



The new BMW M 1000 R.

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1. Overall concept. Short version.



"The M R is the second M model from BMW Motorrad. Based on the current S 1000 R and S 1000 RR, the product substance of the M 1000 R - M R for short - has been tuned to meet the specific requirements of a supersport roadster. The riding dynamics speak for themselves both on the country road and on the race track." Ralf Mölleken, Project Manager 4-cylinder models

The new BMW M R: The M Roadster meets the highest demands on both country road and the race track.

At the end of 2018, BMW Motorrad already introduced the successful M automobile range strategy for motorcycles and has since been offering M special equipment and M Performance Parts. The new BMW M 1000 R - hereafter referred to as the M R for short - is the second M model from BMW Motorrad to celebrate its world premiere, following the M 1000 RR superbike: The M Roadster.

In the anniversary year of the 50th birthday of BMW M GmbH, BMW Motorrad is also adhering to the dynamic philosophy of the most powerful letter in the world with the new M R: M is synonymous worldwide with racing success as well as the fascination of high-performance BMW models and is aimed at customers with particularly high demands for performance, exclusivity and individuality.

With an engine output of 154 kW (210 hp), a DIN empty weight of only 199 kg fully fuelled, and suspension technology and aerodynamics designed for both high-performance road use and fast laps on the racetrack, the new M R delivers a dynamic riding experience in the roadster segment previously reserved for thoroughbred superbikes.

Powerful M R 4-cylinder based on the RR engine. Even more peak power, higher torque and increased thrust and traction thanks to shorter secondary and gear ratios for maximum riding pleasure on country roads and race tracks.

The new M R features a modified water-cooled 4-cylinder in-line engine based on the power unit of the S 1000 RR. Its peak power output is 154 kW (210 hp) at 13,750 rpm, 33 kW (45 hp) more than in the S 1000 R. The maximum torque of 113 Nm is generated at 11,000 rpm (S 1000 R: 114 Nm at 9,250 rpm). Compared to the S 1000 R, the maximum revs of the M R are now 14,600 rpm. Increased rear wheel traction in all gears is also provided by a shorter secondary gear ratio through the use of a sprocket with 47 teeth (S 1000 R: 45 teeth). In addition, the gear ratios of the 4th, 5th and 6th gears are shorter, which also benefits thrust and traction at the rear wheel.

M winglets and wind deflectors: You can brake later, benefit from a lower wheelie tendency and accelerate earlier thanks to the aerodynamic downforce.

In addition to drive and suspension technology, aerodynamics was also a key item in the specifications for developing the M R. The new M R was given winglets in the area of the front side panels with the aim of achieving even faster lap times on the racetrack and the best possible riding stability at high speeds. Already at a speed of 160 km/h, they provide an increase in front wheel load of 11 kg at 220 km/h thanks to the aerodynamic downforce generated. The BMW Motorrad developers countered the slightly increased aerodynamic resistance caused by the small additional frontal area and shape of the M winglets with a correspondingly designed wind deflector in front of the instrument cluster in combination with the M Competition Package.

Suspension and chassis trimmed for performance-oriented use on country roads and racetracks featuring fully adjustable suspension elements, steering damper, milled-over handlebar clamp, wider tubular handlebar with laser-etched "BMW M 1000 R" lettering and handlebar end mirrors.

The suspension and chassis of the new M R are based on the S 1000 R with the aluminium bridge frame as the centrepiece. On the M R, the front wheel is controlled by an upside-down fork with a 45 mm sliding tube diameter in "All black" design, i.e. it is really completely black. It is equipped with so-called closed cartridge inserts, separate hydraulic piston-cylinder systems. Another new

feature of the M R is the additional adjustability of the fork's spring base in conjunction with the standard Dynamic Damping Control (DDC).

In addition, the fork of the M R features an upper triple clamp with an elaborately milled-over handlebar clamp as well as a black aluminium tubular handlebar with a wider design than previously seen on the S 1000 R and with a lasered "BMW M 1000 R" lettering. Also new on the M R are the handlebar end mirrors forged from aluminium. The fork legs have also been modified and are now designed to accommodate the new M brake callipers. Another new element of the M R is the adjustable steering damper.

M brakes with radial hand brake pump and lightweight forged aluminium wheels for optimum riding dynamics on the racetrack and in performance mode. Exclusive M Carbon wheels as part of the M Competition package.

After the M 1000 RR, the new M R is the second BMW motorcycle to feature an M brake. It was developed directly using the experience gained with the racing brakes on BMW Motorrad factory racing machines in the Superbike World Championship. The M brake callipers feature a blue anodised coating in conjunction with the famous M logo.

Together with two 320 mm brake discs of 5 mm thickness and black anodised aluminium brake disc carriers, the brake system equipped with a new radial hand brake pump currently marks the pinnacle of brake development in the field of road-legal systems. The new M R is already equipped with very lightweight forged aluminium wheels as standard. As part of the M Competition package, the exclusive M Carbon wheels are available with newly designed tapes on the rim.

Brake Slide Assist - assists the rider when brake drifting.

The new Brake Slide Assist function is an important and very helpful innovation, especially for race track riders. It allows the rider to brake drift into corners with a constant slide.

Instrument cluster with perfectly readable 6.5-inch TFT display, new display of the rev counter (red area) and OBD interface for M GPS Datalogger and M GPS Laptrigger that can be used via activation code.

The instrument cluster of the new M R corresponds to the design of the M RR and also offers the M start-up animation. The extended display of the red speed range is a new feature. As optional equipment, comprehensive data material for using the M GPS Laptrigger and the M GPS Datalogger (Original BMW Motorrad Accessories) can be provided by means of an activation code via the OBD interface of the instrument cluster.

M Design and the dynamic design language of the M R signal pure performance and sportiness.

Even more than the S 1000 R, the new M R with optimised suspension technology and the most powerful engine to date in a dynamic roadster from BMW Motorrad is uncompromisingly designed for sporty riding - whether on country roads or on the race track. M R - the pinnacle of what is currently possible in the roadster segment. The proportions of the M R are ultra-compact and powerful, and the three-dimensionally designed surfaces are both exciting and dynamic. Slim, slender and extremely aggressive, the M R looks extremely distinctive from the front with its new M winglets. In addition, the signature light makes the new M R clearly recognisable as a BMW from the front - analogous to the kidney grille on BMW automobiles.

The performance-oriented look of the new M R is also reflected in its colour concept. Lightwhite non-metallic / M Motorsport makes the basic variant of the M R look particularly light, sporty and rider-friendly, while the Blackstorm metallic / M Motorsport colour scheme included in the M Competition package stands for sheer power and dynamism.

Uncompromising design and technology: The M R featuring the M Competition Package.

If the new M R in standard trim is still not enough for you, the M Competition Package offers a fascinating mix of refined components for the racing technology gourmet and the aesthetically minded rider alike. In addition to the Blackstorm metallic / M Motorsport colour scheme, the M Competition package includes M Carbon wheels, M rider footrest system, M Carbon parts such as rear wheel cover and chain guard, front wheel cover, tank covers, airbox cover with tapes, wind deflector, sprocket cover, the M pillion package as well as the M pillion cover and a milled, fully adjustable M rider footrest system.

The highlights of the new BMW M 1000 R.

- M RR shift cam engine, output 154 kW (210 hp) at 13,750 rpm and thus 33 kW (45 hp) more than in the S 1000 R. Maximum torque of 113 Nm at 11,000 rpm (S 1000 R: 114 Nm at 9,250 rpm).
- Shorter secondary gear ratio (sprocket with 47 teeth instead of 45).
- Shorter gear ratios of 4th, 5th and 6th gear.
- Optimised intake system with variable intake funnels for improved charge exchange at high engine speeds.
- Titanium rear silencer.
- M Endurance chain.
- Riding modes "Rain", "Road", "Dynamic", "Race" and "Race Pro 1-3" as well as the latest generation of Dynamic Traction Control DTC and DTC wheelie function with 6-axis sensor box.
- Three adjustable throttle characteristics available now for optimum response. "Engine Brake" with triple adjustability of engine drag torque in "Race Pro" mode.
- Brake Slide Assist assists the rider when brake drifting.
- Shift Assistant Pro for fast upshifts and downshifts without using the clutch. Easy reversibility of the shifting scheme for racetrack use.
- Launch Control for perfect race starts and Pit Lane Limiter for keeping to the given speed precisely in the pit lane.
- Hill Start Control Pro for comfortably starting off on inclines.
- M winglets and wind deflectors: Brake later and accelerate earlier, plus more high-speed stability thanks to aerodynamic downforce.
- Engine spoiler.
- Upside-down fork in "All black" design with adjustable spring base in conjunction with standard DDC.
- M brakes on a Dynamic Roadster from BMW Motorrad for the first time: The M R offers maximum braking performance for country roads and race tracks.
- Aluminium forged wheels.

- M Carbon wheels with M- tapes and M- lettering on the rim: High-grade high-tech components deliver maximum performance as part of the M Competition Package.
- M handbrake and clutch lever.
- Adjustable steering damper.
- Milled-over handlebar clamp.
- Compared to the S 1000 R, wider tubular handlebars with laser-etched "BMW M 1000 R" lettering.
- Handlebar end mirrors.
- Main headlamp with illuminated M logo.
- Small number plate holder.
- Instrument cluster with large, perfectly readable 6.5-inch TFT display, start-up animation with M logo and OBD interface for M GPS Datalogger and M GPS Laptrigger that can be used via activation code.
- Rev counter (red area) displayed in a new design.
- Lightweight M battery, rear USB charging socket, powerful LED light units, electronic cruise control and heated grips.
- Keyless Ride Light (ignition only).
- M Design and dynamic design language signal ultimate roadster • performance.
- M Competition Package.
- RDC as standard.
- Extensive range of optional accessories.

2. Drive.



With the engine of the M 1000 R, we have achieved a technical balancing act. For super-sporty country road use, a pleasant power characteristic with plenty of torque in the low and medium rev range is available, while high peak power is provided for riding on the race track. The significantly improved acceleration and pulling power values are immediately noticeable to the rider.

Ralf Möllleken, Project Manager M 1000 R

Powerful M R 4-cylinder based on the RR engine. Even more peak power and higher torque for delivering maximum riding fun on country roads and race tracks.

The new M R uses the water-cooled 4-cylinder in-line engine taken over from the M RR. Its peak power output is 154 kW (210 hp) at 13,750 rpm, 33 kW (45 hp) more than in the S 1000 R. The maximum torque of 113 Nm is generated at 11,000 rpm.

Compared to the S 1000 R, the maximum engine speed of the M R has been increased from 12,000 rpm to 14,600 rpm.

In the rev range above 10,000 rpm, which is relevant for supersports riding as well as for use on race tracks, significant improvements have been achieved over the already very powerful engine of the S 1000 R. In the range from 10,000 rpm to 12,000 rpm, noticeably more torque and thus acceleration power is available.

From a speed of 10,000 rpm, the engine of the new M R again clearly shows its advantages and provides much more peak power and torque until the maximum speed is reached. Increased rear wheel traction in all gears is also provided by a shorter secondary gear ratio through the use of a sprocket with 47 teeth (S 1000 R: 45 teeth). In addition, the gear ratios of the 4th, 5th and 6th gear have been changed. The rear gear is shorter, which also benefits traction at the rear wheel.

BMW ShiftCam technology for varying timing and valve lift.

With the aim of generating significantly increased peak power as well as achieving optimum power delivery across the rev range

relevant for supersports riding on country roads as well as for race track use, the intake ducts have also been redesigned as in the M RR. Compared to the S 1000 R, they feature advanced channel geometry and are designed to achieve the best possible flow conditions.

- Here, too, BMW ShiftCam technology is used to vary the valve timing and valve lift on the intake side. This is a three-part intake shift camshaft that has two cams mounted on a shift segment for each valve to be actuated: a torque cam and a power cam, each with optimally designed cam geometry. As with the S 1000 RR, the shift speed of the BMW ShiftCam on the M R is 9,000 rpm. Below 9,000 rpm, shifting is load-dependent and when a higher torque is required, the shift is made to the torque cam.

By means of an axial displacement of the cam segment, the inlet valves are shifted from either the torque cam or the power cam in just 10 ms, depending on the load and speed. The **axial displacement of the cam segment** and thus the use of torque or power cam is effected via two shift cams on the cam segment and two electromechanical actuators. The different design of the cam geometry is used to vary the timing and the valve lift. While the full-load cam provides maximum valve lift, the partial-load cam delivers reduced valve lift.

The benefits of BMW ShiftCam Technology:

- Increase in torque and pulling power in the low and medium speed range with simultaneous gain in peak power.
- Optimal design of the part-load cam geometry for the lower to medium load and speed range. The new MR engine offers almost the same high torque range in the lower and middle ranges as the previous S 1000 R engine, but with the same peak power as the RR.
- Reduction of load change loss in the partial load range.
- Reduction of exhaust emissions and optimised sound.

Titanium valves, new spring assembly on the exhaust side, narrower and lighter cam followers and optimised camshafts.

The M R also uses four valves made of lightweight titanium per combustion chamber. The shafts of the inlet valves feature hollow-

bore design to minimise weight. The valves are operated as usual via light, speed-resistant and DLC-coated cam followers.

In the M R, too, the camshafts are driven directly from the crankshaft and without an intermediate gear. The primary reduction gear for halving the speed of the camshafts is located directly in the cylinder head.

Very light, compact basic engine with wet sump lubrication, 6-speed gearbox and anti-hopping clutch.

As before, the cylinder liners integrated into the upper half of the engine housing are polish-slide-honed to reduce friction, and the oil and water pumps are combined into a single compact module. The tubing of the water and oil cooling circuit is also reduced to a minimum and designed to be very resistant to falls, in keeping with the spirit of a racing engine. To achieve the smallest possible overall width, there is only one gear wheel on the crankshaft, as the primary reduction gear of the starter engages directly with the primary gear wheel of the clutch. The starter motor is integrated on the top of the housing behind the cylinders. The crankshaft position is detected via the rotor/generator.

As in the RR, the oil supply is in the form of wet sump lubrication. For the sake of maximum operational safety, the oil pan keel and thus the suction point of the pump is very low. The anti-hopping clutch is operated from the right-hand side of the engine. On the M R as well, the upper half of the housing accommodates the light, compact and precisely shiftable 6-speed gearbox, and the Pro Shift Assistant is already fitted as standard.

Intake system with shorter intake funnels for optimised charge exchange at high engine speeds.

The new M R also has a so-called full E-throttle system, i.e. an "electronic throttle grip" for pleasantly low operating forces and perfect engine control. The M R engine is equipped with variable intake funnels. The length of the intake funnels is varied in two stages by a map-controlled servomotor mounted on the airbox. At a speed of 11,000 rpm the short intake paths favourable for achieving maximum power are opened.

New lighter exhaust system with short, compact rear titanium silencer.

The BMW Motorrad developers also pursued the overriding goal of further increasing the new M R in terms of power and torque delivery compared to the S 1000 R, while at the same time significantly reducing weight for the new exhaust system too. It features two three-way catalytic converters and a titanium rear silencer. An M Titanium front silencer system including manifold is also available as part of the special ex-works equipment.

Drastically improved riding performance with even more acceleration and pulling power.

The new M R engine is significantly more powerful than the 4-cylinder of the S 1000 R across the entire rev range. Acceleration and pulling power in particular have been noticeably increased. With an acceleration speed of 7.5 s to 200 km/h, the M R is 0.5 seconds faster. The picture is even more drastic with regard to the pull-through values, measured in 6th gear. While the S 1000 R takes 3.3 s from 60 to 100 km/h, the M R only needs 2.9 s. The intermediate sprint from 100 to 150 km/h takes 2.5 s (S 1000 R: 3.3 s) and in the interval between 140 and 180 km/h 2.8 s (S 1000 R: 4.0 s).

In this way, the new M R manages the balancing act of being a race track motorcycle and a sports machine for public roads. The new M R engine is much more powerful than the S 1000 R engine in the range from 10,000 rpm to 14,600 rpm, which is particularly relevant for dynamic riding on the race track, but without losing its superior qualities as a fascinating source of power for sporty country road riding.

- Riding modes "Rain", "Road", "Dynamic", "Race" and "Race Pro13" as well as the latest generation of Dynamic Traction Control DTC and DTC wheelie function with 6-axis sensor box.

With the new M R, a distinction is made between two riding mode worlds: For country roads and for the race track. The new M R features the four riding modes "Rain", "Road", "Dynamic" and "Race" as standard, as well as the additional riding modes "Race Pro 1", "Race Pro 2" and "Race Pro 3". The latest generation of Dynamic Traction Control (DTC) with 6-axis sensor cluster, lean angle sensor and fine adjustment for even more safety and performance when accelerating are also standard features.

The DTC has four fixed basic settings for the respective riding modes "Rain", "Road", "Dynamic" and "Race" as standard as well as the DTC wheelie function. In the "Race Pro" riding modes, fine

adjustment (+/- Shift) is also available. The DTC wheelie function is also adjustable. It allows wheelies to be suppressed or limited with the aim of maximum acceleration via the front wheel lift-off detection.

Now three adjustable throttle characteristics are available for optimum response. "Engine Brake" with triple adjustability of engine drag torque in "Race Pro" mode.

As standard, the new M R features three throttle characteristics that are firmly linked to the respective riding modes "Rain", "Road", "Dynamic", "Race" and "Race Pro". The newly added third throttle characteristic "Direct Throttle Response" with a very steep gradient for particularly spontaneous response is configurable in "Race Pro" mode. As a further component, "Engine Brake" in "Race Pro" mode also offers triple adjustability of the engine drag torque in overrun mode.

- Rain: Soft throttle response, reduced drive torque in the lower gears.
- Road: Optimum throttle response, reduced drive torque in the lower gears.
- Dynamic: Optimum throttle response, reduced drive torque in the lower gears.
- Race: Optimum throttle response, maximum drive torque in all gears.
- Race Pro 1-3: Can be configured. In Race Pro, Setting 3 can also be selected. The throttle response is soft, the drive torque maximum in all gears.

Shift Assistant Pro for fast upshifts and downshifts without using the clutch. Easy reversibility of the shifting scheme for racetrack use.

Shift Assistant Pro enables upshifting without clutch actuation and thus offers perfect acceleration almost without interrupting traction. It also allows downshifting without clutch or throttle actuation in the load and speed ranges relevant for riding. This allows very fast gear changes and reduces clutch use to a minimum. For use on the race track, the conventional shifting scheme (first gear down) can be changed in a few simple steps (first gear up).

Launch Control for perfect race starts.

The new M R also offers Launch Control, which actively supports the rider during race starts. It is activated at a standstill with the engine running and at idle speed by pressing the start button for more than three seconds.

Pit Lane Limiter for keeping to given speeds precisely in the pit lane.

The Pit Lane Limiter also allows the rider to limit speed for pit lane riding in any riding mode.

Hill Start Control Pro for comfortably starting off on inclines.

The new M R already features the Hill Start Control Pro function as standard. It goes beyond the features of the Hill Start Control comfort system standard on the RR and offers the additional Auto HSC function. The settings menu allows this extra function to be individualised in such a way that the holding brake is automatically activated on a gradient (greater than +/- 5 %) when the handbrake or foot brake lever has been activated, shortly after the motorcycle comes to a standstill.

3. Suspension and aerodynamics.



"In order to put the high performance of the M 1000 R on the road, we had to apply some measures to the suspension and chassis. The M winglets, a front-wheel oriented seating position and a tyre developed exclusively for the M R ensure maximum stability and riding pleasure. The M brake, used for the first time on a Dynamic Roadster, keeps the M R in check. Sebastian Epp, suspension development M 1000 R

The significantly increased potential of the new M R compared to the S 1000 R is not only reflected in the high-performance drive technology. In fact, the outstanding riding dynamics are largely the result of consistent development work on the suspension and aerodynamics, with countless test rides on country roads and, in particular, race tracks, as well as tests in the BMW Group wind tunnel.

M winglets and wind deflectors: You can brake later, benefit from a lower wheelie tendency and accelerate earlier thanks to the aerodynamic downforce.

In addition to drive and suspension technology, aerodynamics was also a key item in the specifications for developing the M R. The new M R was given winglets in the area of the front side panels with the aim of achieving even faster lap times on the race track and the best possible riding stability at high speeds. At a speed of 220 km/h, they provide an increase in front wheel load of approx. 11 kg thanks to the aerodynamic downforce generated. An additional substructure, invisible from the outside, ensures the optimal transmission of the downforce generated by the winglets.

The winglets, which have become indispensable in racing series such as MotoGP or the Superbike World Championship, also serve in particular to achieve the best possible contact between the wheels and the road surface - especially when accelerating and at high speeds. Wheelies are absolutely undesirable from a riding dynamics point of view, as the drive force in a wheelie is not converted 100 per cent into propulsion, but also to a considerable percentage into the rising of the front end of the motorbike.

Accordingly, the traction control kicks in to stop the wheelie and thus reduces the driving force. Valuable tenths of a second are lost here. The additional wheel load on the front wheel counteracts the wheelie tendency during acceleration, the traction control system has to regulate less, more drive power is converted into acceleration and the rider achieves a faster lap time.

The BMW Motorrad developers countered the slightly increased aerodynamic resistance caused by the small additional frontal area and shape of the M winglets with a correspondingly designed wind deflector (only in the M Competition Package). It provides improved airflow around the rider's helmet, relieves the rider's upper body at high speeds and compensates for the slight increase in drag caused by the winglets with the aim of achieving a sufficiently high top speed.

Suspension and chassis trimmed for performance-oriented use on country roads and race tracks featuring fully adjustable suspension elements, steering damper, milled-over handlebar clamp, wider tubular handlebar with laser-etched "BMW M 1000 R" lettering and handlebar end mirrors.

The suspension and chassis of the new M R are based on the S 1000 R with the aluminium bridge frame as the centrepiece. It is a welded construction consisting of four gravity die-cast elements and integrates the engine, which is inclined forward by 32 degrees, as a supporting element. The main frame was designed to transmit power directly to the engine structure via the shortest possible paths.

The frame, known as the "Flex Frame" due to the optimal interaction of the main frame, rear frame and swinging arm, offers further advantages due to its very narrow design. This considerably reduces the width of the vehicle in the area relevant for good knee closure. The rider benefits from being able to keep his thighs together closer to the bike and thus a more relaxed riding posture.

When designing the suspension of the new M R, the aim was to realise both the best possible lap times on the race track and an exceptional riding experience on country roads.

The front wheel is controlled by an upside-down fork with a 45 mm sliding tube diameter in "All black" design, i.e. it is really completely black. It is equipped with so-called closed cartridge inserts, separate hydraulic piston-cylinder systems. The fork of the

M R features an upper triple clamp with an elaborately milled-over handlebar clamp as well as a black aluminium tubular handlebar with a wider design than previously seen on the S 1000 R and with a lasered "BMW M 1000 R" lettering. Also new on the M R are the handlebar end mirrors milled from aluminium. The fork legs have also been modified and are now designed to accommodate the new M brake callipers. In addition, the M R has an adjustable steering damper.

The fork features adjustment options for the spring base as well as 10 tuning levels each for the damping rebound and compression stages. The sensitive response, the wide adjustment range and the very high damping reserves offer maximum riding dynamics and individual tuning options on the race track. The total suspension travel is 120 mm.

The central spring strut has an adjustable spring base and adjustable damping rebound and compression damping. The rebound and compression damping are adjustable via the very user-friendly scaling of 10 steps each. The total suspension travel on the rear axle is 117 mm.

Dynamic Damping Control (DDC) - the new generation of electronic damping adjustment with even wider spread.

The new M R is equipped with the electronically controlled Dynamic Damping Control (DDC) suspension as standard.

The basic settings of the DDC are linked to the riding modes "Rain", "Road", "Dynamic" and "Race". In "Rain" and "Road" mode, the DDC's tuning focus is on rich, pleasant damping and can thus be described as sporty-comfortable. The area of application of this DDC damping characteristic "road" is preferably the country road with poor to good asphalt surface.

The "Dynamic" driving mode, on the other hand, is intended for very well-maintained country roads. The DDC damping characteristic "Road dyn." is available for this purpose.

In the "Race" riding mode, the basic damping is raised again for race track use and works with the "Track" characteristic.

In the "Race Pro" riding modes, on the other hand, the individually adjustable "Race" DDC damping characteristic optimally supports

race track riding and provides an even richer and firmer damper setting. Here, the spring-damper elements provide the rider with optimum, crystal-clear feedback at all times with regard to the respective riding situation.

In addition, the suspension tuning can also be individualised in all riding modes. Like in the case of mechanical adjustment, the customer has the option of adjusting the suspension to softer or firmer simply by "pressing a button" in the configuration menu. Thus, DDC is also able to take into account how much load the new M R is carrying. Accordingly, the rider can set the DDC setting in the configuration menu for riding solo (1 helmet) or with a pillion rider (2 helmets). A new feature of the M R's DDC is the additional adjustability of the fork's spring base.

M brakes with radial hand brake pump for maximum braking performance in race track and performance mode.

Next to the M 1000 RR, the new M R is the second BMW motorcycle to feature an M brake. It was developed directly using the experience gained with the racing brakes on BMW Motorrad factory racing machines in the Superbike World Championship. The development of the M brake incorporated all of BMW Motorrad's previous findings, including those from customer sport and from the ABS race track functions. The result of this sophisticated development work was the M brake - offering maximum performance, pressure point and fade stability as well excellent response. The M brake callipers feature a blue anodised coating in conjunction with the famous M logo.

Together with two 320 mm brake discs of 5 mm thickness and black anodised aluminium brake disc carriers, the brake system equipped with a new radial hand brake pump currently marks the pinnacle of brake development in the field of road-legal systems. Two brake pad variants are available for different applications. One for road use and another compound from the World Endurance Championship for use on the race track. Both brake pad compounds are matched to the ABS Pro functions. At the rear wheel, a single-piston floating caliper in M design, also anodised in blue, together with a 220 mm steel brake disc provide deceleration.

Lightweight forged aluminium wheels as standard and exclusive M Carbon wheels as high-grade high-tech components for maximum performance as part of the M Competition package.

The new M R is already equipped with very lightweight forged aluminium wheels as standard. The exclusive M Carbon wheels are also available as an optional extra ex works and as part of the M Competition package. Carbon fibre - once developed for the aerospace industry- this high-strength and super-light material first established itself in racing and now also in BMW motorcycles. BMW Motorrad uses it wherever minimum weight and maximum strength are required.

Less weight means lower rotational masses leading not only to improved acceleration and braking behaviour but also makes the bike easier to handle. In short: The M Carbon wheels make the M R even more agile and dynamic to ride. In addition, the carbon fibre surface covered with high-gloss clear lacquer is characterised by its high-quality, deep black shimmering structure and also stands out thanks to the tapes in the M colour scheme and M lettering on the rim edge.

Brake Slide Assist - assists the rider when brake drifting.

The new Brake Slide Assist function is an important and very helpful innovation, especially for race track riders. It allows the rider to brake drift into corners with a constant slide.

From a technical point of view, a slip angle (drift angle) is set by limiting the brake pressure at the rear wheel by the ABS Pro system and by controlling the rear wheel slip by the engine drag torque control (MSR).

Due to his position on the motorcycle and the application of force via the handlebars, the rider has a considerable influence on the drift behaviour during braking. Brake Slide Assist provides support to the rider for this partially unstable driving condition of drifting and is only active in ABS Pro Setting "2".

4. Electrical system and electronics.



Instrument cluster with large, perfectly readable 6.5-inch TFT display, start-up animation with M logo, new display of the rev counter (red area) and OBD interface for M GPS Datalogger and M GPS Laptrigger that can be used via activation code.

The instrument cluster of the new M R is essentially the same as that of the M RR. Four screens (Pure-Ride with the most important information and 3 Core Screens) allow the rider to choose the display according to his needs. It follows a consistent design for supersport purposes, also on the race track. The diversity of information, display quality and also the user-friendliness of the new instrument cluster are currently unrivalled in this segment.

In addition to a wide range of functions and information, the BMW Motorrad developers placed particular emphasis on the best possible readability of the 6.5-inch TFT display. To ensure optimum readability even under difficult lighting conditions - the display was therefore designed to be large and thus easy to decipher. It is linked to the multi-controller on the left handlebar control unit and can be operated quickly, safely and conveniently. After turning the ignition, the M logo appears prominently in the display.

The TFT display of the M R offers customised screen displays for different purposes. The Pure Ride screen, for example, provides all the necessary information for normal operation on the road, while the three Core screen displays are designed for the race track and provide a corresponding range of information. In addition, the rev counter is displayed here both in analogue form (Core 1 and 2) and in the form of a bar graph (Core 3).

The instrument cluster of the M RR features an optimised rev counter display. It now has a dashed area and a solid red area that is directly controlled by the engine control unit. Dashed areas are to be avoided and are not recommended while the solid red area is locked off. This new display scheme applies, for example, to the warm-up speed, a speed limit by the fault memory, the pit lane limiter and the launch control as well as the showroom mode and the temperature caution map. Another new function of the rev

counter is that it flashes together with the shift light. In addition to the digital display of speed, rpm, selected riding modes, settings for ABS Pro and DTC as well as the menus, further information can be called up via the display:

- Current left/right lean angle.
- Maximum left/right lean angle.
- Current deceleration achieved in m/s².
- Maximum deceleration achieved in m/s².
- Torque reduction through DTC.
- Speed warning (display "SPEED" if a predefined speed is exceeded).
- Average speed.
- Average fuel consumption.
- Trip 1 and 2.
- Residual range.
- Total kilometres.
- Fuel tank level.

For riders who take the new M R out on the race track, the instrument cluster offers further, highly interesting data material that can be called up in various display formats:

- Lap time and lap distance.
- Lap specific speeds (min, max, average).
- Active riding mode per lap.
- DTC setting value per lap.
- Lean angle left/right.
- Lean angle maximums left/right per lap.
- Maximum DTC torque reduction per lap.
- Maximum deceleration per lap.
- Number of gear shifts per lap.
- Average throttle grip position per lap.
- Total laps, total riding time and total distance.
- Best-ever lap

and much more.

As optional equipment, comprehensive data material for using the M GPS Laptrigger and the M GPS Datalogger (Original BMW Motorrad Accessories) can be provided by means of an activation code via the OBD interface of the instrument cluster. The TFT menu also offers a specially reserved menu item for the M GPS

Laptrigger. However, manual triggering is still possible via the flash button. The M GPS Laptrigger, in conjunction with a GPS mouse, provides data for around 300 race tracks around the world.

Lightweight M battery, USB charging socket at the rear, powerful LED light units all round, adaptive turning light as well as electronic cruise control and heated grips.

The electrics and electronics of the new M R are largely based on the proven systems of the S 1000 R. However, with a view to the highest possible performance, the M R has a battery weighing only 1,288 g with a capacity of 5 Ah. It also features a USB charging socket installed at the rear of the vehicle as standard, which provides a maximum charging current of 2.4 A. It also has electronic cruise control and heated grips for colder days as standard.

All light units of the new M R are based on the latest LED technology. These include the bright main headlamp with illuminated M logo, the position light, the front indicator lights, the rear light unit and the instrument cluster with its indicator lights. The LED headlamp with adaptive turning light also gives the M R not only a highly dynamic look, but also illuminates the road perfectly. The position lights reinforce the unmistakable appearance and their luminosity was chosen so that they did not have to be homologated as daytime running lights.

In keeping with the "all in one" motto, the number plate holder, which is short and light on the M R, and the indicator and number plate lights at the rear form a single unit, and the brake light and tail light functions are integrated into the indicator lights. This extremely compact design also allows the M R to be made "ready to race" in just a few steps.

5. Design and colour concept.



M Design and the dynamic design language of the M R signal pure performance and sportiness.

Even more than the S 1000 R, the new M R with optimised suspension technology and the most powerful engine to date in a dynamic roadster from BMW Motorrad is uncompromisingly designed for sporty riding - whether on country roads or on the race track. M R - the pinnacle of what is currently possible in the roadster segment. The proportions of the M R are ultra-compact and powerful and are both exciting and dynamic. Slim, slender and extremely aggressive, the M R looks outstanding from the front with its new M winglets. In addition, the signature lights make the new M R clearly recognisable as a BMW from the front - analogous to the kidney grille on BMW automobiles.

Pure dynamics in white and black.

The performance-oriented look of the new M R is also reflected in its colour concept. There are two colours to choose from: white and black. Lightwhite non-metallic / M Motorsport makes the basic variant of the M R look particularly light, sporty and rider-friendly, while the Blackstorm metallic / M Motorsport colour scheme included in the M Competition package stands for sheer power and dynamics. Both colour schemes are supported by a clutch and generator cover coated in granite grey and the M brake in blue.

Uncompromising design and technology: The M R featuring the M Competition Package.

If the new M R in standard trim is still not enough for you, the M Competition Package offers a fascinating mix of refined components for the racing technology gourmet and the aesthetic rider alike. In addition to the Blackstorm metallic / M Motorsport colour scheme, the M Competition package includes M Carbon wheels, M rider footrest system, M Carbon parts such as rear wheel cover and chain guard, front wheel cover, tank covers, airbox cover with tapes, wind deflector, sprocket cover, the M billion package as well as the M billion cover and a milled, fully adjustable M rider footrest system.

6. Equipment program.



Optional equipment and Original BMW Motorrad Accessories.

An extensive program of optional equipment and Original BMW Motorrad accessories is available for customising the new BMW M R. Optional equipment items are supplied ex works and are integrated in the production process. Original BMW Accessories are installed by the BMW Motorrad dealer or by customers themselves. These items can also be retrofitted.

Options.

- **M Competition Package:** Includes Blackstorm metallic / M Motorsport colour scheme, M Carbon wheels, M rider footrest system, M Carbon parts such as rear wheel cover and chain guard, rear wheel cover and chain guard, front wheel cover, tank covers, airbox cover with tapes, wind deflector, sprocket cover, the M pillion package and the M pillion cover, milled, fully adjustable M rider footrest system.
- **Pillion package:** Pillion seat, pillion cover and pillion footrests.

Individual options.

- M pillion seat.
- Pillion seat cover.
- M titanium front silencer and manifold.
- Theft alarm system.
- Windshield Sport.
- M Sports seat low.
- M Sports seat high.

Original BMW Motorrad Accessories.

M Performance Parts.

- M GPS activation code.
- M GPS Datalogger including M GPS Laptrigger.
- M Endurance chain.
- M axle protectors.
- M Carbon airbox cover.
- M Carbon rear wheel.

- M Carbon front wheel.
- M Carbon chain guard.
- M Carbon rear wheel cover.
- M Carbon front wheel cover.
- M Carbon sprocket cover.
- M Carbon tank cover left/right.
- M Carbon fairing side panel top.
- M Datalogger.
- M rider footrests.
- M rider footrest system.
- M seat.
- M seat high.
- M seat low.
- M pillion footrests left/right.
- M folding handbrake lever.
- M remote adjustment for brake.
- M handbrake lever protector.
- M chain tensioner.
- M folding clutch lever.
- M clutch lever protector.
- M mounting stand receptacle.
- M engine protector.
- M oil filler neck.
- M cover kit.
- M fork clamp for stub handlebars left/right.
- M tyre warmers.

Ergonomics and comfort.

- Pillion seat.
- Windscreen tinted.
- Windshield high, tinted.
- Knee pads for tank.

Design.

- Tankpad.

Safety.

- Radiator protector (oil and water cooler).
- Protective glass for 6.5 inch TFT display.

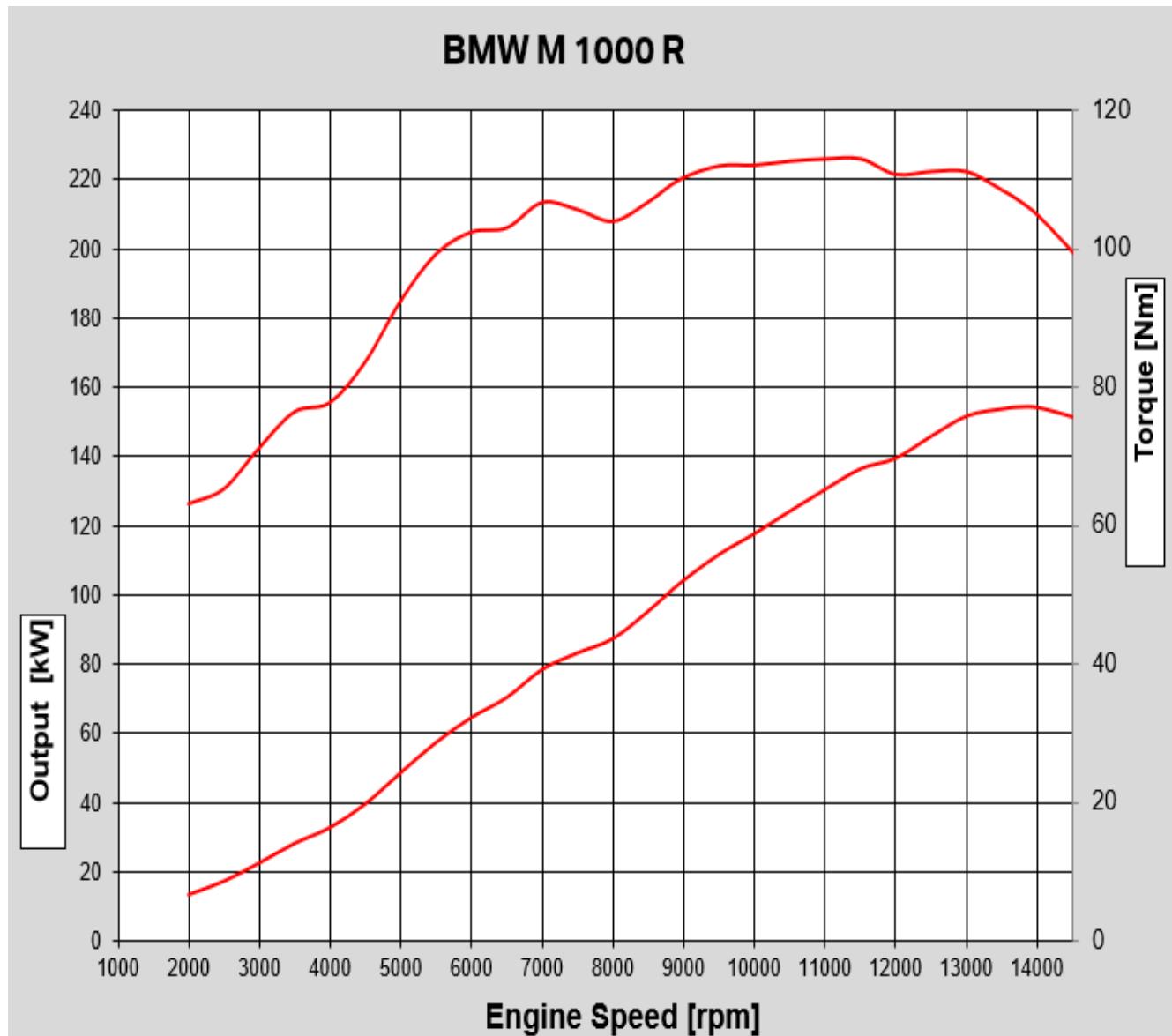
Storage.

- Rider equipment organiser

Maintenance and technology.

- Motorbike rug.
- BMW Motorrad Battery Charger Plus.
- Mounting stand Sport, rear.
- Mounting stand Sport, front.

7. Engine output and torque.



8. Technical specifications.



BMW M 1000 R

Engine

Capacity	cc	999
Bore/stroke	mm	80/49.7
Output	kW/hp	154/210
at engine speed	rpm	13750
Torque	Nm	113
at engine speed	rpm	11,000
Type	Water-cooled in-line 4-cylinder engine	
Compression/fuel	13.3:1 / Premium unleaded petrol, octane rating 95–98 (RON) (knock control; rated power at 98 RON)	
Valve/accelerator actuation	DOHC (double overhead camshaft), Valve actuation via single cam followers	
Valves per cylinder	4	
Ø intake/outlet	mm	33.5/27.2
Throttle valve diameter	mm	48
Engine control	BMS-O	
Emission control	Closed-loop three-way catalytic converter	

Electrical system

Alternator	W	493
Battery	V/Ah	Battery 12/5, maintenance-free
Headlamp	W	Full LED headlamp
Starter	kW	0.8

Power transmission – gearbox

Clutch	Self-reinforcing multi-plate anti-hopping oil bath clutch, mechanically operated	
Gearbox	Constant-mesh 6-speed gearbox	
Primary ratio	1.652	
Transmission ratios	2.647	
I		
II	2.091	
III	1.727	
IV	1.500	
V	1.360	
VI	1.261	
Rear wheel drive	Chain	
Secondary ratio	2.765	

Suspension

Frame construction type	Aluminium composite bridge frame, engine self-supporting	
Front wheel suspension	Upside-down telescopic fork, sliding tube diameter 45 mm,	

Rear wheel suspension	Aluminium double-sided swinging arm with central sprint strut and Full Floater Pro kinematics	
	BMW M 1000 R	
Suspension travel, front/rear	mm	120/117
Wheel castor	mm	96.3
Wheelbase	mm	1,450
Steering head angle	°	66
Brakes	Front	M double disc brake, floating, Ø 320 mm, radial four-piston fixed callipers
	Rear	M single-disc brake, Ø 220 mm, single-piston floating calliper
ABS		BMW Motorrad ABS Pro (part-integral)
Traction control		BMW Motorrad DTC
Wheels	Standard: aluminium forged wheels M Carbon wheels in conjunction with M Competition Package	
	Front	3.50 x 17"
	Rear	6.00 x 17"
Tyres	Front	120/70 ZR17
	Rear	200/55 ZR17

Dimensions and weights

Total length	mm	2,090
Total width with mirrors	mm	812
Seat height	mm	840
DIN unladen weight, fully fuelled	kg	199
Permitted total weight	kg	407
Fuel tank capacity	l	16.5

Performance figures

Fuel consumption (WMTC)	l/100 km	6.4
CO2	g/km	144
Acceleration	0-100 km/h	s
Top speed	km/h	280

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The BMW Group

With its four brands BMW, MINI, Rolls-Royce and BMW Motorrad, the BMW Group is the world's leading premium manufacturer of automobiles and motorcycles and also provides premium financial and mobility services. The BMW Group production network comprises over 30 production sites worldwide; the company has a global sales network in more than 140 countries.

In 2021, the BMW Group sold over 2.5 million passenger vehicles and more than 194,000 motorcycles worldwide. The profit before tax in the financial year 2021 was € 16.1 billion on revenues amounting to € 111.2 billion. As of 31 December 2021, the BMW Group had a workforce of 118,909 employees.

The success of the BMW Group has always been based on long-term thinking and responsible action. The company set the course for the future at an early stage and consistently makes sustainability and efficient resource management central to its strategic direction, from the supply chain through production to the end of the use phase of all products.

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