean. Providing you've been servicing the engine in accordance with manufacturer instruction and have been using good quality oil at regular intervals, there should be no need to worry. When checking oil levels, check the transmission and differential oil levels are correct, too.

LIGHTS

Another overlooked check when drivers get back on the road is the operating condition of all lights, including indicators. Have a friend stand in front and behind your Porsche to confirm all lights are working as they should. You don't want to discover side repeaters are faulty when you're looking to turn at a busy junction! A duff bulb might be at play, or you might be experiencing the effect of a bulb not grounding properly. While the car is laid-up, you may wish to upgrade your Porsche's standard candles-for-headlights before any future night driving. Air-cooled Porsche parts and accessories specialist, CarBone, has developed bi-LED headlights to make classic 911s safer, significantly improving the driver's field of view with a bright and sharp beam pattern. The main advantages of bi-LED modules are quick start without illumination, as well as eye-friendly intense white light, ensuring night turns to day without dazzling drivers of oncoming vehicles. Featuring high-quality E-marked Hella lenses and packing the latest LED technology into unprecedented compact dimensions, each headlight unit is a direct plug-and-play fitment into standard H4 sockets, meaning no modifications are necessary. The headlights are levelled traditionally, using screws on the outer ring of the map, the same way F-series and G-series 911 lighting is adjusted, though it should be noted CarBone's offering

doesn't work with the 964's electric levelling system. Until now, LED low and high beam lights were implemented using two different projectors, but these bi-LED units make use of one projector, a single diode and a moveable diaphragm, as per bi-Xenon lights. Supplied as a set of two, CarBone bi-LED headlights can be ordered from the company's online store with immediate effect.

Price: €1,650
(0% VAT for non-EU customers)
***car-bone.pl* or call +48 429 422 115**

SCREENWASH

This is another obvious-sounding consideration, but one we feel worth mentioning due to how few drivers actually check the fluid level or operating condition of their Porsche's windscreen washers before setting off after leaving their car in a state of suspended animation. Few car care products are capable of multi-tasking, but that's exactly what Chipex's aquaphobic screen wash manages to achieve. Of course, you'd expect glass cleaner to ably rid your car's windscreen of dirt when wipers are called into action, but Chipex's offering goes a step further by employing biodegradable water repelling technology, essentially preventing the buildup of rainwater and dirt from occurring and helping to keep washer jet pipes free of detritus. Bird droppings are also less likely to stick to your car's glass, which Chipex assists by way of improved visibility through deep cleaning, wiper blade conditioning (resulting in the absence of smearing and squeaking) and a fluid anti-freeze rating of -2°C. We tested the product at varying speeds and noticed how rain immediately beaded on impact before rolling off glass without leaving nasty water marks. Pleasingly, this low-cost screen wash's super-concentrated formula enables you to fill your fluid reservoir several times over by diluting just one single-litre bottle of product.

Price: £13.95
***chipex.co.uk* or call 01295 258308**

FUEL SYSTEM

In recent times, much has been written about the damage old fuel can cause fluid transfer hoses, lines and engine components if left to absorb moisture, primarily due to modern petrol's high ethanol content. Though this article chiefly concerns cars left stationary for weeks, not months, it's worth knowing phase separation can be determined using a water probe tool designed specifically for the job. If excess water is detected, you can re-emulsify the ethanol/petrol mixture, or you can drain the fuel and fill up with fresh petrol.

If you didn't drain the tank before leaving the car in storage for a long period of time, this check is an excellent idea. Either way, if filling up with fresh fuel, pause several times during the process to make sure petrol isn't leaking as quick as you're putting it in. Ordinarily, a split hose or corroded clamp are the chief suspects when it comes to fault finding. Both are quick and easy fixes.

TURN THE KEY

Having carried out all the checks outlined here, turn the ignition and let oil pressure build before starting the engine. Remember, exhaust smoke may bellow on start-up, so consider pushing the car outdoors before firing the engine. Make sure the transmission is in neutral (many owners like to keep their cars in P or R to prevent rollaway caused by a weak handbrake). Adjust the choke (if applicable), engage the ignition and turn the key all the way to 'start'. Let the engine warm up without forcing high revs and have another look under the car. Pumps and other ancillaries will be operating, allowing you to see if pressurised fluid transfer systems have sprung an otherwise undetected leak.

BRAKES AND CLUTCH

Before setting off on the open road, perform a brake test. You'll want to be sure the pedal maintains firmness (old rubber hoses can collapse, causing excessive pedal travel) and that the brakes clamp and release without error. If you discover problems, you need to address them before any further action. Also, with your Porsche in neutral, check the effectiveness of the handbrake. Can you move the car, even though the handbrake has been activated? While you're at it, check the clutch pedal is operating correctly and that you're able to shift between gears without resistance from what might be a sticky linkage.

Remember, a car left standing for long periods may develop a seized clutch, which is another reason you should ensure your treasured sports car is kept in good operating condition, even during periods of absence from the road.

STATE OF PLAY

If you expect your Porsche to be off the road for a significant length of time, consider declaring the vehicle SORN (Statutory Off Road Notification). By telling the DVLA the car won't be used on the public highway until further notice, you'll avoid paying unnecessary road tax. The process can be completed free of charge by way of submitting a form on the DVLA website, where you can also reapply for road tax. Be aware, when declaring SORN, though the notification applies from the point of declaration, you're liable for all road tax in the corresponding calendar month. You may also wish to speak to your insurer about temporarily switching your current cover to a cheaper 'laid-up' policy. Though both these points relate primarily to cars in storage for the long term (e.g. winter months), you may be able to take advantage of mid-term policy adjustments free of charge. This is certainly the case with RH Specialist Insurance — whether it's adding a driver, changing address, switching a car from laid-up to on-the-road or any other alteration, there's no administrative fee. In contrast, many insurers charge for each amendment. During a full year of cover, this might end up costing as much as the policy itself! For further information, visit *rhspecialistinsurance.co.uk*.

Of course, your insurer may wish to know how you intend to protect your laid-up car in terms of vehicle security. The different options available for Porsches of all ages vary wildly, from old-school wheel clamps and steering wheel Diskloks to super-advanced smartphone-controlled tracking systems. As you can imagine, the scope of what's on offer is beyond this article, suffice to say we'll dedicate a forthcoming feature to this subject.

CLEAN MACHINE

Working on the assumption you've cleaned your Porsche before taking it off the road, we appreciate the frustration of getting ready to hit the public highway, only to find dust or dirt has somehow made its way onto the car's bodywork while it's been sitting still. You don't necessarily need to clean it all over again, though. Quick detailer and a microfibre cloth can get rid of these marks in a jiffy. In fact, we'd recommend keeping a bottle of the stuff in the car at all times, ensuring you're able to wipe clean any dust or dirt captured on the drive to your destination.

In the current COVID climate, you may also wish to give the car's interior a once-over, with particular focus on all parts your hands come into contact with. Switchgear, the steering wheel and door handles can all be wiped clean with antibacterial spray, but ensuring the product is sympathetic to your classic car's surfaces and materials is important. The two products listed below should be of huge help when getting ready for that all-important first trip out in weeks.

MEGUIAR'S ULTIMATE QUIK DETAILER

Described as a "revolutionary mist and wipe product working like a spray detailer while enhancing wax protection", Meguiar's Ultimate Quick Detailer essentially rids your car's bodywork of watermarks and other surface imperfections with the aid of a microfibre cloth (sold separately), whilst using hydrophobic polymer technology to deliver a high surface tension adding protection and causing subsequent rainfall or water drops to bead. Perfect for removing dust and fingerprints, Ultimate Quik Detailer leaves a glossy finish and is safe to use on all paint surfaces.

Price: £16

***meguiars.co.uk* or search Amazon**

CHIPEX WATERLESS WASH & WAX

Despite the recent spell of wet weather across much of the British Isles, water companies are warning of the possibility of a hosepipe ban if exceedingly hot conditions return. One essential activity which may be affected by water restrictions is the cleaning of your Porsche. Thankfully, Chipex has developed a car care formula allowing you to achieve a showroom shine even when taps stop running. The detailing brand's Waterless Wash & Wax has been chemically engineered in the UK using a unique carnauba wax mixture. Quick and easy to apply, this eco-friendly fluid contains no nasty chemicals, meaning gardens and nearby drains remain unaffected. The product also comes in handy when you want to display a streak-free car at shows.

Price: £15.99

chipex.co.uk

or call 01295 258308

AUTOGLYM MULTI-PURPOSE ANTIBAC SURFACE SANITISER

Returning your Porsche to the road is all well and good, but remaining vigilant in these troubling times should remain of paramount importance when it comes to cleanliness and preventing the spread of coronavirus. With this in mind, the car care experts at Autoglym have introduced this germ-killing weapon of mass destruction to their impressive portfolio of products. Killing 99.99% of all known nasties and conforming to standard EN 1276, this pleasant-smelling spray is safe to use on all plastics and washable vehicle surfaces, including steering wheel, door cards and gear stick, where mould grows on sweat residue. Autoglym's superb surface sanitiser is available in 500ml bottles at low cost, ensuring a germ-free Porsche is but a wipe away!

Price: £6.50

***autoglym.com* or call 01462 677766**

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108551

PORSCHE 911

2005, 53000 miles, £26,995. 911 Cabriolet. Dark blue with black leather interior and manual gearbox. Three owners from new. MoT until April 2022. Please call 07766 826258, Greater London.
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PORSCHE 911

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109630

PORSCHE 911

2007, 21947 miles, £149,995. This 911 GT3RS (997) has the 6-speed manual gearbox and is presented in Orange with black Nomex bucket seats. Please call 01825 830424, South East. (T)
108556

ACCESSORIES

PORSCHE DRIVER MANUALS

POA. 911T, 911S pre '73. 3.0 turbo, early dealer service Europe booklet, 911. The 911 hardback. Tool rolls, unused air pump, jack and other items. Please call 07737 174200, West Midlands.
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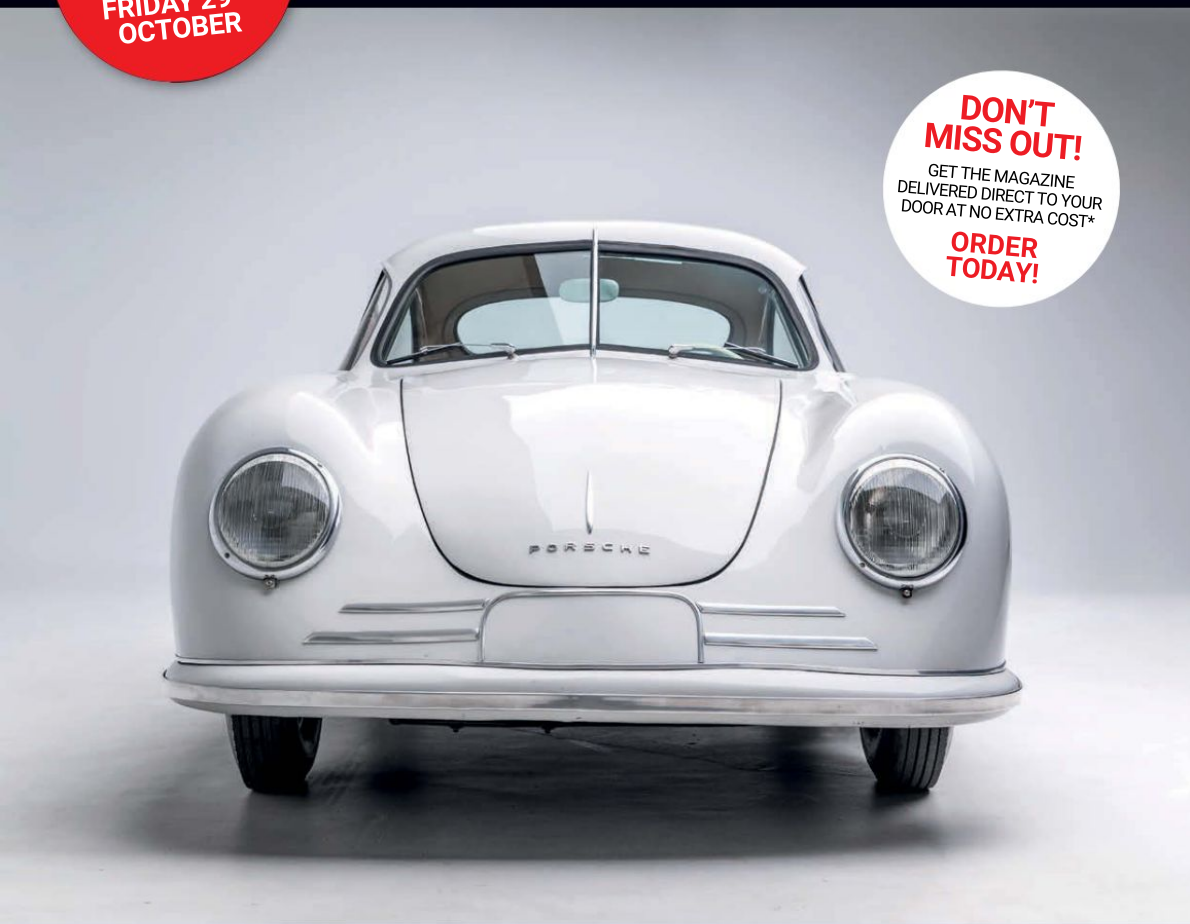

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