

The new BMW M 1000 XR.

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1. Overall concept. Short version.



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"The M XR is the third M model from BMW Motorrad. Based on the current S 1000 XR and S 1000 RR, the product substance of the M 1000 XR - M XR for short - has been tuned to meet the specific requirements of a long-distance sports bike. The riding dynamics speak for themselves, both on the country roads as well as on the race track and on long-distance journeys".

Dominik Blass, M 1000 XR Product Manager.

The new BMW M 1000 XR: the long-distance sports bike designed to meet the highest demands, from dynamic riding on country roads to long-distance touring and racing.

At the end of 2018, BMW Motorrad already introduced the successful M model range strategy for motorcycles and has been offering M special equipment and M performance parts ever since. The new BMW M 1000 XR is the third M model from BMW Motorrad to celebrate its world premiere, following the M 1000 RR superbike and the dynamic M 1000 R roadster: The long-distance sports bike M 1000 XR.

In the centenary year of BMW Motorrad, the dynamic philosophy of the world's most powerful letter is also applied to the new M XR:

M is synonymous worldwide with racing success and 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 148 kW (201 hp), a DIN empty weight of only 223 kg and suspension technology and aerodynamics designed equally for high-performance country road use, extended long-distance trips and fast laps on the race track, the new M XR, as the lightest representative of this crossover segment, opens up dynamic driving dimensions previously reserved for thoroughbred superbikes.

Powerful M XR 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 XR features a modified water-cooled 4-cylinder in-line engine based on the power unit of the S 1000 RR. Its peak power is 148 kW (201 hp) at 12,750 rpm, 23 kW (31 hp) more than in the new S 1000 XR. The maximum torque of 113 Nm is reached at 11,000 rpm. The maximum engine speed of the M XR is 14,600 rpm. Increased rear wheel pulling power in all gears is also provided by a shorter secondary gear ratio through the use of a sprocket with now 47 teeth (S 1000 XR: 45 teeth). In addition, the gear ratios of the 4th, 5th and 6th gear are now shorter compared to the S 1000 XR, which also benefits traction at the rear wheel, acceleration and pulling power.

M winglets and wind deflectors: Brake later, reduce wheelies and accelerate earlier thanks to aerodynamic downforce.

In addition to drive and suspension technology, aerodynamics was also a key item in the specifications for developing the M XR. The new M XR 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. From a speed of about 100 km/h, they provide an increase in front wheel load thanks to the aerodynamic downforce generated. It increases by approx. 12 kg at 220 km/h.

Chassis trimmed for performance-oriented riding on country roads and race tracks with Dynamic Damping Control (DDC), adjustable spring base, adjustable steering damper, milled-over handlebar clamp and more front-oriented tubular handlebar with laser-etched "BMW M XR" lettering.

The suspension and chassis of the new M XR are based on the S 1000 XR with the aluminium bridge frame as the centrepiece. The M XR features upside-down forks with a 45 mm slide tube diameter at the front. The forks are equipped with so-called closed cartridge inserts, separate hydraulic piston-cylinder systems. Another new feature of the M XR is the additional adjustability of the fork's spring base in conjunction with the standard Dynamic Damping Control (DDC) suspension strut.

In addition, the forks of the M XR feature an upper fork bridge with an elaborately milled-over handlebar clamp as well as a more front-oriented black aluminium tubular handlebar with lasered "BMW M 1000 XR" lettering. The handlebar end mirrors available as an option ex works are also new on the M XR. The fork legs have also been modified and are now designed to accommodate the new M brake callipers. Another new element of the M XR is the adjustable steering damper.

M brakes with radial hand brake pump and lightweight forged aluminium wheels for optimum riding dynamics on the race track and in performance mode. Exclusive M Carbon wheels are available as part of the M Competition package or as an individual option.

After the M 1000 RR and the M 1000 R, the new M XR is the third 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 XR 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 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 unlock code.

The instrument cluster of the new M XR 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 unlock code via the OBD interface of the instrument cluster.

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

Even more than the S 1000 XR, the new M XR with its optimised chassis technology and the most powerful engine to date in a dynamic long-distance sports bike from BMW Motorrad is uncompromisingly designed for sporty riding - whether on country roads, long-distance tours or on the race track. M XR - there is currently no better performing and lighter vehicle in this crossover segment. The proportions of the M XR are ultra-compact and powerful. Three-dimensional surfaces create excitement and a dynamic look. Slim, sleek and extremely aggressive, the M XR's front end is unmistakable with its new M winglets, designed as quadruple wings. The performance-oriented look of the new M XR is also reflected in the colour concept, with the body in Black combined with the M colours Light Blue, Dark Blue and Red.

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

If the new M XR 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, this makes the new M XR another 3 kg lighter. The M Competition Package includes M Carbon wheels, M Carbon parts such as rear wheel cover with integrated chain guard, side panels, front wheel cover, inner cover and ignition/steering lock cover as well as a fully adjustable M rider

footrest system, passenger footrests and the MGPS Laptrigger (unlock code).

The highlights of the new BMW M 1000 XR.

- Shift cam engine of the S RR, output 148 kW (201 hp) at 12,750 rpm, 23 kW (31 hp) more than in the new S 1000 XR. Max. torque of 113 Nm at 11,000 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.

- Steeply angled titanium rear silencer with Carbon end cap.

- 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.

- Four 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.

- 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: Brake later and accelerate earlier, plus more high-speed stability thanks to aerodynamic downforce.

- Upside-down forks with adjustable spring base in conjunction with standard DDC.

- M brakes on a long-distance sports bike from BMW Motorrad for the first time: The M XR offers maximum braking performance for riding on country roads and race tracks.

- Aluminium forged wheels.
- M Carbon wheels with M- tapes and M- lettering on the rim: High-grade, light, high-tech components deliver maximum performance as part of the optional M Competition Package.
- M handbrake and clutch lever.
- Adjustable steering damper.
- Milled-over handlebar clamp.
- Compared to the S 1000 XR with more front-oriented tubular handlebars featuring laser-etched "BMW M XR" lettering.
- Handlebar end mirrors (optional).
- Headlights with iconic light signature and adaptive cornering lights (Headlight Pro).
- 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 unlock 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.
- M Design and dynamic design signal ultimate roadster performance.
- M Competition Package as an optional extra ex works.
- RDC as standard.
- Extensive range of optional accessories and special equipment ex works.

2. Drive.



"The M 1000 XR engine is the best of both worlds. For sporty riding on country roads, it provides a pleasant power delivery with plenty of torque in the low and mid-range, while on the race track or long-distance touring it delivers high peak power and stability. The significantly improved acceleration and pulling power are immediately noticeable to the rider. The significantly improved acceleration and pulling power values are immediately noticeable to the rider."

Anton Decker, M 1000 XR Project Manager.

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

The new M XR uses the water-cooled 4-cylinder in-line engine taken over from the M R. Its peak power is 148 kW (201 hp) at 12,750 rpm, 25 kW (31 hp) more than in the new S 1000 XR (model year 2024). The maximum torque of 113 Nm is reached at 11,000 rpm. Compared to the S 1000 R, the maximum engine speed of the M XR has been increased from 12,000 rpm to now 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 XR. In the range from 10,000 rpm to 12,000 rpm, noticeably more output and torque and thus acceleration power are available.

From a speed of 10,000 rpm, the engine of the new M XR clearly shows its advantages and provides much more peak power and torque until the maximum speed is reached. Increased rear wheel pulling power in all gears is also provided by a shorter secondary gear ratio through the use of a sprocket with now 47 teeth (S 1000 XR: 45 teeth). In addition, the gear ratios of the 4th, 5th and 6th gear are shorter compared to the S 1000 XR, which also benefits pulling power 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 and M R. Compared to the current S 1000 XR, 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 XR 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 M XR engine offers almost the same high torque range in the lower and middle ranges as the previous S 1000 XR 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 XR 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.

The camshafts are driven directly from the crankshaft 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 sump 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 XR as well, the upper half of the housing accommodates the light, compact and precisely shifting 6-speed gearbox, and the Pro Shift Assistant is already fitted as standard for lightning-fast gear changes with virtually no interruption in pulling power.

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

The new M XR 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 XR 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 enhancing 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 more steeply angled titanium rear silencer with Carbon end cap.

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 XR across the entire rev range. In particular, acceleration and pulling power in conjunction with the shorter final gear ratio have been noticeably increased. With an acceleration of 7.4 s to 200 km/h, the M XR is 1,3 seconds faster than the S 1000 XR. The picture is even more drastic with regard to the pull-through values, measured in 6. gear. While the S 1000 XR takes 3.8 s from 60 to 100 km/h, the M XR only needs 3.3 s. The intermediate sprint from 100 to 140 km/h takes 2.7 s (S 1000 XR: 3.8 s) and the interval between 140 and 180 km/h 3.2 s (S 1000 XR 4.6 s).

In this way, the new M XR 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 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 Pro 1-3" as well as the latest generation of Dynamic Traction Control DTC and DTC wheelie function with 6-axis sensor box.

With the new M XR, a distinction is made between two riding mode worlds: For country roads and for the race track. The new M XR 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 achieving maximum acceleration via front wheel lift-off detection.

Four 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 XR 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.

Shift Assistant Pro enables upshifting without clutch actuation and thus offers perfect acceleration almost without interrupting power delivery. 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.

Launch Control for perfect race starts.

The new M XR also offers Launch Control, which actively supports the rider during race starts. It is activated during standstill with the engine idling 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 of the M XR to limit speed for pit lane riding in any riding mode.

Hill Start Control Pro for comfortably starting off on inclines.

The new M XR 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 XR on the road, we had to apply some measures to the suspension and chassis. The quadruple-wing M Winglets and a front-wheel oriented seating position provide maximum stability, control and riding pleasure. The M brake, used for the first time on a long-distance sports bike, keeps the M XR in check."

Edgar Heinrich, Head of BMW Motorrad Design.

The significantly increased potential of the new M XR 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 wind tunnel.

M winglets: Brake later, reduce wheelies and accelerate earlier thanks to aerodynamic downforce.

In addition to drive and suspension technology, aerodynamics was also a key item in the specifications for developing the M XR. The new M XR 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. 11.4 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 and reduces the drive force to stop the wheelie. 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.

However, when developing the winglets for the new M XR, the focus was not only on maximum downforce, but also on the best possible efficiency and thus an optimum downforce-drag ratio in combination with a favourable air flow around the rider.

The following goals were achieved with the winglets designed as slim quadruple wings:

- Optimal positioning.
- Maximum downforce on three functional wing elements.
- Reduction of secondary vortices via endplates.
- Attractive slim look with outer flap.

Chassis trimmed for performance-oriented riding on country roads and race tracks with Dynamic Damping Control (DDC), adjustable spring base, adjustable steering damper, milled-over handlebar clamp and front-oriented tubular handlebar with laser-etched "BMW M 1000 XR" lettering.

The suspension and chassis of the new M XR are based on the S 1000 XR 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 XR, the aim was to realise both the best possible lap times on the race track and an exceptional riding experience on country roads. As a long-distance

sports bike, the M XR also has excellent long-distance riding qualities.

The M XR features upside-down forks with a 45 mm slide tube diameter at the front. It is equipped with so-called closed cartridge inserts, separate hydraulic piston-cylinder systems. In addition, the forks of the M XR features an upper fork bridge with an elaborately milled-over handlebar clamp as well as a more front-oriented black aluminium tubular handlebar with lasered "BMW M XR" lettering.

The fork legs have also been modified and are now designed to accommodate the new M brake callipers. In addition, the M XR has an adjustable steering damper.

The forks feature adjustment options for the spring base as well as ten 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 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 ten steps each. The total spring travel is 138 mm at the front and rear.

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

The new M XR 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 XR is carrying. Accordingly, the rider can set the DDC setting in the configuration menu for riding solo (1 helmet) or with a passenger (2 helmets). A new feature of the M XR's DDC is the additional adjustability of the fork spring base.

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

After the M 1000 RR and the M 1000 R, the new M XR is the third 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 265 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 XR is already equipped with very lightweight forged aluminium wheels as standard. The exclusive and very low weight 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, which are around 1.5 kg lighter, make the M XR 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 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.

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 XR is essentially the same as that of the M RR. Four screens (Pure-Ride with the most important information and three 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 XR 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 XR 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/s^2 .
- Maximum deceleration achieved in m/s^2 .
- 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.
- Break time.
- Riding time.

For riders who take the new M XR 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.
- Lap specific speeds (max, average).
- Active riding mode.
- Maximum lean angles left/right.
- Maximum deceleration.
- Total laps.
- 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 unlock 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 XR are largely based on the proven systems of the S 1000 XR. However, with the highest possible performance in mind, the M XR 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 XR are based on the latest LED technology. These include the iconic main headlamp with illuminated M logo, the position light, the front side indicator lights, the rear light unit and the instrument cluster with its control lights. The LED headlamp with adaptive turning light also gives the M XR only a highly dynamic look, but also illuminates the road perfectly.

In keeping with the "all in one" motto, the number plate holder, which is short and light on the M XR, 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 XR be made "ready for racing" in just a few steps.

5. Design and colour concept.



M Design, dynamic design and narrow rear end of the M XR signal pure dynamic performance and sportiness.

Even more than the S 1000 XR, the new M XR with optimised suspension technology and the most powerful engine to date in a dynamic long-distance sports bike from BMW Motorrad is uncompromisingly designed for sporty riding - whether on country roads, long-distance rides or on the race track. M XR - more performance at low weight is currently not possible at the top of the crossover segment. The proportions of the M XR are compact and powerful and are both exciting and dynamic. The M XR looks aggressive from the front with the new M winglets and the iconic signature LED light, thereby ensuring maximum recognition value. The sporty look is also underlined by the new and narrower rear section with slimmer side panels, motorsport-style air intakes, "X" signature and a narrower passenger grab handle made of high-strength plastic.

Pure long-distance performance in M colours. M seat offered in three different heights with plenty of freedom of movement.

The high-contrast bodywork of the basic version, painted entirely in Lightwhite solid paint, differs from the Competition version not only in the basic colour. The new M 1000 XR with Competition Package features a more tone-on-tone combination of high-gloss Black Storm metallic paintwork and high-gloss carbon fibre side panels and front and rear mudguards, which blend harmoniously into the graphic concept. Overall, the M graphic language of light blue/dark blue/red on both variants reflects the dynamic and performance-oriented appearance of the new M XR.

The new M XR exudes power and dynamism even when stationary. The granite grey engine cover and black fuel filler cap further distinguish the M models. The blue spring on the spring strut adds a sporty touch. The powerful appearance of the M XR is complemented by loving details such as the embroidered M logo in the cover of the seat, which is available in three heights (820 /850 /870 mm) and optimised for plenty of freedom of movement.

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

If the new M XR in standard trim is still not enough for you, the M Competition Package and the basic Blackstorm metallic paintwork in conjunction with the M motorsport colours offer a fascinating mix of refined components for the racing technology gourmet and the aesthetic rider alike. The M Competition Package includes M Carbon wheels, M Carbon parts such as rear wheel cover with integrated chain guard, side panels, front wheel cover, inner cover and ignition/steering lock cover as well as a fully adjustable M rider footrest system, passenger footrests and the MGPS Laptrigger (unlock code).



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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 XR. 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 M Carbon wheels, M Carbon parts such as rear wheel cover with integrated chain guard, side panels, front wheel cover, inner cover and ignition/steering lock cover as well as a fully adjustable M rider footrest system, passenger footrests and the MGPS Laptrigger (unlock code).

Individual options.

- Theft alarm system.
- Windshield, high
- M Sports seat black low. **NEW!**
- M Sports seat black high. **NEW!**
- Handlebar end mirrors.
- Navigation system preparation.
- M Carbon wheel.

Original BMW Motorrad accessories.

M Performance Parts.

- M GPS Datalogger including M GPS Laptrigger.
- M axle protectors.
- M Carbon rear wheel and front wheel.
- M forged wheels.
- M Carbon chain guard and wheel cover.

- M Carbon front wheel cover.
- M Carbon cover ignition steering lock.
- M Carbon side panel part left/right.
- M Carbon inside cockpit trim.
- M Carbon engine protection bar.
- M rider footrests.
- M rider footrest system.
- M passenger footrests left/right.
- DB-Eater.
- M Chain tensioner, with or without assembly stand mount.
- M engine protector.
- M oil filler neck.

Ergonomics and comfort.

- M seat black high. **NEW!**
- M seat black low. **NEW!**
- Windshield high, tinted.

Design.

- Handlebar end mirrors black. **NEW!**

Navigation and communication.

- BMW Motorrad navigation preparation.
- BMW Motorrad Connected Ride Cradle.
- BMW Motorrad Connected Ride Navigator.
- BMW Motorrad Connected Ride Navigator protective glass.

Safety.

- BMW Motorrad theft alarm system.
- Radiator protector (oil and water cooler).

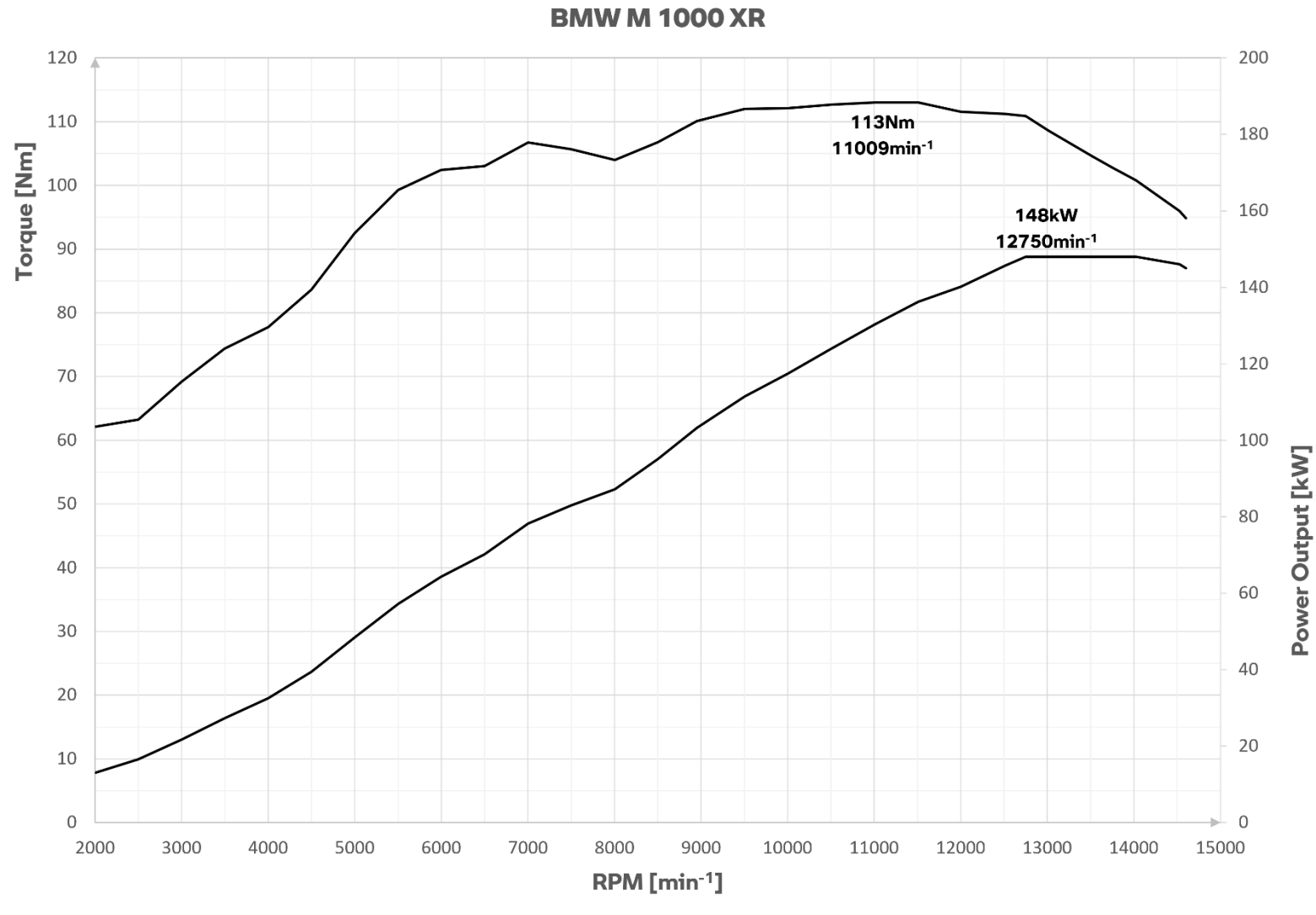
Storage.

- Soft bags black left/right, 8 l each. **NEW!**

Maintenance and technology.

- Motorbike rug.
- M tyre warmers.
- Mounting stand Sport, rear.
- Mounting stand Sport, front.

7. Engine output and torque.



8. Technical specifications.



BMW M 1000 XR		
Engine		
Capacity	cc	999
Bore/stroke	mm	80/49.7
Output	kW/hp	148/201
at engine speed	rpm	12,750
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	450
Battery	V/Ah	Battery 12/5, maintenance-free
Headlight	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	I	2.647
	II	2.091
	III	1.727
	IV	1.500
	V	1.360
	VI	1.261
Rear wheel drive	Chain	
Secondary ratio	2.765	
Chassis		
Frame construction type	Aluminium composite bridge frame, engine self-supporting	
Front wheel suspension	Upside-down telescopic forks, slide tube diameter 45 mm,	
Rear wheel suspension	Aluminium double-sided swinging arm with central sprint strut and Full Floater Pro kinematics	

BMW M 1000 XR		
Spring travel, front/rear	mm	138/138
Wheel castor	mm	117.4
Wheelbase	mm	1,548
Steering head angle	°	64.9
Brakes	Front	M double disc brake, floating, Ø 320 mm, radial four-piston fixed callipers
	Rear	M single-disc brake, Ø 265 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 or individual option
	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	2,170
Total width with mirrors	mm	850
Seat height	mm	850
DIN empty weight	kg	223
Permitted total weight	kg	450
Fuel tank capacity	l	20
Performance figures		
Fuel consumption (WMTC)	l/100 km	6.5
CO2	g/km	152
Acceleration	0-100 km/h s	3.2
Top speed	km/h	>275