



## A new class of motorcycle: 25 years of the BMW GS range

The BMW R 80 G/S is a milestone of BMW motorcycle history. Even today, 25 years on, the market segment it established has lost none of its fascination for bikers. With their innovative features and striking design, the various GS model generations have conquered ever-new target groups.

By Fred Jakobs

In September 1980, in Avignon, BMW presented the BMW R 80 G/S to the press. The fact that BMW had landed a grand coup with this Enduro model became clear even at the first test rides. The BMW G/S created a new market segment which even today, a quarter of a century after its launch, has lost none of its attraction.

The birth of the BMW GS in the year 1978 came during a period of declining

sales following nearly a decade of steady growth. One of the reasons for this was a weak dollar, which made it particularly difficult to sell to the USA, their chief export market. But another reason was an excessively conservative model policy compared with the competition. On 1st January 1979 a new management team took up their posts to get the motorcycle business back on track.

The first model to be shown to them by the development department was a cross-country prototype as the basis for a new production model.

It was largely built from components of the BMW R 80 road model which were imaginatively combined with newly developed elements to form an entirely new motorcycle. A lighter rear end and a larger front wheel formed the basis of its





Freedom and adventure in the land of opportunities. The BMW R 80 G/S in unique terrain.

events, and even in the 1950s and '60s BMW raked in title after title. The last three cross-country championships were won in the years 1970 to 1972 by Herbert Schek on a modified BMW R 75/5. In 1978, when the rules allowed four-stroke motorcycles to compete again, Laszlo Peres from BMW's test department came second in the German Championship on a self-built 800 cc machine weighing only 142 kg.

This success created an appetite for more: in 1979 BMW established another works team, so that it could now officially take part in cross-country competitions. The reward for this commitment was the German Championship title, won by Richard Schalber in 1979 and Werner Schütz in 1980, not to mention the European Championship, which Rolf Withhöft won in 1980.

Building a successful sports model is one thing. Developing an economically viable production motorcycle is a more complex challenge. Thus it was clear from the outset that the new model was not simply to be a replica of the cross-country sports machines which could only have been sold at a relatively high price to a few active sports riders or collectors. The new model had to be primarily suitable for everyday use, and the selling price had to be in line with the market.

### Seeking a market position

The only question was what sort of sales figures could be achieved. With the Honda XL 250 and the Yamaha XT 500, Japanese manufacturers had proved that, because of their ease of handling, endurance models also had their appeal for road riders, and had triggered an "enduro wave" especially in the USA. So there was definitely a recognizable market out there.

Yet these single-cylinder motorcycles were not what BMW had in mind. They were fitted out in a very spartan fashion, which may have been adequate for brief cross-country excursions but made riding over long distances a strain. As for taking a

off-road credentials. But the outstanding technical innovation was a single swinging arm on the rear wheel.

This had already been developed by the BMW engineers some time earlier and put in the "bottom drawer". Now it proved perfect for the project to create a completely new endurance model. Single suspension arms had been used as early as the 1950s, though only on very small motorcycles like the German "Imme" or in some motor scooters, in other words in machines whose weight

and performance were not to be compared with a "grown-up" BMW. Incidentally, the initial prototype was built without a formal development brief and was immediately used by the test department to accompany the works team in cross-country motor-sport events.

### Cross-country tradition

Cross-country racing was familiar territory for BMW; back in the 1920s and '30s the company had been successful in six-day



Prototype of the 1979 BMW R 80 G/S. Its cross-country racing origins are clearly visible.



pillion passenger along, that was out of the question on extended journeys.

A BMW had to look different. Typical virtues such as comfort, long-distance suitability and longevity were vital. And so the idea gradually materialized that cross-country viability should be combined with high performance and ride comfort on the road.

A careful study of the market for Enduros, moreover, showed that a mere two percent of the kilometres ridden were across really difficult terrain, with 98 percent on normal roads, unsurfaced tracks or narrow paths.

### Ingenious rear-wheel drive

It was against this background that the top management gave the go-ahead for series production. Rüdiger Gutsche, head of chassis development, was put in charge of the project. Gutsche was – and still is today – a keen cross-country rider who in the past often attracted attention riding his self-built BMWs at events.

The focus of development was on the new single-arm rear-wheel suspension. By strengthening the mounting of the crown wheel in the rear-wheel drive it was possible to screw the road wheel directly to the final drive via a flange. It would make changing the wheel as easy as on a car, but this was broaching new technical ground and the key question was whether such a design would be able to withstand heavy stress.

Initial tests were promising and in January 1980 the G/S was to undergo a real-life test under the most extreme conditions: BMW's press spokesman, Kalli Hufstadt, set off with the journalist Hans Peter Leicht on a 2,000-kilometre journey through Ecuador, riding two pre-production machines. The slogan was



Trial run with the pre-production model. BMW press spokesman Kalli Hufstadt and journalist Peter Hans Leicht put the R 80 G/S through its paces in Ecuador in 1980.

"From primeval forest to eternal ice", for during the trip the motorcycles had to prove themselves in extreme climatic and road conditions: from the heat and humidity of the Amazon basin up to an altitude of more than 5,000 metres in the rarefied atmosphere of the high Andean glaciers. Both men and machines emerged from this trial of strength with no more than a few slight injuries.

The development work of the BMW engineers had paid off, as had the intense physical training undertaken by both riders before their departure. The backroom boys could now get down to the fine tuning, where their work naturally benefited from their experience with competition motorcycles.

### The press is impressed

By 1st September 1980 everything was ready. The BMW R 80 G/S was intro-

duced to the international press in the French city of Avignon. Less than 21 months had elapsed since the launch of the project, and those involved at BMW were anxious to see the reaction. Needless to say, attention first focused on the "Monolever", as the rear swing-arm was called. But this innovation was not an end in itself: it made the assembly some two kilograms lighter than a conventional solution, while torsion resistance was about 30 percent higher, noticeably reducing the unwanted lateral forces during spring compression.

With a dry weight of just 167 kg, it was the lightest motorcycle in the 800 cc class. It had a clearance of 218 mm – 50mm greater than on the /7 series – and its spring travel of 200 mm in front and 170 mm at the rear delivered off-road qualities to satisfy most riders. Another result of experience in cross-country sport was the electronic ignition and – a first on any endurance machine – a disc brake on the front wheel.



Herbert Schek in the European Off-Road Championship in 1978.





Left: Press launch of the BMW R 80 G/S in September 1980 in Avignon. Euphoria after the test drive. Right the R 80 G/S proves off-road quality.



But the question was, how would the press take to the concept of a large, long-range endurance bike? Would the BMW R 80 G/S, in the hope implied by its nomenclature – G for Gelände (terrain) and S for Strasse (road) – be accepted as a positive synthesis, or derided by the public as a lazy compromise?

The answer was not long in coming: the enthusiasm among journalists at the launch of the new motorcycle was unanimous. The words of the journalist writing for the Swiss magazine *Moto Sport* stand for numerous reactions in similar vein:

"Incredible! BMW has managed to build a motorcycle that has everything it takes to become a really big seller: the R 80 G/S! Holding steadfastly onto tried and tested traditions and combining them with careful observation of market trends and bold new ideas, they have created a motorcycle which many true biking aficionados have been waiting for.

Though there are 'Enduros' with which you can cover long distances perfectly well, in terms of performance alone there's no keeping up with modern road machines... The G/S feels at home on the tight and twisty serpentine of a dirt track in the Alpine foothills, along broad, well-surfaced mountain passes, and – no exaggeration – the autobahn. Not to mention the sheer fun of it."

Rarely indeed had a new model inspired journalists to such a variety of word play: "natural boxer", "off-road champion", "one-armed pathfinder", "mountain boots for sprinting", "BMW for a bit on the side", to quote only the most piquant. Some magazines, such as

the German publication *Motorrad* and the British *Motorcycle Sport*, described it with a wink as "the best road motorcycle from BMW", so impressed were they by its handling qualities. A summary of all the test rides might be: "A motorcycle for every terrain".

#### Customers go for the G/S

It is worth mentioning that the BMW R 80 G/S, at 800 cc, not only had the largest-capacity engine of any endurance machine allowed on the road, but with a top speed of 168 km/h it was by far the fastest.

To this end, Metzeler had developed special tyres, since those hitherto available on the market were only licensed for speeds of up to 130 km/h. Such figures alone underline the special status of the BMW G/S.

On 19th September, when it was shown to the public at the IFMA (international motorcycle show), there was a tremendous crush around the BMW stand. People were anxious to see the "Bavarian Allrounder" that had already received so much advance praise in the press. Enthusiasm on the stand was converted into orders for the coming motorcycle season.

By the end of 1981, 6,631 machines – more than twice the number originally planned – had left the workshops in Berlin. In that year, one in every five BMW motorcycles sold was a G/S. The endurance tourer was making a key contribution to BMW's steadily rising sales figures – and to this day, 25 years after the launch, this segment of the market has retained its enormous importance for BMW.

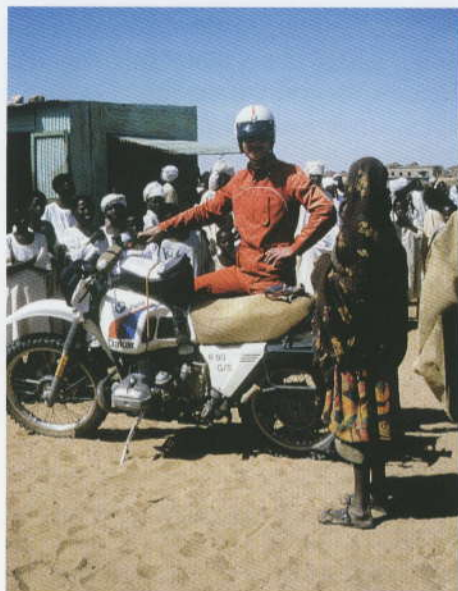
#### Success in the desert

In parallel with the market launch, BMW increased its commitment to cross-country sport and set its sights on the toughest and most prestigious off-road event in the world: the Paris-Dakar Rally. First staged in 1979, this race covered 9,500 kilometres. A mere 30 percent of the route ran along on surfaced roads. In 1979 the only BMW driver, Fenouil, retired with a technical fault. In 1980 the start of the Paris-Dakar hung by a thread when the leading sponsor backed out,



Maximum driving pleasure: The BMW R 80 G/S also offered perfect handling on the road.





Left: G/S 80 Project Manager Rüdiger Gutsche and Africa Tour 1985.  
Right: Hubert Auriol and Gaston Rahier after the Paris-Dakar victory, 1984.



The G/S sold superbly well, yet success attracts not only admirers, but also imitators. Competitors from Japan and, later, Europe as well were now offering endurance models more specifically tailored for road use. When the first twin-cylinder models appeared on the market with capacities approaching 800 cc, it was clear, if it had not been before, that BMW could not rest on its laurels and had to actively defend its position.

### The Paralever

The result of further development was presented to the public for the first time in Florence on 24th August 1987. These successor models were called the R 80 GS and R 100 GS – the oblique stroke in the typography had been dropped, which suggested the interpretation *Geländesport* (cross-country sport).

With the 1,000 cc R 100 GS, BMW was once again able to offer the largest-

and only a whip-round among French BMW motorcycle dealers produced the necessary funds at the last minute. It seemed as if this personal financial involvement would pay off: Hubert Auriol, who signed on as the second BMW France rider beside Fenouil, was in the lead after 11 stages, but in the 12th he was disqualified for obtaining unauthorized assistance. Even so, by coming fifth, Fenouil earned a succès d'estime.

In 1981, the rally was prepared for more professionally. BMW went to the starting grid with three motorcycles prepared by HPN: Auriol was the first to reach Dakar, and it was he, too, who was able to repeat BMW's overall victory in 1983. In 1984 and 1985 the Belgian Gaston Rahier won the Paris-Dakar, but these would be BMW's last victories for many a year, for after the 1986 season BMW withdrew its works team. With four victories in the Paris-Dakar, BMW

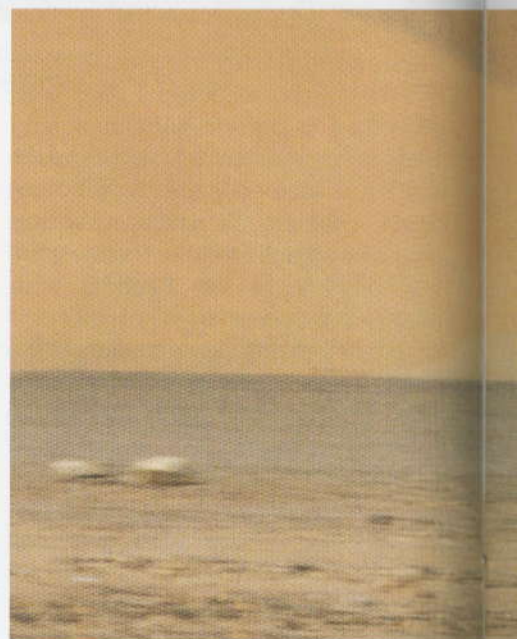
had given impressive proof of its off-road potential.

### Into the distance on the G/S

The publicity value of its successes in the Paris-Dakar helped to gain BMW new customers. Of course, to a road rider who only occasionally went along country paths, it mattered little whether or not "his" motorcycle had proved itself in the world's toughest rally. But for globetrotters keen to visit remote civilizations on two wheels, results like that certainly counted.

While BMW offered an extensive range of accessories for the G/S, alongside that a second market established itself which was specifically targeted to meet the demands of long-distance travel. It ranged from larger fuel tanks made of every imaginable material, through luggage and navigation systems, to special mudguards. Then there were numerous specialists – headed by the Dakar-seasoned teams of HPN and Schek – who offered conversions which adapted the motorcycle completely to the planned tours. Customers did not balk at a purchase price that was double that of the production model. In 1984 BMW itself brought out a special "Paris-Dakar" model. A 32-litre tank with the striking Paris-Dakar logo and a single seat with a generous luggage rack gave it the outward appearance of the competition machines, even though the technology of the production model was hidden under the new clothing.

The revolutionary single swinging arm of the BMW R 80 G/S: wheel changing made simple.



BMW rider Hubert Auriol crossing the endless

engined Enduro on the market. Yet it was not the engine, which was already well known from the road models, that attracted attention. Once again it was the frame, which had undergone sub-



Gaston Rahier storms to victory at the Paris-Dakar 1984.

stantial modifications, including the rear suspension again. It is true that BMW had scored a major hit with the first single swing-arm in a large-engined, high-performance motorcycle, but true to the motto that the better is the enemy of the good, the BMW designers had set about building on the advances already made.

The Monolever had attracted attention at its launch in 1980 and from 1983 onwards was incorporated in the new four-cylinder series, and a year later in the big Boxers as well. However, not even the single swing-arm could eliminate the characteristic drive-shaft reactions.

During acceleration the bike pitched forward due to expansion of the rear wheel suspension spring and plunged back when the throttle was reduced. In cross-country riding this was particularly significant, since the raising of the rear wheel when accelerating hardened the suspension, thus reducing the traction that was



would have been necessary to lengthen the arm to 1.7 metres.

With the "Paralever", as the new suspension arm was christened, a different route was chosen, one which had already been tried out in the 1950s by BMW's former development chief Alexander von

this solution never reached series production and doubtless with the passage of time had been rather forgotten. Then, after three decades, the idea was taken up again in the Paralever.

The housing for the rear-wheel drive was located on the suspension arm and could rotate with it, and the reactive forces were diverted into the frame through a driving force support. The rotatability of the axle drive was made possible by two roller bearings in the suspension arm and a second universal joint in the drive shaft. This solution resulted in an additional weight of just 1.6 kg compared with the Monolever, but its effect was equivalent to a theoretical suspension arm length of 1,400 mm, reducing the unwanted reactions to a minimum. In addition, the suspension play was lengthened from 170 mm to 180 mm, and the diagonally positioned suspension strut, which could be set to four positions, had a slightly progressive action.

#### Perfection in the detail

Beyond this, numerous detail improvements were incorporated in the new GS. The frame and rear end were given added reinforcement, and a new Marzocchi telescopic fork was fitted to the front wheel. Marzocchi had already been active in the works involvement in the Paris-Dakar, and the result of their joint development work was a fork with suspension play increased from 200 mm to 225 mm, which guaranteed an active damping effect even on rough terrain and eliminated distortion on



expanse of the Sahara: Paris-Dakar Rally of 1983.

so critical on rough terrain. To eliminate this reaction it would have been possible to lengthen the suspension arm. However, this was only a theoretical possibility, since to neutralize the rearing effect, it

Falkenhausen. In 1955, for Walter Zeller's works racing bike, Falkenhausen had developed and patented a rear-wheel suspension arm with double joint and driving force support. For reasons of cost