

Porsche Classic News

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THE FIVE-SPOKE ALUMINIUM WHEEL MAKES HISTORY 91136102042

Aluminium rims were all the rage in the new-style Formula 1 in 1965 – a year when cars could still compete with engines with a cubic capacity of just two litres. Page 2



NEW NOSE FOR OLD 356 MODELS

True Porsche fans will realise that we are not referring to a visit to a cosmetic surgery clinic, but to the unmistakable nose panel which was (and still is) just about the most important part of a wellpreserved Porsche 356, since first impressions count when considering the vehicle as a whole. Page 5



IMPROVED ACOUSTICS FOR THE MODERN ERA

The Porsche Classic Radio Navigation System fits in perfectly with this philosophy. Page 6



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BRAKING POINTS IN THE DEVELOPMENT OF THE 356 BRAKE DRUM

356 41023
64433106112

The end of the 1940s marked the start of a challenging period for Porsche and society at large. The previous headquarters of Porsche KG in Stuttgart had been confiscated by the military government. A wood factory in Gmuend, in the Austrian state of Carinthia, provided temporary accommodation for the company. The mood was positive and hopeful, and the changes on the horizon were gathering momentum, taking everyone and everything along for the ride.

“Porsche-Konstruktionen Ges.m.b.H.”, based in the Maltatal valley, worked diligently on the development of a smart sports car based on elements of the VW Beetle. The team was small but solid and highly motivated. Everyone involved in the project was kept fully up to speed with its aims and progress: Engineers and mechanics were equal partners in the process of developing the 356 sports car. The team rarely made notes or kept information on file, but each and every person knew what was going on. As soon as a car rolled out of the wood factory, all employees involved would surround the driver to find out the verdict.

Bodywork components were not readily available – so testing was performed without it

The test drives saw the cars climb through the forested landscape of Maltatal along simple dirt tracks, the Porsche leaving clouds of dust in its wake, hanging like white mist over green meadows. The cars were repeatedly driven on the long journey to the infamous Turracher Höhe beyond the Nock mountains. At the time, the Turrach was an incredibly steep mountain, with inclines of up to 34 percent – steeper than some modern stairwells. The roads in the steep section at kilometre 60 were deeply eroded; the slopes seemed endless in an era when the Beetle engine could deliver just 21.5 hp from a displacement of 1,100 m³. Drivers had particular respect for the downhill stretches, which quickly sent the small brake drums in the first prototypes – based on a Bowden cable system with a cast iron drum – up in smoke, generating a putrid odour.

As bodywork components were not readily available, these development mules often had no body – leaving test drivers completely exposed, close to the front wheels and with only a dust coat and motorcycle goggles to offer protection against anything propelled towards them by the crank-driven front wheels. They would also immediately notice the strong smell generated when the load on the brakes increased – valuable feedback that would not have been received so clearly inside a sealed car body. The slimline 356 prototypes with powerful 40 hp engines weighed in at less than 500 kilograms, resulting in slight play on the brakes.

The five-spoke aluminium wheel makes history

91136102042



This was at a time when not even Formula 1 cars had single-piece forged rims.

Racing technology once again drives series production

Aluminium rims were all the rage in the new-style Formula 1 in 1965 – a year when cars could still compete with engines with a cubic capacity of just two litres. The new Porsche 911 S was greeted with heady enthusiasm by the press: “The 911 S is expensive, but you get a dream Porsche for the price.”

Tips were given to help readers identify the dream Porsche – which had now been boosted to 160 hp – at first glance: “From the exterior, the 911 S can be recognised by its five-spoke forged aluminium wheels, which boast generous air profile sections to improve brake cooling. The brakes, which have already shown their capacity to deliver first-class performance and safety in the 911, have been enhanced with the addition of hollow-cast brake discs – an innovation from the world of motorsport – to further improve performance.”

The series Porsche 911 S benefited directly from technologies developed for its contemporary racing counterparts.

The “Wheels” section on page 3 of the homologation sheet published by the FIA (Fédération Internationale de l’Automobile) for the new 911 S makes the first recorded mention of “forged light-alloy wheels, weight 4.5 kg, dimensions 4.5J x 15 inches”. The low weight of the rim prototype was particularly impressive: At the time, a steel rim with the same dimensions weighed around 7 kilograms.

The journey to creating a lighter, faster wheel progressed quickly towards the end goal: After all, Porsche had always been interested in motorsport innovations. The new trend for light magnesium and alloy rims that dominated the field in the early 1960s persisted, but tests involving magnesium rims from the USA failed miserably. Sales representative Günter Kraetsch visited the Porsche factory on behalf of the wheel manufacturer Otto Fuchs, and heard about the tests.

He informed the management of Otto Fuchs KG, which already had experience working with welded light-alloy rims – but this time, Porsche was looking for a single-piece forged wheel, which would present a significant design challenge. Günter Kraetsch explains: “We had no prototypes to study when developing the wheel – our wheel was the first single-piece non-welded, non-riveted wheel.”

On 13 February 1965, Fuchs produced its first design sketches for a single-piece wheel. When Porsche expressed an interest, contact was quickly established with machine tool manufacturers, to gain a clear idea of the technical processes involved in the production of the wheel. The Institute for Metal Forming Technology at the University of Stuttgart was also consulted in an advisory capacity. The eventual aim was to establish a production method whereby a blank could

be forged into a wheel using a process similar to that used for porcelain or pottery. The key details of the process were initially top secret. In 1969, an application was filed to patent the specific aspects of the process connected with “moulding a complete wheel using pressure rollers in a flow bench to the wheel rim base”. The patent was granted.

From the start, progress had to be quick. The fact that the first prototypes were produced at two different locations didn’t help in this regard: Once the forged blanks had been transported from Meinerzhagen in the Bergisches Land region to Esslingen, near Stuttgart, for the next stage of rolling, they then had to be brought back to Bergisches Land for fine machining. In spite of the complex logistics, the first test wheels completed this convoluted journey by air on 10 September 1965, landing at Stuttgart Airport in Echterdingen at 17:35. Porsche immediately took the wheels for a test drive. Those initial findings must have been impressive, because just four days later, the next four wheels were transported to Frankfurt in time for the opening of the International Motor Show. Overnight, the wheels were fitted to the brand-new Porsche Targa to gauge interest among the public attending the event. The response to the new wheel was overwhelmingly positive and soon after, in December 1965, Porsche placed an order for 5,000 of the wheels for the new 911 S models. Initially, reject rates were high, as the manufacturer had not yet managed to implement a fully optimised series production process – but a new two-piece tool was developed and saved the day.

The Fuchs rim quickly sparked a new wheel trend, and the wheel manufacturer was forced to respond: Almost from the very first day, there was a demand for wider rims for Porsche models. After being given the chance to take the 5.5 x 15 Fuchs wheels – already an inch wider than the originals – for a spin, motorsports journalist Paul Frère reported that the rim was “incomprehensibly narrow”, and casually mentioned that the rims on the newly launched rival model, the Fiat Dino, were a whole inch wider. These comments triggered a competitive race towards ever-wider rims.



The design process for the first Fuchs rim was unusually straightforward: The Fuchs design proposal submitted in January 1965 revolved entirely around the methods and limitations of the forging process, but Porsche quickly responded with a new suggestion. Heinrich Klie, who had been involved in the establishment of the Porsche Design Studio since the 1950s, floated the idea of the characteristic design with five triangular spokes.

Without allowing himself to be influenced by drawings, Klie modelled the new hubs from clay, after fashioning a base for his model using a steel wheel with a wooden insert.

The new design was created spontaneously, and very few changes were made. Soon, the concept had been accepted and had been given the final seal of approval by Ferry Porsche. Even in meeting minutes from Fuchs, the design was described as “a more harmonious design for the new vehicle”. Heinrich Klie himself witnessed how his design retained its relevance over the years, without losing any of its aesthetic appeal.

In Zuffenhausen, 911 chief designer Alexander (“Butzi”) Porsche added the black inlays that made the entire wheel disc appear more streamlined – and cemented the success of the new wheel.

The forged aluminium rim has around double the dimensional stability of a standard cast rim

There were a number of different assessments of the weight of the new wheels. Initially, a weight saving of around two kilograms was planned: In the FIA homologation sheet for the Porsche 911 S, the values are recorded as 4.5 kilograms for the forged aluminium wheel, compared to 7.28 kilograms for the steel wheel, giving a weight saving of 62 percent.

During series production, a standard weight of 4.9 kilograms was established for the 15-inch forged rim, which still equates to a significant weight saving of 48 percent compared to the 7.28-kilogram steel rim, and a total weight saving of almost 10 kilograms for the whole car. As none of this weight is part of the sprung mass, the weight saving brings even more impressive advantages: In test drives, the test engineers were able to fine-tune the torsion bars and dampers much more effectively once these lightweight wheels were available. In practice, these kinds of special adjustments only became commonplace for special-series models, such as the Carrera RS 2.7. For decades, the series models were fitted with the basic steel wheels to ensure compatibility with winter tyres, so this would have made a special chassis adjustment impractical.

However, test drives with the Fuchs wheels did produce some positive results: Road holding became more secure and performance limits edged upwards. Most importantly of all, the sports car was now significantly easier to handle when being driven at its limits. For this reason alone, test engi-

neers, Porsche racing drivers and customers alike were all interested from the start.

Price is often a deciding factor with forged rims, which cost around four to five times more than conventional cast rims. The higher cost is driven by the complex 58-step production process, which requires specific materials to be selected even before the first forming stage. Forged rims are manufactured exclusively from 95 percent aluminium (Al-SiMg alloy), which is capable of absorbing a higher level of force due to its low silicon content.

The rim blank is initially a disc-shaped piece of metal, which is preforged in a 4,000-tonne press to form a rotationally symmetrical blank. At the next stage, the design is forged by applying the die to the blank at a force of 7,000 tonnes, shaping the blank wheel disc into the final design.

The air windows and hub centre are then punched out

at a force of 800 tonnes, while burrs and excess material along the edges are cut away. Next follows the complex flow forming process, during which the edge of the blank is heated to 300 degrees Celsius and the complete rim area is rolled out using a pressure roller, from the outer to the inner flange, via the wheel rim base tool; heat is applied to the blank throughout this step.

Porsche can supply almost all Fuchs rims for classic Porsche models. In response to demand, Fuchs has resumed production of entire series of rims for older models. And if there is one thing you can be sure of with these new rims for older Porsche models, it is this: Quality control is as good as ever.

Fuchs rim® 7 x 16, ET23.3: Part no. 91136211507

Fuchs rim® 6 x 15, ET36: Part no. 91136102013

Fuchs rim® 7 x 15, ET23.3: Part no. 91136102050



Forged rims are manufactured in a 58-step production process

Fuchs rim® 8 x 15, ET10.6: Part no. **91136102068**

Fuchs rim® 9 x 15, ET3: Part no. **91136102042**

Fuchs rim® 8 x 16, ET10.6: Part no. **91136211703**

Fuchs rim® 9 x 16, ET15: Part no. **91136211903** ■



Time for an oil change The Porsche Classic Motoroil



Porsche Classic is launching its own engine oil for air-cooled flat-four and flat-six engines: the Porsche Classic Motoroil. And if it says Porsche on the label, then you can be sure that there is Porsche inside.

In collaboration with the Porsche Development Centre in Weissach, the engine oil has been developed by the Porsche Classic experts with the specific aim of meeting the demands of the 356 and 911 models, including the 993 model range. Its operating behaviour and lubricating properties were put to the test in extensive laboratory-based tests and practical trials.

The Porsche Classic Motoroil oil comes in two different versions: 20W-50 for all 356, 914 and 911 models up to the 2.7-litre G model and 10W-60 for flatsix engines from a displacement of 3.0 litres up to the 911 (type 993).

For example, the thermal load is higher than in water-cooled units, which means that the engine oil has to work harder to cool the engine down.

The larger oil volume firstly entails a longer oil heating time, and secondly calls for optimum cold running behaviour. The traditionally high power output per litre of the engines also results in high compression and high pressures. Together with the different temperature zones which are characteristic of air-cooled engines, this means that the oil

needs a high “hidden” performance reserve. A compact and lightweight engine design means that the connecting rods will be short in relation to the piston stroke, which in turn means high lateral piston forces and correspondingly high demands on the lubricating film stability of the oil. In short, the older flat engines in particular can’t just use any old oil.

The development of an engine oil for classic air-cooled flat engines has therefore been something akin to a balancing act between tradition and innovation: as advanced as possible and as traditional as necessary.

Although modern oils are better from a technical point of view, this is not the case when it comes to classic air-cooled flat engines.

For example, the low viscosity of a 0W-30 oil means optimum cold-start behaviour, low engine resistance and other benefits in modern engines. In a 356, however, an oil of this kind can result in leaks and increased oil consumption due to the engine’s higher production tolerances and lower oil pressure during operation. Modern oils also use highly efficient detergent / dispersant agents to thoroughly clean the engine and reliably remove dirt, which can be too

much of a good thing for a classic Porsche engine.

It is true that additional deposits should be prevented and oil-soluble contaminants such as soot, water and dust kept suspended until they are drained off through the oil filter or removed during the next oil change.

At the same time it is important that the deposits which have built up over decades are not suddenly dissolved and that seals are not corroded. Since not every classic Porsche is in everyday use, the engine oil also had to meet other demands: classic vehicles are often left stationary for long periods of time and only moved intermittently and for short journeys, which means that condensation can form in the oil if the engine does not heat up fully.

Aggressive combustion residues can cause acidification of the oil fill, resulting in the corrosion of engine components. The alloys, metals and sealing materials which were used at the time are at particular risk. Porsche therefore paid particular attention to this aspect when developing its Porsche Classic Motoroil. The special formulation incorporates a high alkaline reserve, which neutralises any acids that may form.

Additional corrosion inhibitors also protect vulnerable components, even during longer stationary periods. ■

ff page 1

The foot brake was only used in exceptional circumstances

The 230-millimetre cast Beetle drums with thin 30-millimetre pads were tested for the 356 and found to be inadequate. The first draft of the driver manual suggested: “You should use the same gear when travelling down a hill as you would when travelling up it. The foot brake should only be used in exceptional circumstances.” During tests, the drivers used second gear to travel down the Turrach mountain and relieved the load on the foot brake by switching quickly down to first gear, using measured intermediate acceleration at critical points.

A-version of the Porsche 356 with drum brakes specially developed for the race track

Ferry Porsche often took the lead at team meetings, while the drivers wiped the road dust from their brows, often mixed with horse dung left behind the old-fashioned carts that still used the tracks. While all of this work was taking place at the end of the 1940s, it would be another decade before the first successful tests were completed on a system that used discs rather than drums to decelerate a car.

Hydraulic duplex actuation modernised the braking system

The more modern duplex braking system, which featured double brake pistons for the 230-millimetre cast iron drums that were still in use, was the logical next stage of the development process. Hydraulic duplex actuation brought the first hint of modernity to the design office, which was also responsible for constructing initial prototypes. Around this time, Professor Porsche happily approved the design and details of the 356 project to date. The welded 356 chassis, the “platform frame with deep tunnel elements” and the torsion bar spring axles to the front and rear of the chassis fully satisfied his own personal hopes and expectations for the project. It was around this time that Porsche famously said that he “wouldn’t have changed a thing” in his son’s 356 design.

His experience of duplex braking systems also stretched to his own designs, some of which had even helped the “Silver Arrows” to achieve racing glory. The first real race track test for the Porsche 356 coincided with the launch week of the Paris Salon motor show in 1951. The driver and, later, chief press officer for Porsche, Richard von Frankenberg, was successful in the race.

Plans for even more modern duplex brakes were already in the pipeline

Once the pioneering journey to developing hydraulic duplex brakes for the front wheels had been completed, the next step – increasing the drum diameter by 60 percent, from 230 to 280 millimetres – seemed inevitable. But the team knew that the 40 hp Porsche engines still had development potential. In a 1951 magazine article, car tester Paul Pietsch said of the brakes: “... they fully satisfy requirements. If performance increases further over time, as is expected with Porsche, an even more responsive brake will be essential.” The driver fell in love with the car to such an extent that he “didn’t want to be without it, and bought the test car from Porsche KG”.

The target dimensions for the brake drums and pads had already been calculated by the designers: A drum diameter of 280 millimetres and a brake pad thickness of 40 millimetres in a duplex hydraulic system. The new brakes seemed generously sized, even considering future developments in engine power. But the weight of a 280-millimetre drum made of cast iron was problematic: Engineers quickly realised that an unsprung weight well in excess of five kilograms per wheel could be too much for the chassis of the lightweight racer.



A forged aluminium blank is the starting point for forming the drum in a hot-rolling process.

The new brakes seemed very generously sized

In the test reports compiled at the time, there are countless weight calculations for the brakes, braking armature and wheels, all with the aim of identifying an efficient lightweight design. References to this objective are recorded at an early stage, including a note stating that “the Porsche team could purchase hydraulic Lockheed duplex brakes for the front wheels during series production of the Porsche 356/2. These brakes were fitted with specially designed lightweight drums which had been adapted to existing VW wheel hubs, enabling the Porsche 356/2 to both climb and descend the Alpine passes with great safety”. (“Porsche – Origin of the Species” by Karl Ludvigsen, published by Delius-Klasing.) During tests, a prototype aluminium brake drum which added just 3.5 kilograms of weight per wheel was deemed light enough for sports car use.

And with a smaller cast iron brake ring, the system delivered sufficient braking power too

Prior to the invention of the disc brake, the combination of a 280-millimetre aluminium drum with an anchored cast iron brake ring represented the pinnacle of achievement in brake technology. The manufacturing partner was the Fuchs company from Meinerzhagen, which would go down in history decades later as the manufacturer of the Fuchs rims for the Porsche 911.



Eventually, this design was deployed in the 1951 Porsche 356 and remained in use – along with its counterpart racing variants – until disc brake technology became widely established. The production process involved heating a forged aluminium blank and forming it into a 300-millimetre drum. The cast iron brake ring was shrunk at high temperature and carefully secured inside the aluminium drum.

This combination of materials required the engineers to bend the rules of physics. Aluminium expands more than twice as much as cast iron when exposed to heat. In the conventional shrinking process at temperatures of around 200 degrees Cel-

sius, the brake rings had to be able to loosen and move around under load. Although this incompatibility did not result in brake failure, excessive noise was generated as the drum surface and brake anchor came into contact with one another.

From the very first tests right through to production, the team experimented with all available technical methods that might help solve this problem. Initially, adding a knurled pattern to the exterior surface of the cast iron drum seemed to improve matters. But the design did not yet deliver the required reserves for race use, if the racing car and series model were to use the same braking system.

The breakthrough came in the form of an undercut concept that many engineers still marvel at today: The exterior surface of the brake ring was not only knurled, but also given a beaded rim, of the kind seen on many saucepans.

Success with undercut concept

To securely anchor this thick rim inside the forged aluminium drum using a shrinking process, the component had to be heated to an exceptionally high temperature of around 500 degrees Celsius – dangerously close to the melting point of aluminium. As aluminium responds very sensitively to heat treatment, it was essential to control the process with ultimate precision to ensure that the drum did not start to disintegrate.

The developers’ decision to take this route was vindicated only when their tests proved successful. Few notes were recorded in the test reports while the A models of the Porsche 356 series were fitted with the hybrid cast aluminium drums with cast iron rings. Between model years 1951 and 1959, there are no test reports in existence for the Porsche 356 that contain any form of criticism of the brakes. In 1954, a specialist magazine said the following of the 60 hp Porsche 356: “Thanks to the good brake cooling performance and the use of highly heat-resistant pads, no fading can be detected.”

Praise in the media

Just three years later, the same magazine praised the significantly more powerful 100 hp Porsche Carrera with its double-camshaft engine for the very same brakes: “An average deceleration value of 7.25 m/sec² coupled with a relatively low pedal pressure of 45 kg proves that this is most certainly an above-average brake. These values are also indicative of how little fading tendency this brake possesses.”

The repair instructions issued by Porsche contain clear information on brake maintenance: If the brake drum is worn, it can only be restored to its oversize dimensions once. A drum that is no longer round – an issue which manifests in a pulsing brake pedal – should be replaced. As spare parts became more difficult to obtain as years went by, many workshops tried out their own methods for repair. However, the results of these efforts were often unsatisfactory. Replica

systems produced by various manufacturers did not deliver the intended results.

A solution is now at hand in the form of a Porsche Classic reissue: a set of Porsche 356 A brake drums that lives up to the reputation of the 1950s original.

Brake drums like the originals

It is with good reason that modern spare parts are produced in line with exactly the same designs as the originals from long ago. The initial prototypes were subject to comprehensive testing, both on the test bench and during test drives. Each brake was carefully broken in to achieve optimum braking performance – as is expected of a drum brake.

This intricate art of breaking in brakes before they commence their life on the road is just as relevant today. New drums and brake pads should only be exposed to a reduced load over the breaking-in period of a few hundred kilometres; a feel for brake actuation and a good under-

standing of appropriate cool-down phases are essential throughout this process. If the breaking-in period is completed properly, the brakes of the Porsche 356 A will feel just like they did when the car first came off the production line. The drums now come with the latest certification and the seal of approval of the KBA (the German Federal Motor Transport Authority in Flensburg), making them an essential choice for all owners of a model 356 A.



Brake drum 356, front axle
Part no. **356 41023**
356 A (1950–1959)

Brake drum 356, rear axle
Part no. **64433106112**
356 A (1950–1959)

New nose for old 356 models



True Porsche fans will realise that we are not referring to a visit to a cosmetic surgery clinic, but to the unmistakable nose panel which was (and still is) just about the most important part of a well-preserved Porsche 356, since first impressions count when considering the vehicle as a whole.

The nose panel of the Porsche 356 A includes openings for the headlights, the indicators, the two horns and the front bumper mounting. This all makes it a particularly complex component, and also one of the largest spare parts previously stocked by Porsche.

“Previously” is the operative word, unfortunately, since genuine nose panels were impossible to come by for many years. Third-party reproductions were sporadic in their success, and were often anything but a good fit. Customer demand for these parts increased over the years, resulting in a reissue of the nose panel for 356 vehicles from model years 1950–1959.

One of the largest Porsche spare parts

As well as the original hand drawings which were still available, the experts used the most cutting-edge methods at their disposal to ensure that the perfectly shaped new part was also thoroughly modern in terms of its accuracy and durability. In order to obtain a digital data set which could be superimposed over the design data for the original part, they scanned the entire front of a well-preserved factory car. The software mirrored the two halves to even out the tiny irregularities which were an unavoidable by-product of 1950s sheet metal manufacturing techniques. The complex task of mould making could then begin, using the prototype for the old originals with the striking shape of the 356 A. Only the early pilot tools are still made of wood today; the original mould was designed in high-quality steel.

Six tools for one part

This meant not just one tool, but six, as this was ultimately the only way to achieve the high degree of deformation required for the body panels while ensuring premium quality.

When welding the nose panel into a 356, the most important aspect as far as the fit is concerned is always the transition near the edge of the luggage compartment, which continues the bonnet contour in the finished vehicle. Anyone wishing to achieve uniform gap sizes here was often previously obliged to waste large quantities of tin to compensate for irregularities on the front end as a whole. Various tactics have been adopted in order to ensure that the new nose is a good fit more or less from the start: The Porsche Classic technicians carried out extensive tests to check the fit of their first prototypes on several restored vehicles. Lessons learned in the Classic workshop were fed back to the team responsible for mould making, who improved the fit until the welding experts could assemble the part without any delays.

To make it easier for the body makers to fit the nose panel to the rest of the vehicle’s front end, the Porsche reproduction of the original allows for several millimetres of give against the direction of travel (i.e. backwards).

The body makers now have slightly more room for manoeuvre when welding in the part than they did before. For example, the old nose can be cut off slightly further back than was possible when original sheet metal parts from the spare parts warehouse were being used. This allows expert welding of the sheet metal parts away from the location of the old fabrication weld, making it significantly easier to achieve flush assembly without using large quantities of bodywork tin. The

deep drawing of the new nose in three consecutive moulding stages ensures a better surface quality than before, thanks to the high degree of accuracy of the modern tool moulds. The entire component is primed using a highly professional CDP process, involving the application of a high-quality cathodic dip coating which meets the highest standards of modern series production.



A more accurate fit than the original

After precise cutting, the entire component is thoroughly degreased and cleaned, and then primed in a dip with an electrically charged cathode (hence the name). This results in a flawless coating of highly anti-corrosive dipping varnish, which acts in the same way as a hermetic seal. This alone guarantees particularly effective corrosion protection, and the performance of this coating exceeds by far the traditional techniques of the 1950s.

Of course the Porsche Classic range includes not only the newly reissued nose panel for the 356 A, but also noses for the 356 B and C. Suitable for models almost 70 years old, these serve as a reminder of the truth behind an advertising slogan of the time:

“Driving in its purest form.”

Front panel for 356 A, B and C
Part no. **64450301101GRV**, 356 A (1950–1959)

Part no. **64450301105GRV**, 356 B-T5 (1960–1961)

Part no. **64450301106GRV**, 356 B-T6 (1961–1963)
356 C (1963–1965)

Porsche Classic develops dedicated car care range

New shine for classic sports cars



Porsche Classic Car Care Set
Part no. **PCG90101040**



Owners of classic Porsche sports cars attach the greatest of importance to preserving their vehicles original condition. Porsche Classic has therefore put together a car care kit that has been developed specifically for the characteristics of earlier paints, softtop fabrics and other materials.

The total of 17 products and implements cover the full gamut of exterior care.

These include shampoo and cleaning clay for stubborn grime, polish and hard wax, synthetic materials cleaner and acid-free wheel rim cleaner. Also included are the appropriate sponges, cloths and brushes for each.

Every product has been tested in the Porsche development centre in Weissach for compatibility with the relevant materials, with tests run both in the lab and in practical application.

The car care kit is available in an appropriately configured leather bag featuring the classic Pepita pattern. In Great Britain it costs £396, inclusive of value added tax. ■



Improved acoustics for the modern era

Owners of older Porsche models frequently take the puristic view that nothing on earth could possibly sound better than a six-cylinder boxer engine at work. However, this appreciation of true art is increasingly tempered by the need for congestion warnings when travelling on modern roads, in order to avoid spending more time stationary than moving (even in a classic Porsche 911!).

The Porsche Classic Radio Navigation System fits in perfectly with this philosophy.

Many owners of classic Porsche vehicles have experienced the pleasure of taking an emphatic leap into the 21st century with this traditionally designed modern radio, not least thanks to features such as navigation, Bluetooth®, touchscreen and media interfaces for iPhone®, iPod®, USB, AUX and SD cards. And the congestion warnings for Europe in the classic Porsche models have an extremely modern feel.

Modern loudspeaker systems

Old loudspeaker systems often meet their limits as far as listening pleasure is concerned. After all, the loudspeakers fitted as original equipment have seen up to 30 years of service. The front loudspeakers in the door trim are particularly vulnerable to ageing as a result of rain or accidental kicks.

A parts reissue now offers a useful solution to this problem, ensuring that loudspeaker systems no longer lag behind the Porsche Classic Radio Navigation System in technical terms. A major advantage is that the new equipment fits into the mountings of the previous systems without the need for any modifications, and does not change the original look in any way.

The front installation kits for the 911 G and 964 models from model years 1988 – 1994 are available as sets of four loudspeakers. They each contain two 30 mm tweeters and two woofers or mid-range speakers with a diameter of 130 mm. Both units slot into the original housing in the doors and are connected using plug and play. Suitable cable adapters and branches are included for any separate amplifiers and equalisers. An adapter kit is included for use in doors of the 964 model range.

Special rear loudspeaker sets are available for the Coupé, Targa or Cabrio bodywork designs. This means that each of the models from the specified years can be individually fitted with new loudspeakers. Cable sets with suitable branching cables again ensure problem-free installation.

Problem-free installation

The parameters of all the loudspeaker sets are tailored to the technical environment in terms of frequency response, impedance and power consumption. The result: perfect hi-fi stereophonic sound, with a transparent reproduction quality for every musical spectrum and razor-sharp clarity for every type of intonation.

All components are also available separately, including the mounting ring for the 964 models, individual loudspeakers to replace units which have failed as a result of damage, and sets of branching cables.

Loudspeaker sets:

Loudspeaker set for Coupé, Cabrio and Targa, front

Part no. **PCG91164510**

911 G (1988–1989), 964 (1989–1994)

Consisting of: two 130 mm low mid-range speakers, two 30 mm tweeters, two branching cables with connectors. Frequency response 60 Hz – 20,000 Hz, impedance 4 Ω, 40 W RMS – 80 W max.

Assembly adapter for loudspeaker set, front

Part no. **PCG91164515**

964 (1993–1994)

Loudspeaker set for Coupé and Targa, rear

Part no. **PCG91164520**

911 G (1988–1989), 964 (1989–1994)

Consisting of: two 90 x 150 mm coaxial loudspeakers. Frequency response 88 Hz – 20,000 Hz, impedance 4 Ω, 40 W RMS – 80 W max.

Loudspeaker set for Cabrio, rear

Part no. **PCG91164530**

911 G (1988–1989), 964 (1989–1994).

Consisting of: two 100 mm cone loudspeakers. Frequency response 88 Hz – 20,000 Hz, impedance 4 Ω, 40 W RMS – 80 W max.

Individual loudspeakers:

Door tweeter, 30 mm, Coupé, Cabrio and Targa, front

Part no. **96464550201**

911 G (1988–1989), 964 (1989–1994)

Door woofer, 130 mm, Coupé, Cabrio and Targa, front

Part no. **96464550301**

911 G (1988–1989), 964 (1989–1994)

Cone loudspeaker, 100 mm, Cabrio, rear

Part no. **96464550401**

911 G (1988–1989), 964 (1989–1994)

Loudspeaker, 90 x 150 mm, Coupé and Targa, rear

Part no. **91164541901**

911 G (1988–1989), 964 (1989–1994)



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Anyone who owns an historic Porsche is in the best hands with Porsche Classic



www.porsche.com/classic

Any owner of a classic Porsche – defined as any Porsche which was taken out of series production at least ten years ago – places great importance on maintaining its functionality and value. For this reason, expert care and professional maintenance – carried out using only original parts – and restorations performed with genuine passion and enthusiasm, are of the utmost importance. Porsche Classic Genuine Parts from the 356 to the Carrera GT.

Today, the Porsche classic family includes the 356, the 914, all air-cooled model series of the 911 from the F model to the 993, the 959, the transaxle models 924, 944, 928 and 968, the Boxster 986 and the first water-cooled 911 of series 996. In 2016, the Carrera GT super sports car joined this list. The production and supply of Porsche Classic Genuine Parts makes an invaluable contribution to the continued existence of all these prized classic Porsche cars.

More than 52,000 genuine parts available

We have over 52,000 spare parts items in stock in our modern warehouse – and we can dispatch these parts directly to your Porsche Partner via the global Porsche sales network. We obtain our genuine parts from the same companies that originally supplied them for series production. Failing that, we locate new suppliers. Our work is always based on original drawings, detailed descriptions, our comprehensive stock of prototype parts and, last but not least, the expertise of our employees.

This approach means that all Porsche standards relating to technology, safety and quality are fulfilled – even when we need to develop new versions of original parts. Around 300 part reissues developed each year – from bodywork elements to interior components. With around 300 new versions of parts developed each year, we constantly strive to fill gaps in our

spare parts range. This process is driven by our commitment to one simple thing: driving. Closely monitoring the market, continuously analysing its needs and updating our stock of parts enables us to expand our spare parts range all the time and fill any gaps that may appear. Although some care and maintenance tasks can be completed satisfactorily by knowledgeable Porsche owners, non-professionals can often encounter difficulties if more complex problems occur, or if extensive bodywork tasks, engine work or even full restoration is required.

Original tools and methods combined with cutting-edge technology

As an integral division within Porsche AG, we only use methods – during bodywork repairs, for example – that Porsche engineers would have used during the original production process. We have access to tools that are not normally available to external companies. Cutting-edge technology complements these original tools perfectly. To achieve maximum precision, we use the latest generation of frame alignment benches and computer-controlled laser measuring systems.

The use of Porsche Genuine Parts guarantees optimum maintenance and restoration results.

Our specialists also use original Porsche sheet metal parts to achieve the best possible results during bodywork restoration. Frequently made using the original press tools and produced exclusively from high-quality sheet metal, our parts – unlike lower-cost replicas – guarantee the best possible fit, saving valuable time during fitting and preventing the customer from incurring unnecessary costs. But above all, our parts are guaranteed to meet the high Porsche quality standards.

Porsche Classic Genuine Parts for engines and gearboxes

We only use genuine spare parts during any restoration and repair work, including repairs to the powertrain. We replace components – such as cylinder heads, camshafts, valves or occasionally even the crankshaft – based on specific wear limits according to the repair or maintenance plans. Our experts have many years of experience, enabling us to complete all of this work in-house. Decades of wide-ranging experience

and knowledge. In addition to the essential genuine parts, repair and maintenance work on engines and gearboxes also relies on the latest technologies, combined with decades of experience. But the fact that a potentially record-breaking 70 percent of all Porsche road vehicles ever produced are still being driven today – and often in good or excellent condition – is not just down to the use of genuine spare parts and the latest repair technologies. Porsche fans show a special passion for their cars, and their keen attention to maintenance, care and preservation – perhaps unique in the world of automotive brands – is what makes these impressive figures possible.

Porsche Classic at locations worldwide

Since early 2014, a number of selected Porsche centres around the world have earned Porsche Classic Partner certification. At these centres, you will find enthusiastic, knowledgeable experts who can provide all the services and advice you may need for your classic Porsche.

Experienced experts ready to advise and assist

Porsche Classic Partners are easy to spot: The Porsche Classic flag outside and the Classic Corner in the showroom serve as indicators that owners of classic Porsche cars have come to the right place. Porsche Classic Partners organise special classic events and keep their customers up to date with all Porsche Classic news, including reissues of parts. Our website at www.porsche.com/classic provides all the detailed information and background context you may need on Porsche Classic Genuine Parts. It also includes a collection of original colour charts for classic Porsche cars. The site even gives you the opportunity to play a key role in our product development process, by completing a form on the website about availability of Porsche Classic Genuine Parts. We look forward to your feedback!

New: The Porsche Classic Parts Explorer. Visit www.porsche.com/classic for regular updates on the latest reissues, highlights and accessories – simply click on your model to find out more. Available now in German-speaking countries – worldwide launch to follow soon. Our team's skills and attention to detail ensure that all Porsche technology, safety and quality standards are fulfilled. Whether it's a 911 F model, a 928 or a 356 – Porsche Classic Partners offer the perfect service for any classic Porsche. ■