The new BMW M5.
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1. Leading power: The new BMW M5.

A change in leadership is nigh in the exclusive segment that brings together ultra-dynamic business sedans with track-oriented drive and chassis technology. The new BMW M5 is poised to build on the tradition of its predecessors and once again redefine the performance experience available in a four-door car. Displaying the conceptual harmony, state-of-the-art technology and astonishingly dynamic handling for which BMW M cars have become renowned, the fifth-generation BMW M5 stirs the passion of keen drivers for top performance and blends it, in inimitable style, with the universal qualities of a top-class premium sedan. The most powerful engine ever fitted in a series-produced model from BMW M GmbH, the innovative Active M Differential – which optimises power transfer to the rear wheels – and model-specific chassis technology developed on the back of extensive racing expertise all secure the BMW M5 a dominant position among high-performance sedans.

Under the bonnet of the new BMW M5 lies a newly developed, high-revving V8 engine with M TwinPower Turbo technology producing maximum output of 412 kW/560 hp at 6,000 – 7,000 rpm and peak torque of 680 Newton metres (502 lb-ft) between 1,500 and 5,750 rpm. The instantaneous power delivery and sustained thrust familiar from M cars are the key to acceleration of 0–100 km/h (62 mph) in 4.4 seconds (0–200 km/h / 124 mph: 13.0 seconds). Average fuel consumption in the EU test cycle stands at 9.9 litres per 100 kilometres / 28.5 mpg imp (CO_2 emissions: 232 g/km).

While output has increased by around 10 per cent and maximum torque is up by more than 30 per cent, the new BMW M5 burns over 30 per cent less fuel than its predecessor. The significantly improved balance between the performance-focused M experience and the car's fuel consumption stems from the exceptionally impressive efficiency of the new V8 engine and from far-reaching Efficient Dynamics technology, including the Auto Start-Stop function in conjunction with the standard seven-speed M Double Clutch Transmission Drivelogic.

In order to channel the engine's imposing power development into inspiring performance characteristics, the new BMW M5 boasts chassis technology – including electronically controlled dampers, M-specific Servotronic steering, a stability control system with M Dynamic Mode and high-performance compound brakes – which was developed on the back of racing expertise and is weight-optimised and tuned to the output profile of the powerplant. This technology combines with model-specific, function-related design features – which make a direct contribution to optimising the supply of cooling air and enhancing aerodynamic characteristics – to create the conceptual harmony typical of BMW M cars. The precise interplay of the drive system, chassis and design has been refined in extensive and detailed testing on the Nordschleife circuit at the Nürburgring to ensure unbeatable longitudinal and lateral acceleration, handling characteristics and braking performance.

The interior design, control concept and innovative equipment features of the new car also play their part in creating the exclusive M experience. Sports seats, an M leather steering wheel, and an M-specific instrument cluster and centre console lend the cockpit a classical sports car feeling. For the first time, two M Drive buttons have been fitted as standard for the driver to call up the ideal car set-up for the situation at hand. High-quality, precisely finished materials, generous levels of space and the extensive range of equipment fitted as standard generate the premium ambience – laced with cutting-edge luxury – of a BMW 5 Series model. Moreover, customers can also give their car the personal touch, since virtually the full range of options for the BMW 5 Series Sedan are also available for the M5, including a host of driver assistance systems and mobility services from BMW ConnectedDrive.

Body design: hallmark M design elements make a genuine contribution to meeting technical requirements.

The design of the body faithfully showcases the standout characteristics of the new BMW M5. The dynamic proportions and stylishly authoritative appearance of the BMW 5 Series Sedan has been further enhanced by the addition of M-specific design features which are geared precisely to meeting the technical demands of the car, making them a central element of the high-performance Sedan's overall concept.

The design of the front apron clearly embodies the supreme power of the new V8 engine. The contour lines of the bonnet converge in a V to the brand's hallmark double-kidney grille. The wide-spread arrangement of the customary M black slats – like the three large air intakes in the lower section of the apron – emphasise the cooling air requirement of the engine behind the grille. At the lower edge of the front end, air-channelling flaps developed on the race track ensure optimised aerodynamics.

The standard-fitted bi-xenon headlights generate daytime running light with visually unique LED light rings. Cutting across the top of the customary twin round headlights are LED accent lights to create the characteristic intent look – both during the day and in night-time driving.

The long wheelbase, set-back passenger compartment and high-gloss black side window borders clearly accentuate the stretched silhouette of the new BMW M5. Prominently flared, muscular wheel arches, wheels sitting flush with the bodywork and lowered suspension enhance the car's sporting presence when viewed from the side. The model-specific 19-inch M light-alloy wheels in double-spoke design also assist in this regard. The side skirts of the new BMW M5 also have a design very much of their own. The aerodynamically honed form of the exterior mirrors is accentuated by a horizontal colour gradation, while the front side panels sport a fresh take on the hallmark M gills.

The bespoke rear apron draws particular attention to the drive forces channelled through the rear wheels. A diffuser integrated into the lower edge of the apron provides efficient airflow through the back end of the underfloor section. A signature M feature of the new BMW M5 is the twin-pipe exhaust system, whose tailpipes are positioned wide to either side of the diffuser. The subtle gurney-style rear spoiler on the boot lid also aids the car's aerodynamics.

The drive system: high-revving V8 engine with M TwinPower Turbo technology sets new standards in output and efficiency.

For the first time, a BMW M5 has a turbocharged engine to thank for its outstanding dynamics. The high-revving V8 unit with M TwinPower Turbo technology mobilises the highest output ever generated by a BMW M car, and at the same time provides the most efficient balance yet between performance and fuel consumption. The 4.4-litre engine develops top output

of 412 kW/560 hp at 6,000 – 7,000 rpm, while its maximum torque of 680 Newton metres (502 lb-ft) is on tap between 1,500 and 5,750 rpm. The rev limiter intervenes at 7,200 rpm. The rev band, which offers extremely dynamic acceleration between the arrival of peak torque and the availability of maximum output, is therefore almost three times as wide as that of the predecessor unit.

The M TwinPower Turbo package of technology developed for the engine powering the new BMW M5 combines design features derived directly from motor racing with innovations spawned by the rigorous implementation of the Efficient Dynamics strategy. It comprises a turbocharging system based on the Twin Scroll Twin Turbo principle, including cross-bank exhaust manifolds, High Precision Direct Petrol Injection and VALVETRONIC variable valve control. Added to which, the engine has an extremely powerful cooling system and wet sump lubrication optimised for high lateral loads. This is a combination without parallel worldwide and produces the suitably exclusive performance characteristics you would expect from a BMW M car. The experience is defined by instantaneous responses and extremely impressive pushing power developed from extremely low revs and maintained into the higher reaches of the engine speed range.

The two turbochargers of the eight-cylinder engine are accommodated, along with the catalytic converters, in the V-shaped space between the cylinder banks. This arrangement allows model-specific positioning of the intake and exhaust ducts with their reduced pipe length and larger cross sections. The cross-bank exhaust manifold ensures additional optimisation of the gas flow. It is made up of four separate exhaust ducts, which are connected with the exhaust ports of two combustion chambers – one on the left-hand cylinder bank and one on the right. Identical pipe lengths and a combustion chamber arrangement mirroring the firing sequence ensure the gas flows through the exhaust ducts at an even rhythm. In each case, two of the four exhaust gas ducts supply one of the two turbos, having been channelled together shortly before they reach the turbine. The result is a consistent level of pressure acting on the turbochargers, without any kind of counter-flow, ensuring that the turbines respond extremely rapidly.

The responsiveness, intensity and smoothness of power delivery results in impressive acceleration. The sprint from rest to the 100 km/h (62 mph) mark

is all over in 4.4 seconds, and from that point progress continues with barely any let-up. Indeed, the M5 needs just 13.0 seconds to race from 0–200 km/h (124 mph). Maximum speed is electronically restricted to 250 km/h (155 mph); if the optional Driver's Package is specified, this limit is raised to 305 km/h (190 mph).

Credit for the advances made on the efficiency front can also be put down to the M TwinPower Turbo technology package. The turbocharging raises the output of the M5 despite its lower displacement, and the dethrottling further enhances the engine's efficiency. The High Precision Injection petrol direct injection system uses injectors positioned centrally between the valves to ensure an extremely precise supply of fuel to the combustion chambers. In addition, VALVETRONIC fully variable valve control and Double-Vanos fully variable camshaft control improve both torque development and fuel efficiency. The volume-controlled oil pump and a range of other Efficient Dynamics measures – including Brake Energy Regeneration and the Auto Start-Stop function – deliver an extra boost to efficiency. As a result, the new BMW M5 records average fuel consumption in the EU test cycle of 9.9 litres per 100 kilometres (28.5 mpg imp) and CO_2 emissions of 232 grams per kilometre.

High performance applies to power transfer as well: the seven-speed M Double Clutch Transmission with Drivelogic.

The new BMW M5 is kitted out with a seven-speed double-clutch transmission to ensure that the transfer of engine output to the rear wheels serves up the time-honoured M experience. The M DCT Drivelogic system developed specially for the M5 delivers exceptionally fast and clean gear changes both in automated mode (D) and manual (S). The model-specific M gear selector allows the driver to choose between D and S mode, and to engage reverse. It also offers a sequential shift pattern for the manual gearshift mode. Alternatively, the driver can also change gears manually using the standard-fitted shift paddles on the steering wheel.

M DCT Drivelogic offers three shift programs in S and D mode. When the stability control system is switched off, the Launch Control function allows the driver to achieve the maximum acceleration force possible from a standstill – as permitted by the condition of the road – by pressing the accelerator down with

maximum force. Meanwhile, in stop-start traffic, comfort is further enhanced by the new Low Speed Assistance function.

Innovation for unbeatable traction in dynamic driving situations: the Active M Differential.

BMW M cars are equipped with a specially developed rear axle differential with a variable locking function to allow the driver to enjoy the benefits of rear-wheel drive to the full – in the form of the sharpest possible driving dynamics. In the new BMW M5, this innovation ensures an even more precise distribution of drive between the right and left rear wheel according to the driving situation. The Active M Differential optimises stability with the help of an electronically controlled multi-plate limited-slip differential.

The rear axle's multi-plate limited-slip differential works with extremely high precision and speed. Its control unit is connected with the DSC (Dynamic Stability Control) system and also takes into account the position of the accelerator pedal, the rotational speed of the wheels and the car's yaw rate. Every driving situation is therefore precisely analysed and an impending loss of traction on one side of the car identified at an early stage. The degree of lock is adjusted as required within a fraction of a second and can range from zero to 100 per cent. Wheel spin is thus also prevented on slippery surfaces, in instances where the right and left rear wheel have widely differing friction coefficients, in tight bends and when changing direction extremely dynamically. Optimising traction in this way also provides unbeatable driving stability in challenging conditions and allows impressively dynamic acceleration out of corners.

M-specific chassis, electronically controlled dampers, M Dynamic Mode.

The new BMW M5 comes with bespoke chassis technology whose construction and set-up are defined by extensive expertise from the race track. Like the integral rear axle, whose subframes are bolted rigidly to the body, the double-wishbone front axle boasts specific kinematics and newly developed components made from forged aluminium. Chassis mountings using large panels at the front and rear axle ensures dynamic forces are passed evenly through to the body.

The new BMW M5 is equipped as standard with electronically controlled dampers. Dynamic Damper Control uses electrohydraulic damping force adjustment to provide a set-up suited to the driving situation or the wishes of the driver. There are three damper settings to choose from.

The hydraulic rack-and-pinion steering with variable ratio is another M-specific feature, combining precise directional stability with a need for less steering effort when manoeuvring. The M Servotronic system has also been specially configured and allows the driver to adapt the characteristics of the speed-sensitive power assistance to individual tastes and requirements via three settings.

In addition to applying brake impulses and reducing engine output to stabilise the car, the DSC system in the new BMW M5 also employs the services of the Anti-lock Braking System (ABS), Cornering Brake Control (CBC) and Dynamic Brake Control (DBC), as well as a Brake Assistant, Brake Drying function and Start-Off Assistant. M Dynamic Mode (MDM) can be activated to override the basic setting by pressing the DSC button on the centre console. This mode generates the familiar M self-steering response by raising the intervention thresholds of DSC. “DSC Off” mode can also be activated at the touch of a button.

High-performance compound brakes, extensive safety equipment, extremely impressive power-to-weight ratio.

The high-performance braking system of the new BMW M5 guarantees outstanding stopping power. The further development of the remarkable compound construction has resulted in further optimised braking performance – resisting fade even under heavy loads – and an enviable degree of feel. The six-piston fixed-calliper brakes are radially bolted to the pivot bearing. The M-specific light-alloy wheels for the new BMW M5 come in 19-inch format as standard and are fitted with 265/40 R19 tyres at the front and 295/35 R19 items at the rear.

Hallmark M handling and occupant protection both benefit from the extraordinary strength of the body structure. An intelligent mix of materials containing a high proportion of high-tensile and ultra-high-tensile steels, as well as aluminium, help to minimise the car’s weight. Like the bonnet and front side sections, the doors are also made from aluminium, as are virtually all the

chassis components. With a power-to-weight ratio of 3.3 kg (approx. 7 lb)/hp, the new BMW M5 represents a substantial step forward from its predecessor in this area as well. The safety equipment fitted as standard includes front and side airbags, side curtain head airbags for both rows of seats, three-point inertia reel seat belts on all seats, front belt force limiters and belt tensioners, and ISOFIX child seat attachments in the rear.

Interior and controls: sports car cockpit with premium ambience.
The interior of the new BMW M5 brings together an inimitable combination of the driver-oriented cockpit design of a sports car, the spaciousness of a prestige sedan and the luxurious feel of a premium model. Bespoke M sports seats, Merino leather upholstery with extended features and exclusive aluminium Trace interior trim strips are all standard equipment, as is the iDrive control system with an up to 10.2-inch Control Display. The instrument cluster with black-panel technology includes classical circular instruments in traditional BMW M car style, with red needles and white illumination, as well as model-specific displays and the M logo in the rev counter.

Two M Drive buttons now included to activate the individually configured set-up options.
Arranged around the gearshift lever on the leather-covered centre console designed specially for the new BMW M5 are the buttons allowing drivers to select their preferred settings for all the adjustable drive system and chassis functions. The DSC mode, performance characteristics of the engine, Dynamic Damper Control mapping, M Servotronic responses and M DCT Drivelogic shift program can all be adjusted independently. This allows drivers to put together a detailed set-up configuration for their car and store it by holding down one of the two M Drive buttons on the multifunction steering wheel.

With two M Drive buttons now available, drivers can use the M1 button, for example, to put a sporty configuration within easy reach and the M2 button to keep a comfort-biased option in the locker for when they'd rather take it easy. This ensures they always have the desired option at their fingertips. Whichever setting they select will remain activated until they cancel it by pressing the button again or change to the other M Drive set-up. Cancelling one of the set-up options restores the car's basic efficiency and comfort-

focused configuration, as is the case when you switch on the engine. The set-up options selected using the M Drive buttons can also be adjusted via the iDrive menu.

Head-Up Display with M-specific information comes as standard.
The M Drive configuration also includes the information shown on the Head-Up Display, which comes as standard on the new BMW M5. In addition to a digital speed readout and tips from the optional Speed Limit Info, the M-specific version of the Head-Up Display also shows the gear currently engaged and a multicolour rev counter symbol, complete with Shift Lights.

The new BMW M5 also comes as standard with four-zone automatic climate control, heated seats and electric seat adjustment (including memory function for the driver and front passenger), xenon headlights, ambient light, an alarm system and the BMW Professional radio. In addition, almost all of the items of optional equipment available for the BMW 5 Series Sedan can be ordered as an option. Among the highlights are the Navigation system Professional with a hard disk, the electrically operated glass roof, M multifunction seats, active seats, active seat ventilation, Comfort Access, an electrically adjustable steering column, the Soft Close Automatic function for the doors and a trailer coupling with electrically pivoting trailer hitch ball.

The range of optional driver assistance systems and mobility services from BMW ConnectedDrive include, among other features, Park Distance Control, a rear view camera, Adaptive Headlights with cornering lights, High-Beam Assistant, Speed Limit Info, the Lane Change Warning System, the Lane Departure Warning System, Surround View and BMW Night Vision with pedestrian detection. Plus, innovative technologies optimise the integration of the Apple iPhone and other smartphones, as well as music players, including the use of internet-based services. The apps option allows iPhone owners to receive Web Radio stations, for example, and display Facebook and Twitter posts on the on-board monitor. The likewise new Real-Time Traffic Information function keeps the driver supplied with impressively accurate traffic bulletins and diversion recommendations.

2. At a glance.

- Fifth generation of the world's most successful high-performance sedan in the premium segment of the executive class; new BMW M5 is an exceptionally dynamic high-performance sports car with four doors and five seats; consistent further development of the vehicle concept initiated in 1984 with the first-generation BMW M5; compelling track potential combines with the comprehensive practicality of a luxurious business sedan; groundbreaking character headlined by significantly improved efficiency, supreme long-distance comfort, and innovative driver assistance systems and infotainment functions.

- World premiere of a newly developed BMW M high-performance engine: high-revving 4.4-litre V8 engine with M TwinPower Turbo package – consisting of Twin Scroll Twin Turbo technology, cross-bank exhaust manifold, High Precision Direct Petrol Injection and VALVETRONIC fully variable valve control; 412 kW/560 hp at 6,000 – 7,000 rpm, maximum torque: 680 Newton metres (502 lb-ft) from 1,500 rpm; maximum speed: 7,200 rpm; wet sump lubrication optimised for high lateral loads, lag-free power delivery, typical M car thrust.

- Significantly improved balance between performance and fuel consumption: acceleration 0–100 km/h (62 mph) in 4.4 seconds, 0–200 km/h (124 mph) in 13.0 seconds, top speed: 250 km/h / 155 mph (305 km/h / 190 mph with M Driver's Package); average fuel consumption in EU test cycle: 9.9 litres/100 km (28.5 mpg imp); engine output 10 per cent up on predecessor model, maximum torque increased by 30 per cent, fuel consumption cut by more than 30 per cent; extensive Efficient Dynamics technology, including Auto Start-Stop function and Brake Energy Regeneration.

- Power transfer to the rear wheels via the seven-speed M Double Clutch Transmission Drivelogic; traction-optimised automatic gear selection; Launch Control; Low Speed Assistance; automatically activated parking mode; M-specific gear selector; M leather steering wheel with shift paddles.

- Hallmark M conceptual harmony produces superior performance characteristics with precise interplay of drive and chassis technology, aerodynamics and weight balance; power-to-weight ratio: 3.3 kg (approx. 7 lb)/hp; M-specific suspension (front and rear axle kinematics), M Servotronic steering, Dynamic Damper Control, DSC stability control system including M Dynamic Mode; bodyshell mounting using special panels; lightweight compound high-performance braking system.

- Outstandingly agile handling thanks to innovative rear axle differential with Active M Differential; electronically controlled multi-plate limited-slip differential enables fully variable distribution of drive between the rear wheels to optimise traction and stability in dynamic lane change manoeuvres and acceleration out of corners; degree of lock can be varied between 0 and 100 per cent according to the situation; fast, precise and pre-emptive responses thanks to constant data cross-checking between the Active M Differential and DSC stability control system, and monitoring of the accelerator pedal position, wheel speed and yaw rate.

- Two individually configured set-ups for the car can be called up using the new M Drive buttons on the steering wheel; range of programmable parameters unique in the segment: engine response, M Servotronic responses, Drivelogic shift program, DSC mode, Dynamic Damper Control and information in the Head-Up Display.

- Characteristic body design with familiar M aesthetics reflecting the car's extremely dynamic yet precisely controllable nature; specific design features contributing to performance characteristics; front apron with extremely large air intakes for the engine and brakes; athletically flared wheel arches to emphasise wide track; hallmark M "gills" with integrated indicator bars; aerodynamically optimised rear apron with diffuser between the right and left-hand pair of twin exhaust tailpipes; gurney-style rear spoiler on the boot lid; 19-inch M light-alloy wheels in exclusive double-spoke design.

- Unique combination of sports car cockpit and luxurious ambience for the interior; M-specific instrument cluster in black-panel technology; newly designed, leather-covered centre console; M sports seats; standard specification also includes: Merino leather upholstery with extended

features, exclusive aluminium Trace interior trim strips, BMW Individual roof liner in anthracite, electrically operated steering column adjustment, four-zone automatic climate control and ambient light.

- Extensive range of driver assistance systems and mobility services from BMW ConnectedDrive unmatched by competitors in this segment and beyond: M-specific Head-Up Display (standard), Adaptive Headlights for standard xenon light, High-Beam Assistant, BMW Night Vision with pedestrian detection, Lane Change Warning System, Lane Departure Warning System, Surround View, Speed Limit Info, internet usage, extended integration of smartphones and music players, real-time traffic information and apps for receiving web radio and using Facebook and Twitter.

- Almost all BMW 5 Series Sedan equipment options available, including Comfort Access, M multifunction seats, active seats, doors with Soft Close Automatic function, hands-free tailgate opening, electric glass roof, trailer coupling.

- Specifications and performance:
  BMW M5: V8 petrol engine, M TwinPower Turbo technology with Twin Scroll Twin Turbo, cross-bank exhaust manifold, High Precision Direct Injection and VALVETRONIC variable valve control.
  Displacement: 4,395 cc, output: 412 kW/560 hp at 6,000 – 7,000 rpm, max. torque: 680 Nm (502 lb-ft) at 1,500 – 5,750 rpm.
  Acceleration 0–100 km/h (62 mph): 4.4 seconds,
  acceleration 0–200 km/h (124 mph): 13.0 seconds,
  top speed: 250 km/h / 155 mph (305 km/h / 190 mph with M Driver's Package).
  Average fuel consumption: 9.9 litres/100 kilometres (28.5 mpg imp),
  CO_2 emissions: 232 g/km, exhaust standard: EU5.

3. Design:
Aesthetic and athletic – a precision blend.

- **Familiar M design language based on the sporty yet elegant proportions of the BMW 5 Series Sedan.**
- **Bespoke details directly influenced by technical requirements.**
- **Impressively resolved overall package represents an expression of outstanding conceptual harmony.**

On the race track the new BMW M5 is every inch the high-performance sports car, but it also impresses on the journey there and back with the steady assurance and comfort of a premium-segment business sedan. The conceptual harmony for which M cars are renowned sees its qualities in these disparate environments brought together into a compelling overall package. The design of the body faithfully showcases the standout characteristics of the new BMW M5. The dynamic proportions and stylishly authoritative appearance of the BMW 5 Series Sedan has been further enhanced by the addition of M-specific design features. The carefully selected modifications are geared precisely to meeting the technical demands of the car, making them a central element of the high-performance Sedan's overall concept. The car's extraordinary potential is highlighted subtly and with impressive authenticity by the distinctive design elements on its front, sides and rear end.

Key elements of the car's typically BMW proportions are its long bonnet, broad wheelbase and set-back passenger compartment. Powerfully taut and precisely contoured surfaces underline its air of stylish assurance when viewed from the side. The roof line flows dynamically towards the rear and into the clearly defined, classical sedan boot. The design elements created specially for the BMW M5 body are influenced directly by technical considerations – such as the extra air required to feed and cool the engine and high-performance brakes, the wide track of the chassis and the specific measures introduced to optimise the car's aerodynamic efficiency.

Front apron: dynamically formed intakes ensure precise airflow and optimum cooling.

The design of the front apron clearly embodies the supreme power of the new V8 engine. The contour lines of the bonnet converge in a V to the brand's hallmark double-kidney grille with customary M black slats, whose wide-spread arrangement emphasises the cooling air requirement of the engine behind the grille, as do the three air intakes in the lower section of the front apron. The size and form of the air intakes are tailored precisely to the specific cooling system of the new BMW M5. They ensure a sufficient supply of air, even in extremely hot conditions, to not only cool the engine, engine oil, transmission oil, turbocharger and charge air, but also to maintain the temperature required by the power steering fluid and engine management unit.

The arrangement of the air intakes over various levels creates an impressive depth which underlines the dynamic, forward-thrusting appearance of the Sedan. The functional significance of the forward-projecting central aperture is emphasised by the width of the car, which spreads out towards the road surface, and the protruding form of the contour lines. The two side air intakes, meanwhile, have a dynamically curving form. Positioned far to the outer edges of the car, they emphasise its wide track and fill the spaces in the front apron the BMW 5 Series Sedan normally reserved for foglamps. At the lower edge of the front end, air-channelling flaps developed on the race track ensure optimised aerodynamics.

The airflow is channelled precisely around the underbody of the car as well. A specially sculpted contour lip helps to guide the inflow of air underneath the car onto the horizontally-mounted engine oil cooler. It then flows along the engine shield until it hits the Venturi front end, which is angled to accelerate the airflow and therefore counteract aerodynamically detrimental turbulence around the underbody.

The standard-fitted bi-xenon headlights of the new BMW M5 generate daytime running light with visually unique LED light rings. The indicator lights positioned on the car's outer edges each consist of 10 LED units. LED accent lights cut across the top of the customary BMW twin round headlights to

perfect the intent look – both during the day and in night-time driving – characteristic of BMW models.

Prominently flared wheel arches, three-dimensional gills, eye-catching side skirts.

The long wheelbase, set-back passenger compartment and high-gloss black side window borders clearly accentuate the stretched silhouette of the new BMW M5. Muscular flared wheel arches spotlight the wide track, which helps give the car its unshakable roadholding and impressive lateral acceleration. Wheels sitting flush with the bodywork and lowered suspension – a gift from the specially tuned chassis – enhance the car's sporting presence when viewed from the side. The model-specific 19-inch M light-alloy wheels in double-spoke design also assist in this regard. The lightweight construction of the optional 20-inch forged rims is highlighted by their five slim double spokes. This design clears a line of sight to the high-performance brakes with six-piston fixed callipers, hinting at the precision with which the driver can adjust the car's handling.

Elsewhere, the front side sections carry a fresh take on the hallmark M gills. The three-dimensional shaping, a wide chrome frame and the free-floating look of the indicator bar, which bears the M logo, give the intakes an extremely deep-set look. This underlines the functional role of the gills, which, on the car's left flank, for example, aid heat dissipation from the coolant circuit's expansion tank. The aerodynamically optimised form of the exterior mirrors is emphasised by a horizontal crease. The mirror casings are painted in body colour, the mirror base and lower edge in high-gloss black. The form of the mirror casings has been optimised in the wind tunnel according to the specific airflow characteristics generated by the BMW M5 body.

The side skirts of the new BMW M5 also have a design very much of their own. A particularly powerful bulge at the back end of the skirts and a crease rising slightly to the tail divert the eye to the rear wheel arches – and therefore to the driven axle of the high-performance model.

Broad, powerful tail generates optimum airflow.

The design of the tail provides an effective expression of the superior sports performance and supreme roadholding of the new BMW M5. As with the BMW 5 Series Sedan, the focus on the car's width through the predominance

of horizontal lines is lent additional emphasis by an athletically formed rear apron. The bespoke rear apron of the M5 provides a fluid transition into the wide wheel arches, drawing even more attention to the drive forces channelled through the rear wheels.

A diffuser integrated into the lower edge of the rear apron provides efficient airflow through the back end of the underfloor section. A signature M feature of the new BMW M5 is the twin-pipe exhaust system, whose tailpipes are positioned wide to either side of the diffuser and have likewise aerodynamically formed surrounds. The subtle gurney-style rear spoiler on the boot lid also aids the car's aerodynamics by providing additional downforce at high speeds, in particular, and therefore contributing to the Sedan's assured handling at all times.

The L-shaped rear lights fit the brand's template, down to the distinctive night-time look. Three LED-powered light strips shape the face of the characteristically homogeneous units, and the direction indicators and braking light are also fed by LED units. The reflectors are arranged immediately below the rear lights. This is higher up within the rear apron than they are situated on the regular BMW 5 Series Sedan and accentuates the car's powerful, muscular form particularly strongly.

Customers can choose from eight exterior paint colours for the new BMW M5. These include the exclusive M variants Monte Carlo Blue metallic, Silverstone metallic and Singapore Grey metallic.

4. Drive system: Superior power, supreme efficiency.

- **High-revving V8 engine with M TwinPower Turbo including cross-bank exhaust manifolds.**
- **Maximum output: 412 kW/560 hp, peak torque: 680 Newton metres (502 lb-ft); most powerful engine in the M line-up, fuel consumption more than 30 per cent lower than its predecessor.**
- **Seven-speed M DCT Drivelogic with three shift programs each for manual and automated modes.**

The new BMW M5 adds a fresh, contemporary and fascinating angle to a variety of distinctive features. This applies to both a vehicle concept now in its fifth generation and the car's engine technology. For the first time, a BMW M5 has a turbocharged engine to thank for its outstanding dynamics. The high-revving V8 unit with M TwinPower Turbo technology lends a whole new intensity to the powerful thrust sustained into the higher rev ranges for which M cars are renowned. The 4.4-litre engine develops top output of 412 kW/560 hp at 6,000 – 7,000 rpm, while its maximum torque of 680 Newton metres (502 lb-ft) is on tap between 1,500 and 5,750 rpm. The rev limiter intervenes at 7,200 rpm. The rev band, which offers extremely dynamic acceleration between the arrival of peak torque and the availability of maximum output, is therefore almost three times as wide as that of the predecessor unit.

The drive unit in the new BMW M5 mobilises the highest output ever generated by a BMW M car, and at the same time provides the most efficient balance yet between performance and fuel consumption. The new engine produces around 10 per cent higher output than its predecessor and torque is up by over 30 per cent. Fuel consumption and CO_2 emissions, meanwhile, have been cut by more than 30 per cent. This progress in terms of both driving dynamics and efficiency marks the new BMW M5 out as an extremely pioneering interpretation of a premium high-performance sedan.

The driver can use a button on the centre console to adjust the engine's performance characteristics to the demands of the situation and to individual preferences. "Efficient", "Sport" and "Sport Plus" modes are available.

Every detail of the engine powering the new BMW M5 has been designed to provide outstanding performance and withstand the pressures generated in the process. For example, a dynamically optimised wet sump oil supply ensures that engine lubrication continues at full effectiveness even under extreme longitudinal and lateral acceleration. The engine also boasts a bespoke cooling system with one high-temperature and one low-temperature circuit.

Racing know-how and unparalleled development expertise: the ideal basis for maximum output and unbeatable efficiency.
The M TwinPower Turbo package of technology developed for the engine powering the new BMW M5 combines design features derived directly from motor racing with innovations spawned by the rigorous implementation of the Efficient Dynamics strategy. It comprises a turbocharging system based on the Twin Scroll Twin Turbo principle, including cross-bank exhaust manifolds, High Precision Petrol Direct Injection and VALVETRONIC variable valve control.

This is a combination without parallel worldwide and produces the suitably exclusive performance characteristics you would expect from a BMW M car. The experience is defined by instantaneous responses and extremely impressive torque developed from extremely low revs and maintained into the higher reaches of the engine speed range.

Concentrated power: turbochargers positioned in the V-shaped space between the cylinders, cross-bank exhaust manifold.
The two turbochargers of the eight-cylinder engine are accommodated, along with the catalytic converters, in the V-shaped space between the cylinder banks, which are positioned at a 90-degree angle to one another. This arrangement produces an extremely compact construction and allows model-specific positioning of the intake and exhaust ducts. Their reduced pipe length and larger cross section minimise the pressure losses on the exhaust side of the engine. There is also a smaller distance between the combustion

chambers and the catalytic converters, which helps the “cats” reach their optimum operating temperature soon after the engine has started.

BMW’s patented and globally unique cross-bank exhaust manifold ensures additional optimisation of the gas flow on the way to the two twin-scroll turbochargers. It is made up of four separate exhaust ducts, which are connected with the exhaust ports of two combustion chambers – one on the left-hand cylinder bank and one on the right. Identical pipe lengths and a combustion chamber arrangement mirroring the firing sequence ensure the gas flows through the exhaust ducts at an even rhythm. In each case, two of the four exhaust gas ducts supply one of the two turbos, having been channelled together shortly before they reach the turbine. The result is a consistent level of pressure acting on the two turbochargers, without any kind of counter-flow. This ensures the turbines respond extremely rapidly and charge pressure remains constant.

Effective dethrottling on both the intake and the exhaust side of the engine allows the instantaneous responses typical of M models.
The turbochargers developed specially for the engine powering the new BMW M5 stand out with their particularly high level of compressor and turbine efficiency, and deliver maximum charge pressure of 1.5 bar. Their innovative construction principle uses the potential of turbocharging to deliver an efficient output boost of unprecedented potency. The arrangement of the turbochargers allows the air supply pipes to be kept extremely short. The result is effective dethrottling on both the intake and exhaust side of the engine, which significantly enhances the engine’s responsiveness and fuel economy. The latest version of M TwinPower Turbo technology provides a level of responsiveness, intensity and smoothness in its power delivery unmatched in the segment. In characteristic M engine style, the driver can call on the full consignment of torque with a minimal nudge of the accelerator and as soon as the engine has edged above idle speed.

The engine’s intoxicating thrust gives the new BMW M5 impressive acceleration. The sprint from rest to the 100 km/h (62 mph) mark is all over in 4.4 seconds, and from that point progress continues with barely any let-up. Indeed, the M5 needs just 13.0 seconds to race from 0–200 km/h (124 mph). Maximum speed is electronically restricted to 250 km/h (155 mph); if the

optional Driver's Package is specified, this limit is raised to 305 km/h (190 mph).

The construction principle of M TwinPower Turbo technology also shapes the development of the V8 engine's soundtrack. The concept of cross-bank exhaust manifolds plays a key role in delivering a multilayered collage of sound. The twin-tailpipe exhaust system of the new BMW M5 runs largely in a straight line and has a large cross section. The two exhaust gas ducts each feed into a single muffler, from which the customary M twin tailpipes jut out through the far left- and right-hand sides of the rear apron.

Direct injection system uses new type of injectors to ensure precise fuel supply.

The engine developed for the new BMW M5 combines its outstanding power development with an unsurpassed level of efficiency in this output class. Credit for the progress made in this area should go to the other components of the M TwinPower Turbo technology package. High Precision Petrol Direct Injection ensures an extremely precise supply of fuel to the combustion chambers. Injectors positioned centrally between the valves within immediate range of the spark plugs spray the mixture into the combustion chambers with a maximum pressure of 200 bar, providing smooth and clean combustion.

Innovative solenoid valve injectors in the new BMW M5 engine use multiple injections to achieve an extremely precise mixture preparation. Plus, the cooling effect of the direct injections enables an extraordinarily high compression ratio for a turbocharged engine, which further increases the efficiency of the V8 engine.

VALVETRONIC gives an additional boost to responsiveness and efficiency.

The M TwinPower technology of the new eight-cylinder engine also includes VALVETRONIC fully variable valve control. This system controls the amount of lift of the intake valves. Throttle losses in the gas cycle are therefore minimised, which has a positive impact on both the efficiency of the powerplant and its torque development. The integration of VALVETRONIC therefore sharpens both the responses and efficiency of the V8 engine in the new BMW M5.

Double-Vanos fully variable camshaft control plays its part both in optimising the engine's efficiency and generating high torque at low engine revs. In addition, the volume-controlled oil pump and a range of other Efficient Dynamics measures deliver an extra boost to efficiency. The new BMW M5 is fitted as standard with Brake Energy Regeneration and an Auto Start-Stop function, which automatically switches off the engine when the car comes to a halt at junctions or in a traffic jam. The extensive use of efficiency-enhancing technology produces fuel consumption and emissions values unmatched in this output class. The new BMW M5 records average fuel consumption in the EU test cycle of 9.9 litres per 100 kilometres (28.5 mpg imp) and CO_2 emissions of 232 grams per kilometre. In conjunction with a fuel tank expanded to 80 litres, this gives the new M5 a 50 per cent increase in range over its predecessor – and even greater long-distance touring capability as a result.

Designed to deliver maximum performance: dynamically-optimised oil supply, exceptionally efficient cooling system.

The engine powering the new BMW M5 boasts a dynamically optimised wet sump oil supply designed to work under top-end longitudinal and lateral acceleration. This ensures optimum engine lubrication is maintained under extremely dynamic acceleration, braking and cornering. The model-specific geometry of the oil sump includes overflow barriers, which reduce the effect of the centrifugal forces on oil distribution, and precisely defined return channels. The specially developed system also has an optimised oil extraction position and an additional return pump. The wet sump lubrication of the new BMW M5 guarantees reliable oil supply in any driving situation and is also much lighter than a dry sump equivalent.

The cooling system for the new BMW M5 is likewise based on a bespoke concept designed to withstand extreme conditions. It comprises one high-temperature and one low-temperature circuit and includes a pair of electric water pumps with a coast-down function to ensure the cooling effect continues after the engine has been switched off. In all, the system uses ten cooling units for the engine, engine oil, transmission oil, turbocharger and charge air, and to maintain the temperature required by the power steering fluid and engine management unit. Among the other features specific to the

M5 is the parallel intercooler supply; indirect charge air cooling using a water circuit further sharpens the responses of the turbochargers.

High performance applies to power transfer as well: the seven-speed M Double Clutch Transmission with Drivelogic.

The new BMW M5 is kitted out with a seven-speed double-clutch transmission to ensure that the transfer of engine output to the rear wheels serves up the time-honoured M experience. The M DCT Drivelogic system developed specially for the M5 has been tuned precisely to the performance characteristics of the V8 engine. Both in automated mode (D) and manual (S) it delivers exceptionally fast and clean gear changes. The system's control concept follows similar lines to the sequential M transmission in the predecessor car. Again, no clutch pedal is required for manual gearshift, and the driver can keep his foot on the accelerator during gear changes. The driver uses the model-specific M gear selector to choose between D and S mode, and to engage reverse. The transmission offers a sequential shift pattern for the manual gearshift mode. Alternatively, the driver can also change gears manually using the standard-fitted shift paddles on the steering wheel – the right-hand paddle for upshifts, the left-hand paddle for downshifts. Comfort is further enhanced by the new Low Speed Assistance function, which keeps the car moving at minimal speed through stop-start traffic with a light nudge of the accelerator pedal.

M DCT Drivelogic offers three shift programs in both automated and manual mode. The driver selects his desired mode using the rocker switch positioned immediately behind the shift lever on the centre console. The D1 program is selected automatically when the engine is started, tailoring gear selection to deliver the most efficient possible driving style. D2 mode supports laid-back cruising with gear changes carried out according to engine revs and load. And, to promote a sporty driving style laced with dynamic acceleration, shift times in D3 mode are set up to delay gear changes until the engine has climbed higher up the rev range.

The driver can also adapt the shift characteristics to his requirements in manual mode. S1 mode generates extremely comfortable and jolt-free gear changes. In S2 the gear changes are completed noticeably faster and accompanied by significant shift jolts at higher revs. And S3 is the one to

choose for maximum dynamics; it enables even sportier gear changes and also brings the Launch Control function into play. When the stability control system is switched off, Launch Control allows the driver to achieve the maximum acceleration force possible from a standstill – as permitted by the condition of the road – by pressing the accelerator down with maximum force. Each gear change takes place automatically and at the optimum engine speed.

5. Body and chassis: Perfect for fast laps – and long hauls.

- **Lightweight chassis tuned on the Nürburgring.**
- **Active M Differential delivers optimised traction; adjustable configuration for Dynamic Damper Control and M Servotronic.**
- **Body with outstanding torsional rigidity and stiff axle mounts using special struts and panels.**

The new BMW M5 is a high-performance sports car whose exceptional dynamic potential is geared squarely to the demands of track use, yet which also sets a new benchmark in everyday driving with its supreme touring comfort. Chassis technology geared to the demands of racing, with stronger yet also more lightweight axle links and wheel carriers, enables precise handling even in extremely dynamic driving situations. The torsionally stiff body – with axle mounts using high-strength panels – and the high-performance braking system with hallmark M compound construction are designed to withstand the extreme loads of committed, sporty driving. The precise interplay of powertrain, chassis and body has been fine-tuned down to the last detail during extensive testing at the Nürburgring's Nordschleife circuit, and ensures peerless longitudinal and lateral acceleration, handling and braking.

Among the chassis systems fitted as standard on the new BMW M5 are Dynamic Damper Control, M-specific Servotronic steering and DSC (Dynamic Stability Control) with M Dynamic Mode. Like the engine responses and the transmission's shift program, the characteristics of these systems can be adjusted according to need. This allows the driver to further sharpen the sporting character of their new BMW M5 or give it a more comfort-oriented set-up – ideal for relaxed long-distance journeys in the spacious and luxurious surroundings of a top-class premium sedan.

Innovation for unbeatable traction in dynamic driving situations: the Active M Differential.

BMW M cars are equipped with a specially developed differential for the rear axle to allow the driver to enjoy the benefits of rear-wheel drive to the full – in

the form of the sharpest possible driving dynamics. A variable locking function splits engine power between the right and left rear wheel to generate maximum traction. Another innovation in this area that is fitted in the new BMW M5 ensures even more precise distribution of drive according to the situation at hand; the Active M Differential optimises stability with the help of an electronically controlled multi-plate limited-slip differential, which intervenes at an early stage to prevent wheel spin.

The rear axle's multi-plate limited-slip differential works with extremely high precision and speed. Its control unit is connected with the DSC (Dynamic Stability Control) system via FlexRay high-speed data transfer technology and constantly cross-checks the data collected by its sensors with the feedback from DSC. It then uses this information to calculate the locking force required to deliver optimum traction and stability. The data recorded by DSC sensors is also passed on if the stability control system is switched off. The locking force within the differential can be set between 0 and 100 per cent. The Anti-lock Braking System retains full functionality in all situations.

In addition to its own data and that provided by DSC, the Active M Differential's control unit also takes into account the position of the accelerator pedal, the rotational speed of the wheels and the car's yaw rate. Every driving situation is therefore precisely analysed and an impending loss of traction on one side of the car identified at an early stage. The degree of lock is adjusted as required within a fraction of a second, enabling wheel spin to be prevented on slippery surfaces, in instances where the right and left rear wheel have widely differing friction coefficients, in tight bends and when changing direction extremely dynamically. Optimising traction in this way also provides unbeatable driving stability in challenging conditions and allows impressively dynamic acceleration out of corners. Plus, the Active M Differential also counteracts – to great effect – a loss of traction during double lane changes at high speed and a tendency to understeer under sudden load alterations during dynamic cornering.

M-specific chassis: lightweight, torsionally stiff and extremely durable.

Like its integral rear axle, whose subframes are bolted rigidly to the body and attached to the longitudinal members by additional braces, the double-

wishbone front axle of the new BMW M5 boasts special kinematics and newly developed components made from forged aluminium. The use of this lightweight metal for the control arms and support elements gives the components a reinforced geometry and reduces weight. Like its track width and wheel camber, the lowered suspension of the new BMW M5 is also geared to its high-performance character.

Using large panels to fix the chassis to the front and rear axles optimises torsional rigidity and ensures that the dynamic forces are channelled evenly through the body. For example, the forces exerted on the anti-roll bars on one side of the car when clipping a kerb on the track are transferred evenly over the entire front section of the car.

Fitted as standard: electronically controlled dampers with three settings.

The new BMW M5 is equipped as standard with electronically controlled dampers. Dynamic Damper Control uses electrohydraulic damping force adjustment to provide a set-up suited to the driving situation or the wishes of the driver. The bespoke dampers feature electronically controlled valves integrated into the pistons that react to the vertical movements of the wheels in fractions of a second. The progressive set-up of the rear suspension ensures flexible responses, while also allowing high loads. Indeed, the type of bumps and ruts encountered every day on the road are smoothed out by small adjustments, while under heavier loads and greater suspension travel the spring rate increases disproportionately.

At the touch of a button, the driver can choose from three settings to determine the vehicle's damping characteristics. In "Comfort" mode the dampers respond adaptively to the condition of the road surface and the driver's style. "Sport" mode activates a noticeably stiffer damper set-up, while "Sport Plus" allows further stiffening of the suspension to achieve maximum longitudinal and lateral acceleration in ultra-dynamic driving situations on level race tracks.

M-specific Servotronic steering, DSC stability control including M Dynamic Mode.

The hydraulic rack-and-pinion steering with variable ratio is another M-specific feature, combining precise directional stability with a need for less steering

effort when manoeuvring. Sharply turned-in wheels prompt a lower steering ratio, reducing the number of steering movements required of the driver.

The speed-sensitive Servotronic power assistance in bespoke M configuration has three settings, which can be selected at the touch of a button. “Comfort” mode reduces the amount of steering effort required when parking and manoeuvring, but ensures hallmark BMW precision when steering at higher speeds. “Sport” mode delivers more direct signals through the steering wheel at all speeds. And “Sport Plus” takes steering feedback to an even higher level and demands greater energy from the driver at the wheel.

In addition to applying brake impulses and reducing engine output to stabilise the car, the DSC system in the new BMW M5 also employs the services of the Anti-lock Braking System (ABS), Cornering Brake Control (CBC) and Dynamic Brake Control (DBC), as well as a Brake Assistant, Brake Drying function and Start-Off Assistant. M Dynamic Mode (MDM) can be activated to override the basic setting by pressing the DSC button on the centre console. This mode generates the familiar M self-steering response by raising the intervention thresholds of DSC. “DSC Off” mode can also be activated at the touch of a button.

Taken to another new level: the compound high-performance braking system.

The high-performance braking system of the new BMW M5 guarantees outstanding stopping power. The further development of the remarkable compound construction has resulted in further optimised braking performance – resisting fade even under heavy loads – and an enviable degree of feel. To this end, the size of the grey-cast iron friction rings has been increased and the weight of the aluminium brake-disc bowls further reduced. The inner-vented and perforated brake discs have a diameter of 400 millimetres at the front and 396 mm at the rear. The six-piston fixed-calliper brakes are radially bolted to the pivot bearing. The single-piston floating-calliper brakes at the rear wheels are also used for the electric parking brake.

The M-specific light-alloy wheels for the new BMW M5 come in 19-inch format as standard and are fitted with 265/40 R19 tyres at the front and 295/35 R19 items at the rear. 20-inch forged M light-alloy wheels with 265/35 R20 and 295/30 R19 tyres at the front and rear respectively can be ordered as

an option. The wheels' low spoke count means that the brake callipers – painted dark blue metallic and complete with the M logo – are clearly visible.

Extensive safety equipment, extremely impressive power-to-weight ratio.

Hallmark M handling and occupant protection both benefit from the extraordinary strength of the BMW M5 body structure. Incredibly durable load-bearing structures and large, precisely defined deformation zones keep the forces released in a collision away from the extremely rigid passenger compartment. The safety equipment fitted as standard in the new BMW M5 includes front and side airbags, side curtain head airbags for both rows of seats, three-point inertia reel seat belts on all seats, front belt force limiters and belt tensioners, and ISOFIX child seat attachments in the rear.

An intelligent mix of materials containing a high proportion of high-tensile and ultra-high-tensile steels, as well as aluminium, help to minimise the car's weight. Like the bonnet and front side sections, the doors of the new BMW M5 are also made from aluminium. With a power-to-weight ratio of 3.3 kg (approx. 7lb)/hp, the high-performance Sedan represents a substantial step forwards from its predecessor in this area as well.

6. Interior and control concept: Unalloyed M feeling in a luxurious ambience.

- **Sports car cockpit with M-specific displays and buttons allowing set-up adjustment according to individual needs.**
- **Steering wheel now has two M Drive buttons.**
- **Spacious, high-quality and exclusive interior with M sports seats and Merino leather upholstery.**

The interior of the new BMW M5 brings together an inimitable combination of the driver-oriented cockpit design of a sports car, the spaciousness of a prestige sedan and the luxurious feel of a premium model. Bespoke M sports seats, fine-grain Merino leather upholstery with extended features, door sills with “M5” lettering, an M driver’s footrest, exclusive aluminium Trace interior trim strips and the BMW Individual roof liner in anthracite are all standard equipment, as is the iDrive control system with an up to 10.2-inch Control Display. This screen is centrally positioned and, like the controls in the central section of the instrument panel, tilted slightly towards the driver.

The instrument cluster with black-panel-technology includes classical circular instruments in traditional BMW M car style, with red needles and white illumination, as well as model-specific displays and the M logo in the rev counter. The shift program currently selected and gear engaged are shown in the centre of the instrument cluster. Feedback from all the drive and chassis settings, selectable at the touch a button, is also displayed in the cockpit.

Distinctive centre console design with buttons allowing various set-up options.
Positioned on the specially designed leather-covered centre console around the gearshift lever for the M Double Clutch Transmission with Drivelogic are the buttons allowing drivers to select their preferred settings for all the adjustable drive system and chassis functions on the BMW M5. The DSC mode, performance characteristics of the engine, Dynamic Damper Control mapping, M Servotronic responses and M DCT Drivelogic shift program can all be adjusted independently. This allows drivers to put together a detailed

set-up configuration for their car and store it by holding down one of the two M Drive buttons on the multifunction steering wheel.

For safety reasons, a set-up which includes switching DSC to “MDM” or “DSC Off” can only be activated after the driver has confirmed the request by pressing the M Drive button a second time. The relevant symbol on the instrument cluster shows which set-up has been selected.

Two M Drive buttons now included to activate the individually configured set-up options.

The multifunction buttons on the M leather steering wheel in the new BMW M5 allow the driver, among other things, to operate the cruise control system and the audio and telephone functions. On the left-hand steering wheel spoke the driver will now find two M Drive buttons, which he can use to call up a pre-configured set-up for the car. For example, the driver can save a sporty configuration using the “M1” button and a comfort-biased set-up via the “M2” button. The set-up selected will remain activated until the driver either cancels it by pressing the button again or switches to another M Drive setting. Once the system has been switched off – as when the engine is started – it reverts to a default configuration focusing on efficiency and ride comfort.

No fewer than six parameters on the new BMW M5 can be adjusted using M Drive. In addition to the engine management, Servotronic characteristics, transmission shift program, DSC mode and Dynamic Damper Control system, adjustments can also be made to the information shown on the standard-fitted Head-Up Display. As well as the conventional features, an M-specific display can also be selected. The settings accessible using the M Drive buttons can also be configured in any combination via the iDrive menu.

Active Sound Design delivers precise feedback.

M5 drivers will be given an even more direct reminder of their car’s performance capability by technology that brings the distinctive sound of the high-performance V8 – in all its glory – into the cabin of the new BMW M5. The Active Sound Design technology specially developed for the new BMW M5 takes its cues from the driving situation at any one time to deliver an accurate reproduction of the engine’s sound through the car’s audio system. The system’s digital signal processing exchanges data directly with the engine

management, allowing it to reflect the engine's revs and torque, and the car's speed over the road. The result over a smoothly driven journey is a discreet soundtrack in keeping with the harmonious and assured characteristics of the V8 powerplant. A stamp on the accelerator, meanwhile, prompts an immediate audible response to match the instantaneous – and typically M – burst of power from beneath the bonnet.

In generating its signals, Active Sound Design takes its cues from the firing sequence of the eight-cylinder engine and the frequency range of the exhaust system. This gives the driver an extremely accurate impression of current engine load and an even more intense sensation of the V8's high-performance characteristics. At the same time the Active Sound Design control unit ensures an even spread of sound across all five seats of the new BMW M5, while observing the legal guidelines governing noise emissions inside and outside the car. The characteristics of the sound produced by the technology also adjust to the engine settings selected by the driver. For example, switching to "Sport" or "Sport+" mode sharpens not only the engine's responsiveness but also the acoustic experience inside the car.

Exclusive touches through high-grade leather upholstery and interior trim strips.

Standard leather upholstery comes in a choice of black, silverstone and sakhir orange, with Merino full-leather upholstery offering the same colour variants. As well as aluminium Trace, interior trim is also available in the fine-wood variants Fineline anthracite and ash grain brown.

7. Equipment and BMW ConnectedDrive: Individuality and intelligent integration at the highest level.

- **High-quality range of standard equipment, including four-zone automatic climate control, electrically adjustable M sports seats and xenon headlights.**
- **Head-Up Display with M-specific displays fitted as standard; BMW Night Vision, Surround View, Lane Change Warning System, Lane Departure Warning System and other driver assistance systems from BMW ConnectedDrive available as options.**
- **Unique: integrated navigation with Real-Time Traffic Information, Facebook and Twitter apps.**

The equipment fitted on board the new BMW M5 is wholly commensurate with the high-tech character, pursuit of top performance and luxurious touring comfort of a premium sedan. Its extensive range of standard equipment creates an ideal, high-class environment in which to experience the renowned M feeling. A lengthy list of options unmatched even by luxury-class cars offers customers the chance to give the driving experience their own individual touch. In addition to options which further increase the Sedan's comfort levels and functionality, the selection also includes a variety of driver assistance systems and mobility services from BMW ConnectedDrive. Through the intelligent link-up of the driver, car and outside world, these systems are highly effective in optimising on-board comfort and safety and in maximising the scope for using infotainment functions.

The new BMW M5 is fitted as standard with four-zone automatic climate control, heated seats and electric seat adjustment with memory function for the driver, xenon headlights, ambient light, an alarm system and the BMW Professional radio with CD player, AUX-IN socket and six speakers. Plus, almost all of the options available for the BMW 5 Series Sedan can also be specified for the new M5. Among the highlights of the options list are the Navigation System Professional with a hard disk for map files and personal music collections, an electrically operated glass roof, Comfort Access, an electrically adjustable steering column, the Soft Close Automatic function for

the doors and a trailer coupling with electrically pivoting trailer hitch ball. In addition to active seats and active seat ventilation, exclusive M multifunction seats can also be specified for the driver and front passenger. These also include features such as electric adjustment for the upper backrest segment, backrest width and thigh support. A newly developed mechanism allowing the thigh support to be extended continuously also ensures it now sits flush with the seat surface in every setting.

Exclusively from BMW ConnectedDrive: M-specific Head-Up Display as standard.

The range of standard equipment in the new BMW M5 also includes a Head-Up Display that projects important information onto the windscreen directly in the driver's field of vision. The full spectrum of colours is used to display graphics and symbols, and this all-colour capability means road sign symbols can be reproduced extremely realistically. In addition to a digital speed readout and tips from the optional Speed Limit Info, the M-specific version of the Head-Up Display also shows the gear currently engaged and a multicolour rev counter symbol, complete with Shift Lights.

As well as the Head-Up Display, numerous other driver assistance systems and mobility services available from BMW ConnectedDrive are also unique in the segment occupied by the new BMW M5. The selection of optionally available systems includes Park Distance Control, a rear view camera, High-Beam Assistant, Speed Limit Info, the Lane Change Warning System, the Lane Departure Warning System, Surround View and BMW Night Vision with pedestrian detection.

Innovative technologies, moreover, optimise the integration of the Apple iPhone and other smartphones, as well as music players, including the use of internet-based services. The apps option allows iPhone owners to receive web radio stations, for example, and display Facebook and Twitter posts on the on-board monitor. Another new function, Real-Time Traffic Information, keeps the driver supplied with precise, up-to-the-minute traffic bulletins and diversion recommendations for motorways, country roads and selected urban routes.

8. Model history:
The first of its kind – and still the number one.

- **1985: the first-generation BMW M5 establishes a new category of car – the high-performance sedan.**
- **A successful concept: motor sport technology for everyday use.**
- **Progress in M mode: engine output almost doubled, weight-to-power ratio consistently reduced.**

Whether it was touring cars, rally cars, Formula 2 racers, a super sports car for the newly founded ProCar race series or the engine that powered the Brabham BMW team to the Formula One world title in 1983 – everything BMW Motorsport GmbH sent out onto the race track in its early years seemed hard-wired for success. The strategy pursued by the overall BMW management following the birth of the subsidiary company in May 1972 had been vindicated quickly and in impressive style. Their idea was to concentrate expertise in the development and production of racing cars within a subsidiary company and to rigorously expand this knowledge base with the aim of adding to the brand's legendary racing exploits during the pre-war era. This success whetted the appetite for more, and not only within the company's corridors of power; it was hardly surprising that motor sport enthusiasts among BMW's clientele repeatedly voiced their desire for more performance on the road as well.

All BMW Motorsport GmbH needed was the green light. The subsidiary had already stepped up the conception, construction and testing of its sports cars through the formation of separate development centres for engines and chassis technology. And its range of products had expanded to include track-oriented accessories and vehicle customisation options. It was time to take the next step, one that led directly to the creation of a series-produced car that would allow customers to experience race track technology on the road. This was the concept underpinning the BMW M5 unveiled to the public for the first time in February 1985 as a "stand-alone new car based on the proven BMW 5 Series".

A sporting engine, a sedan and a totally new vehicle concept.
The engine under the bonnet of the BMW M5 had indeed paraded its exceptional qualities to impressive effect on the race track. In its slightly modified form, the straight-six powerplant from the mid-engined BMW M1 sports car now produced 210 kW/286 hp at 6,500 rpm – almost three times the output offered by the entry-level BMW 5 Series model, the BMW 518i. The 3.5-litre four-valve unit developed maximum torque of 340 Newton metres (251 lb-ft), and the 0–100 km/h (62 mph) sprint was all over 6.5 seconds.

However, the magnetic appeal of the BMW M5 lay not only in its acceleration but also its appearance. Take away the subtle badges on the front and rear of the car and you'd have been hard pushed to tell the M5 apart from a standard BMW 5 Series Sedan. All of which made the performance of the new model – surpassed only by out-and-out sports cars – even more breathtaking. With a top speed of 245 km/h (152 mph) the BMW M5 was the fastest sedan of its day, and it was similarly unrivalled in other respects. A strengthened five-speed gearbox, rear axle differential lock, lowered sports suspension with single-tube gas-filled shock absorbers, high-performance brakes with a retuned anti-lock system, and special tyres whose reinforced sidewalls made them a precursor to today's runflat items, together made up a harmonious, performance-focused overall concept.

BMW Motorsport GmbH had put in place a set of fundamental characteristics still found in all M cars today – and created an all-new segment in the process. The high-performance sedan was born, and 2,200 hand-built BMW M5s were sold within the space of just three years.

The second generation: even more powerful, even more distinctive.
A passing of the baton to the next generation of BMW 5 Series models also heralded a new version of the BMW M5, duly unveiled in 1988. Subtle modifications to the standard body design and bespoke light-alloy wheels gave the second BMW M5 a distinctive but still understated appearance. A hike in displacement, first to 3.6 litres and in 1992 to 3.8 litres, gave the six-cylinder in-line engine a boost in output to 232 kW/315 hp and then 250 kW/340 hp at 6,900 rpm. Peak torque initially stood at 360 Newton metres (266 lb-ft), rising to a heady 400 Newton metres (295 lb-ft), and 0–

100 km/h (62 mph) took 6.3, later 5.9 seconds. Top speed was now an electronically limited 250 km/h (155 mph).

The second BMW M5 also boasted bespoke suspension with self-levelling at the rear axle and a differential lock, and in 1992 it gained adaptive suspension with electronically controlled dampers to go with its more powerful engine. In 1994 the engineers at the recently rechristened BMW M GmbH also handed it a six-speed manual gearbox and a newly developed high-performance braking system. Its construction principle, derived from motor sport and still used in the latest compound braking systems today, features radial bearings for the brake discs' friction rings. These allow the materials to expand freely in the heat generated under heavy loads, without compromising on braking comfort or the life of the discs. By 1995 the second generation of the high-performance sedan, available as an option with an even more tightly honed Nürburgring chassis, had notched up sales of over 11,000 units.

1998: the third BMW M5 – now with an eight-cylinder engine.
The third-generation BMW M5 brought even greater athleticism and individuality to the mix on its arrival in 1998. Powerfully sculpted front and rear aprons, accentuated side skirts, aerodynamically formed M exterior mirrors, 18-inch M light-alloy wheels in double-spoke design and a quartet of exhaust tailpipes were among its identifying features. The two pairs of tailpipes and large air intakes indicated that major changes had been made under the bonnet as well. The new model marked the debut of a V8 engine in a BMW M5, delivering the output and punch it needed to maintain its leading position in a segment since discovered by rival manufacturers.

When it came to output and torque, the 5.0-litre eight-cylinder powerplant appeared to be drinking from a bottomless well. At 6,600 rpm it sent 294 kW/400 horsepower charging through its six-speed-manual gearbox to the rear wheels, while torque hit an imposing 500 Newton metres (369 lb-ft). The third-generation BMW M5 raced from 0–100 km/h (62 mph) in just 5.3 seconds. Even its success in the marketplace hit new heights, with over 20,000 units sold worldwide up to 2003.

10-cylinder engine, sequential M Drivelogic gearbox: the fourth-generation BMW M5 delivers cutting-edge racing technology.

The principle of using race track technology to generate thrilling driving pleasure on the road was applied with even sharper focus in the fourth-generation BMW M5 presented in 2004. A high-revving V10 engine derived directly from Formula One and developing 373 kW/507 hp, a seven-speed sequential M Drivelogic gearbox with Launch Control delivering maximum off-the-line acceleration, a variable, engine-speed-sensitive differential lock, and bespoke chassis technology including Electronic Damper Control (EDC) and a compound braking system gave the M5 outstanding performance capability. The premium characteristics of a luxury sedan, meanwhile, were added by features including advanced driver assistance systems such as Adaptive Headlights and the Head-Up Display.

Complete with individual throttle butterflies and Double-Vanos, the 10-cylinder engine powering the fourth-generation BMW M5 developed maximum output at 7,750 rpm and peak torque of 520 Newton metres (384 lb-ft). This unrivalled pulling power opened the door to acceleration of 0–100 km/h (62 mph) in 4.7 seconds and put smiles on the faces of motor racing fans and professional road testers alike. The V10 finished top of the overall rankings in the 2005 and 2006 Engine of the Year Award. And in the two years that followed, it headed the category for engines with displacement of more than 4.0 litres in this prestigious competition. By the time production of the fourth-generation BMW M5 came to an end in summer 2010, more than 20,500 of its kind had left the factory.

Almost 27 years after the launch of the first BMW M5, the fifth generation of the model is poised to take over at the pinnacle of the high-performance sedan segment established by the pioneering original. The latest model's devotion to constant innovation and its rigorous adherence to the harmonious overall concept of engine, chassis and body traditionally espoused by M models take the infectious allure of this breed of car into a new dimension and ensure that it outstrips even the outstanding attributes of its predecessor.

Each of the four previous editions of the M5 has encapsulated the inimitable M feeling with its own individual flair. More objectively, comparing the models on paper reveals the constant technological progress that has been achieved

through the five generations. The maximum engine output of the BMW M5 has virtually doubled over the years, from 210 kW/286 hp to 412 kW/560 hp, and peak torque has risen by exactly 100 per cent – from 340 Newton metres (251 lb-ft) to 680 Nm (502 lb-ft) today. And yet, over that time average fuel consumption of the M5 has improved from 11.3 litres per 100 kilometres (25 mpg) in the first-generation model to 9.9 l/100 km (28.5 mpg) for the new BMW M5. And impressive progress has also been made on an even more telling figure when it comes to the driving experience: the weight-to-power ratio of the first BMW M5 was 5.0 kilograms (approx. 11 lb) per hp, but that figure has now fallen to 3.3 kg (just over 7 lb) per hp.

9. Production:
Applying traditional know-how and innovative processes.

- **Production at BMW Plant Dingolfing alongside the other BMW 5 Series models, as well as the BMW 6 Series and BMW 7 Series.**
- **Production of the high-performance V8 engine in the V engine production halls at BMW Plant Munich.**
- **BMW M5 built at the world's largest BMW plant since 1998, innovative product and process modules raise quality and efficiency to another new level.**

The new BMW M5 is an extraordinarily individual car, whose production sees traditional handcraftsmanship and cutting-edge manufacturing processes blended precisely to deliver not only unbeatable quality but also manufacturing efficiency. The new high-performance sedan will be built at BMW Plant Dingolfing. The BMW Group's largest production facility worldwide also produces the BMW 7 Series luxury Sedan, the BMW 6 Series Coupé and Convertible, and all the models in the BMW 5 Series range. Thanks to this manufacturing concept, the new BMW M5 also benefits from the use of shared product and process modules across the three model series which allow the production processes to run even more efficiently and standards of build quality to be further optimised.

The integrated manufacture of the new BMW M5 also includes the production and assembly of the model's bespoke chassis, body and interior components. The high-performance engine of the new M5 is built in a traditional process at BMW Plant Munich. On the special engine production line at Munich, highly qualified specialists and special manufacturing processes ensure the extremely precise manufacture of the most technically sophisticated engines in the BMW Group portfolio.

V engine production: cutting-edge technology meets precision craftsmanship.

The special engine production line at the BMW Group's home plant has served as the birthplace of many BMW M car engines down the years. The current M3 engine and the new M5 powerplant are built on the new V (flex)

production line alongside the 12-cylinder units for the BMW 760i and the latest Rolls-Royce models. High-tech processes and the precision craftsmanship of experienced experts guarantee an outstanding level of quality. For example, particularly high standards of surface quality and extremely tight production tolerances are enforced for the high-revving M car engines.

The engine block and crankcase of the V8 engine for the new BMW M5 are produced in the light-alloy foundry at BMW Plant Landshut. The initial stage of assembly at Plant Munich sees the basic engines attached to system carriers, each with their own integrated data storage device. This allows quality-related data to be called up during the assembly process. Taking the tightening torque of bolts as an example, once this data has been retrieved the relevant assembly program is then activated on the automated screwing machine. At all subsequent assembly stations the data for each particular engine help ensure that employees use the right tools and apply the correct tightening torque. In addition, core components such as cylinder heads and connecting rods are coded. This allows their progression from arrival at the factory through to final assembly to be followed precisely. The manufacturing process is rounded off by a function test on the test bench which each and every engine has to pass before it can make it through the gates of BMW Plant Dingolfing.

Integrated production optimises quality and efficiency.
The shared vehicle architecture for the BMW 5 Series, 6 Series and 7 Series models forms the basis for integrated production at BMW Plant Dingolfing. Manufacturing quality and efficiency are optimised through the use of shared product and process modules. The flexible set-up of the production machinery also allows the number of individual parts in overall production to be continuously varied according to demand. This ensures both even capacity utilisation across the plant and rapid delivery as part of the Customer-Oriented Sales and Production Process.

Synergies are generated by the use of modular vehicle components, or product modules. The benchmark for the functionality and quality of these components is provided by the extremely high standards that apply for the BMW 7 Series luxury Sedan.

Ongoing improvement of the production process.

BMW Plant Dingolfing operates according to the very latest principles of modern production process design and in line with the BMW Value-Added Production System (VPS). Process-sharing is a typical example of this approach. Shared vehicle components for the BMW 7 Series, BMW 5 Series and the new BMW 6 Series provide the basis for using integrated production processes, in which top-quality multi-model production on a single assembly line is combined with integrated production planning. Further advances are achieved through developments in the area of Value-Added Technology Processes (VTP) and logistics. The end goal is to achieve one-piece flow of parts and materials from the supplier through to the completion of the vehicle.

In technological terms as well, the accent is on developing innovative production techniques which can be applied across several different model series and thus across higher production volumes. For example, the door production process is based on the results of research work carried out at the Dingolfing-based BMW Group Aluminium Competence Centre. Newly developed aluminium processing technology also helps ensure good surface formability of sophisticated design features such as the character line in the doors.

Innovative processes have been introduced in sheet steel processing too. 50 million euros has been invested here on two new sheet steel presses which are now turning out exceptionally high-quality body parts for models, including the new BMW M5. With the first of the two new presses installed at the Dingolfing plant, BMW became the world's first carmaker to use an innovative hot-stamping technique whereby galvanised sheet steel is cold-formed, heated to a temperature of over 900 degrees Celsius, then immediately cooled to a temperature of around 70 degrees and hardened. The cooling is performed in a press with integrated water cooling and takes just a few seconds. This technique gives the components between three and four times the strength of conventional sheet steel.

The BMW plant in Dingolfing, Lower Bavaria, has been part of the company's global production network since 1967. Today this network comprises 25 plants in 14 countries across five continents. 1973 saw the start of BMW vehicle production at the newly constructed Plant 2.4 in Dingolfing.

Numerous awards are proof that the world's largest BMW production plant sets very high standards. More than 8 million BMW cars have been built in Dingolfing to date. Approximately 18,600 people currently work at the site, more than 12,000 of them in car production at Plant 2.4. The BMW M5 has been produced in Dingolfing since 1998.

10. Specifications.

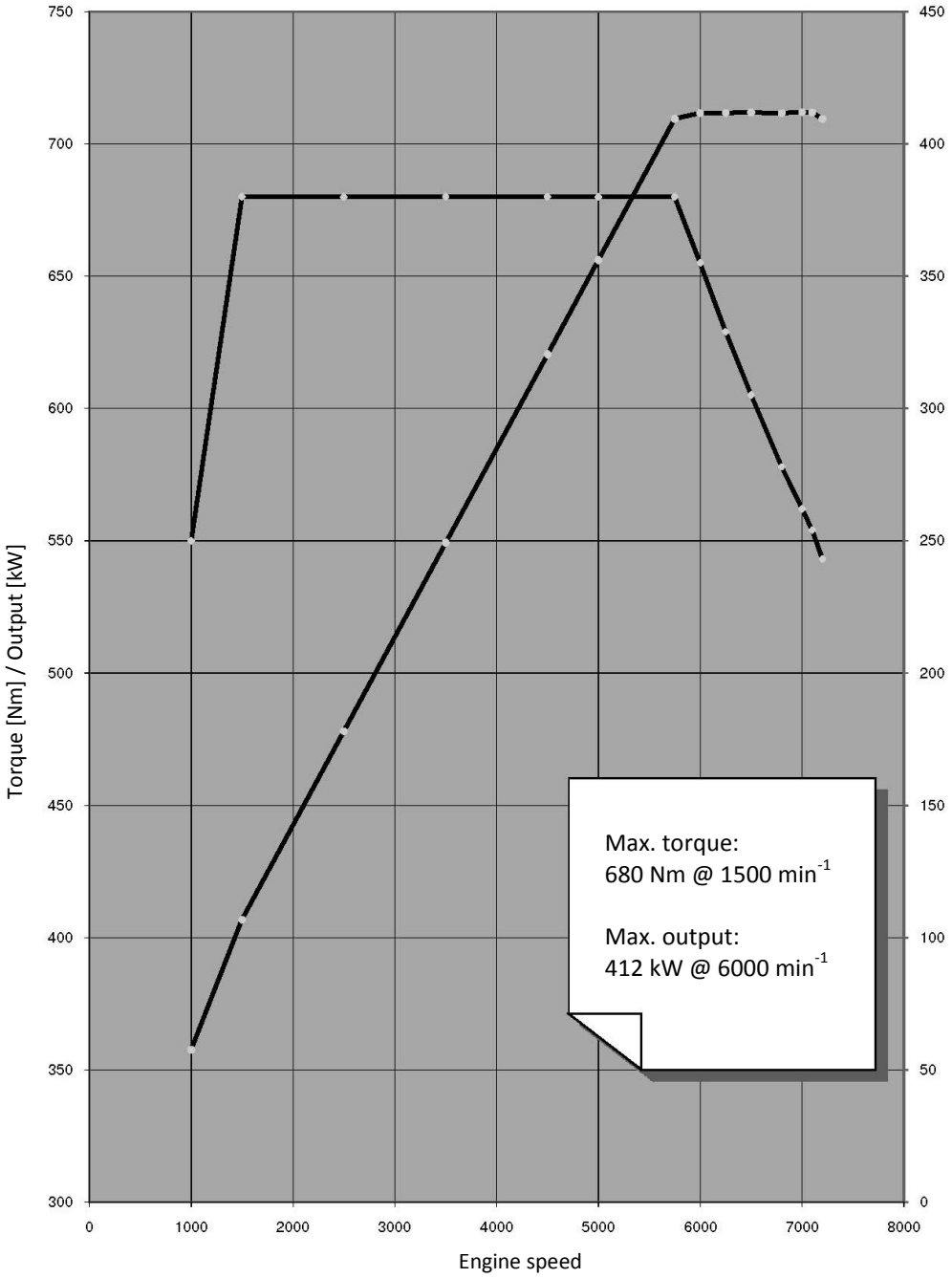
		BMW M5
Body		
No. of doors/seats		4 / 5
Length/width/height (unladen)	mm	4910 / 1891 / 1456
Wheelbase	mm	2964
Track, front/rear	mm	1627 / 1582
Ground clearance	mm	117
Turning circle	m	12.6
Tank capacity	approx. l	80
Cooling system incl. heating	l	18.5
Engine oil[1)]	l	8.4
Weight, unladen, to DIN/EU	kg	1870 / 1945
Max load to DIN	kg	540
Max permissible weight	kg	2410
Max axle load, front/rear	kg	1180 / 1260
Max trailer load, braked (12%)/unbraked	kg	2000 / 750
Max roof load/towbar download	kg	100 / 90
Luggage comp capacity	l	520
Air drag	c_x x A	0.33 x 2.40
Engine		
Configuration/No. of cyls./valves		V90 / 8 / 4
Engine technology		M TwinPower Turbo technology with cross-bank exhaust manifold, twin-scroll turbocharging, direct petrol injection (High Precision Injection), VALVETRONIC and Double-Vanos
Effective capacity	cm^3	4395
Bore/stroke	mm	88.3 / 89.0
Compression ratio	:1	10.0
Fuel grade		RON 98 (min. 95)
Output	kW/hp	412 / 560
at	min^{-1}	6000 – 7000
Torque	Nm	680
at	min^{-1}	1500 – 5750
Electrical system		
Battery/Installation	Ah/–	105 / luggage comp
Alternator	A/W	210 / 2926
Driving dynamics and safety		
Suspension, front		Double track control arm with M-specific elastokinematics, small, negative steering roll radius, anti-dive
Suspension, rear		Integral-V multi-arm axle with M-specific elastokinematics, spatial suspension with anti-squat and anti-dive
Brakes, front		Six-piston fixed-calliper compound disc brakes
Diameter	mm	400 x 36 / vented
Brakes, rear		Single-piston fixed-calliper compound disc brakes
Diameter	mm	396 x 24 / vented
Driving stability systems		Standard: DSC incl. ABS, ASC and MDM (M Dynamic Mode), CBC (Cornering Brake Control), DBC (Dynamic Brake Control), Dry Braking function, Fading Compensation, Start-Off Assistant, Dynamic Damper Control, Active M Differential, linked to Integrated Chassis Management (ICM)
Safety equipment		Standard: airbags for driver and front passenger, side airbags for driver and front passenger, head airbags for front and rear seats, three-point inertia-reel seatbelts on all seats with belt latch tensioner and belt force limiter at the front, crash-activated head restraints at the front, crash sensors, Tyre Defect Indicator
Steering		Hydraulic rack-and-pinion steering with M-specific Servotronic function
Steering ratio, overall	:1	18.0
Tyres, front/rear		265/40 R19 102Y 295/35 R19 104Y
Rims, front/rear		9J x 19 LM 10J x 19 LM

			BMW M5
BMW ConnectedDrive			
Comfort			Optional: BMW Assist incl. Enquiry Service, remote-control functions and V-Info+ (Traffic Info plus), Real-Time Traffic Information, BMW TeleServices, integration of mobile devices
Infotainment			Optional: internet access, BMW Online incl. Park Info, National Info, Google Local Search, News, Realtime Weather, BMW Routes, Office functions, Bluetooth Audio Streaming, Online Update Music Tracks, Apps
Safety			Optional: variable light distribution and adaptive headlight range control (standard), High Beam Assistant, Park Distance Control, rear-view camera, Surround View incl. Top View and Side View, BMW Night Vision with pedestrian detection, Head-Up Display (standard), Lane Change Warning, Lane Departure Warning, Speed Limit Info, Advanced eCall
Transmission			
Type of gearbox			Seven-speed M double-clutch transmission with Drivelogic
Gear ratios	I	:1	4.806
	II	:1	2.593
	III	:1	1.701
	IV	:1	1.277
	V	:1	1.000
	VI	:1	0.844
	VII	:1	0.671
	R	:1	4.172
Final drive		:1	3.150
Performance			
Power-to-weight ratio		kg/kW	4.5
Output per litre		kW/l	93.7
Acceleration	0–100 km/h	s	4.4
	0–1000 m	s	21.9
in 4th/5th gear	80–120km/h	s	3.7 / 4.6
Top speed		km/h	250 / 305[2]
BMW EfficientDynamics			
BMW EfficientDynamics standard features			Brake Energy Regeneration with recuperation display, Auto Start-Stop function, intelligent lightweight construction, on-demand operation of ancillary units, flow rate-controlled power steering pump, tyres with reduced rolling resistance
Fuel consumption EU			
with standard tyres			
Urban		l/100km	14.0
Extra-urban		l/100km	7.6
Combined		l/100km	9.9
CO_2		g/km	232
Emission rating			EU5

Specifications apply to ACEA markets; data relevant to homologation applicable in part only to Germany (weight)

[1] Oil change
[2] In conjunction with optional M Driver's Package

11. Output and torque diagram.



12. Exterior and interior Dimensions.