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## **THE NEXT CHAPTER IN THE STORIED HISTORY OF BMW M**

### **All-New BMW X6 M and BMW X5 M Make World Debuts in 2009**

**Woodcliff Lake, NJ – April 5, 2009...** The modern, sustainable legacy of BMW M GmbH began in 1985 when engineers placed the snarling, race-bred inline-6 engine from the M1 supercar into the production BMW 5 Series sedan, reworked the suspension and brakes, and created the first M5. Through this industry-first combination of attributes, the M5 redefined the capabilities of a sedan with levels of power, precision, balance, and linear control never before imaginable. Since then, finding new ways to expand the boundaries of what is possible with existing BMW models has been the singular purpose of the craftsmen at BMW M. Now the BMW X5 M and the BMW X6 M are the first all-wheel-drive models to offer the remarkable performance, dynamic driving experience, athletic design, and premium quality of a BMW M product.

Both models are powered by a newly-developed 4.4-liter V8 M engine delivering 555 hp at 6,000 rpm and 500 lb-ft of torque from 1,500 to 5,650 rpm. This new M engine is the world's first with a pulse-tuned exhaust manifold encompassing both rows of cylinders combined with high-performance twin-scroll twin turbo technology.

For the X5 M and X6 M, engineers at BMW M pushed the capabilities of BMW's intelligent xDrive all-wheel-drive system and the Dynamic Performance Control system to manage the power and performance potential of these two new vehicles. The special M suspension includes Adaptive Drive and newly-developed Servotronic power steering. These features combine to push the limits of what was previously possible with a sports-oriented vehicle, and guarantee driving behavior characteristic of a BMW M product: incredible stability and precisely

controlled steering qualities abound throughout the performance envelope.

The BMW X5 M and BMW X6 M set new standards of acceleration, lateral grip, steering response, balance, and stopping power among high-performance activity vehicles. Both models accelerate to 60 mph from a standstill in 4.5 seconds and feature impressive delivery of power from the V8 twin-turbo engine which provides maximum torque of 500 lb-ft from 1,500 and 5,650 rpm. From a handling standpoint, both vehicles are notable for superb balance through careful tuning of xDrive, Dynamic Performance Control, and Dynamic Stability Control with M Dynamic Mode for linear buildup of cornering forces. These capabilities place the performance of the X5 M and X6 M on par with the performance of other recent BMW M vehicles.

The athletic character and amazing performance abilities of the BMW X5 M and X6 M result from levels of development never before applied to this type of vehicle. As it did when creating the original M5, BMW M has once again shown that applying new technologies and innovations to a solid BMW production vehicle type will produce startling performance and an exhilarating drive. Both of these new models offer capabilities and dynamic driving experiences which are quite unique, and promise to provide thrills from everyday traffic to the race track.

**Exterior Design: BMW M heritage reflecting function, purpose, and style.**

The outstanding potential of both models is communicated clearly in their looks and design, their performance-bred heritage presented convincingly by the common design of the front end with its large air intakes.

The hood, front air dam, and headlights are virtually identical on the BMW X5 M and X6 M. Both models feature special gills in the front fenders, as well as model-specific 20-inch light-alloy wheels. The signs of distinction of BMW M are

presented in individual style at the rear, confirming the athletic character of each model. The rear diffuser on each model communicates a particularly powerful presence, and the quad tailpipes of the exhaust system are again a signature of BMW M's masterful work.

Compared with the standard BMW X5 and BMW X6, the body-color surface area on the side skirts are designed to place greater emphasis on their road-going orientations. On both models the body designs fulfill major functions in terms of aerodynamics and the carefully controlled flow of cooling air.

**The first modern turbocharged M engine: twin scroll twin turbo technology with a patented exhaust manifold.**

Using BMW's innovative, 4.4L reverse-flow V8 engine with High Precision Direct Injection and twin turbochargers as a basis, the new M engine introduces twin-scroll twin turbochargers and patented exhaust manifold technologies to achieve outstanding thrust and pulling force, while preserving the most compact dimensions possible. Two low-mass twin-scroll turbochargers are positioned together with the catalytic converters in the "V" section between the two banks of cylinders. By reversing the flow of gases through the engine from traditional arrangements, the intake and exhaust ducts are shortened and widened. The result is that pressure losses on the exhaust side are minimized.

The goals: virtually eliminate turbocharger lag while maximizing combustion efficiency and power output. Tremendous power and performance are delivered by the engine in the BMW X5 M and BMW X6 M through a new design and construction principle. The new M V8 engine with twin-scroll twin turbo technology uses a single exhaust manifold with tuned-length runners, incorporating both cylinder banks and connecting cylinders in carefully-selected pairs. This configuration, patented by BMW M and known as Cylinder-bank

Comprehensive Manifold (CCM), offers lightning-quick response, a linear build-up of engine power, and a broad, consistent torque curve by feeding each of the twin turbochargers with a “charge pulse” at approximately every 90 degrees of crankshaft rotation, rather than the more traditional “irregular schedule” of charging.

The managed flow of exhaust gas provided by the CCM ensures high-velocity flow of combustion gases. The appropriate separation of exhaust gas flow from different cylinders is maintained until the gas reaches the turbine wheel, spooling the two twin-scroll turbochargers without back-pressure. With maximum boost pressure of 1.5 bar (21 psi), the use of twin-scroll twin turbo technology and the CCM exhaust manifold allows complete exploitation of the benefits of turbocharging.

Immediate response and remarkable thrust characterize the new V8 twin-turbocharged engine from BMW M GmbH. The impressive onset of power is accompanied by unique, engaging engine sounds that accentuate the quick-revving characteristics with the dynamic acoustic effect typical of a BMW M product. The sounds are always civilized, but transform from relatively calm to extraordinarily intense as the boost and revs build from idle. Reflecting the tremendous power of the engine, the turbocharged M V8 is equipped with an advanced cooling system developed specifically for the two new models. One notable feature in this context is the presence of two high-capacity water-to-air intercoolers which consistently optimize performance under the most demanding driving conditions. An aluminum oil sump exclusive to BMW M with a special finned surface guarantees optimum cooling at all times even under an extremely demanding style of driving.

The turbocharged M V8 engine develops its outstanding power with remarkable

efficiency. In addition to BMW's High Precision Direct Injection, both the BMW X5 M and the BMW X6 M are equipped with a range of technologies from BMW's EfficientDynamics engineering strategy. These include on-demand control of the electric fuel pump, an on-demand compressor for the air conditioner, and a flow-controlled supply of hydraulic fluid to the Active Roll Stabilization system. By operating these features specifically on demand, energy waste is minimized. The engine fulfills the requirements of the US LEV II standard as well as the EU5 requirements in Europe.

### **M Sports Automatic and M shift paddles on the steering wheel.**

Featured for the first time on a BMW M model, the 6-speed M Sports Automatic transmission enhances the high-performance character of the BMW X5 M and the BMW X6 M through its instantaneous response, direct connection to the engine, and a high degree of shifting comfort. The new M Sports Automatic is commanded by an electronic selector on the center console and offers the driver not only the Drive mode, but also Sport and M Manual modes for absolute control of gear selection.

Aluminum pull-style paddles on the steering wheel exclusive to BMW M allow manual shifting (Right for upshifts, Left for downshifts). Upshifts occur significantly quicker than in the past thanks to new technology that reduces torque in the transmission through momentary deactivation of individual cylinders. This significantly enhances the athletic character of the vehicle. In the M Manual mode, each chosen gear is held up to redline in order to give the driver perfect throttle-steering control of the vehicle under the most demanding driving conditions. The transmission does not upshift or downshift automatically in this mode. A further option in the M Manual mode is to activate the Launch Control feature, which enables the driver to accelerate from a standstill with maximum performance. To activate Launch Control, the driver stops the vehicle, moves the

gear selector into the M/S position and activates the Sports Power mode, as well as the M Dynamic mode, or respectively, the DSC-Off mode. Then, with the transmission in stage M1, the driver presses down the brake pedal and moves the accelerator to at least 60% throttle, setting Launch Control to standby. Standby status is confirmed by “starter’s flag” symbol in the instrument cluster. As soon as the driver releases the brake pedal, the vehicle will accelerate with full power in “genuine racing style.” In the process, the M Sports Automatic transmission automatically upshifts at the ideal points, with the fastest possible shifts and optimum wheelspin control. The driver may terminate the Launch Control process at any time by reducing the throttle position.

**BMW xDrive and Dynamic Performance Control with a special M setup for optimum dynamics.**

The outstanding success of BMW’s intelligent xDrive all-wheel-drive technology is based on quick, electronically-controlled power distribution to the front and rear axles. When combined with the superb, near 50-50 static weight distribution of any BMW, xDrive can prevent the tendency for the vehicle to oversteer and understeer as long as possible, reducing the need for Dynamic Stability Control (DSC) to provide electronic assistance.

BMW’s Dynamic Performance Control was presented for the first time in the BMW X6 and is now featured in the BMW X5 M and the BMW X6 M. Put succinctly, Dynamic Performance Control enhances driving stability in demanding situations and is thus perfectly suited to a powerful M vehicle. Vectoring of torque between the right and left rear wheels (both on throttle and off) significantly improves steering precision and tracking stability at all speeds, with DSC being required to stabilize the vehicle only under extreme lateral acceleration. Ultimately this offers the driver an unparalleled standard of performance, agility, balance, and traction, and re-establishes the benchmarks in drivetrain and suspension technology for all

types of performance-oriented vehicles.

In the BMW X5 M and BMW X6 M the potentials of both xDrive and Dynamic Performance Control are maximized by BMW M, with the driver able to activate the M Dynamic Mode (MDM) with the DSC button on the center console or the steering wheel-mounted M Button. This mode raises DSC thresholds of intervention and ensures throttle-steering behavior typical of BMW M by shifting the xDrive bias more to the rear and involving the Dynamic Performance Control in the process. A pictogram in the Control Display in the instrument cluster allows the driver to monitor the activity of Dynamic Performance Control and xDrive through a clear visual depiction, which shows the driver how much power is being distributed to each wheel.

As a result, M Dynamic Mode allows maximum speeds in bends and on winding roads with the DSC system intervening only when the vehicle reaches the absolute physical limits of grip. Even under maximum load in the apex of a bend, the vehicle follows steering inputs with tremendous precision, giving the driver very high speeds when exiting a turn in the interest of optimum performance. Last but not least, DSC may be completely deactivated by experienced drivers at the touch of a button.

Beyond the stabilizing effects of Dynamic Stability Control provided by individual brake activation and engine power reduction under extreme conditions, DSC in the BMW X5 M and BMW X6 M includes a wide range of additional features tuned to BMW M standards to promote safe and exciting driving. These include ABS anti-lock brakes, Trailer Stability Control, Hill Descent Control, Dynamic Brake Control which maximizes brake force when required, Cornering Brake Control for advanced trail-braking, Brake Fade Compensation for extreme driving conditions, automatic Brake Drying when the windshield wipers are activated, Start-Off Assistant for

driving on steep hills, and a braking function for use by the standard cruise control.

Both vehicles come with an electrohydraulic parking brake which features the Autohold (Auto H) function. Auto H is a convenience feature that holds the vehicle in position as soon as it comes to a stop at an intersection or in stop-and-go traffic, without requiring the driver to hold constant pressure on the brake pedal. As soon as the driver touches the accelerator again, the brake is instantly released.

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### **M Suspension with standard Adaptive Drive.**

The suspension developed specifically for the BMW X5 M and BMW X6 M with its double-wishbone front control arms and integral four-link rear axle offers M-specific geometry and damping. This is accomplished through optimized control arm and A-arm bushings at the front, as well as stiffer axle support mounts at the rear.

As part of the advanced Integrated Chassis Management system which networks all drivetrain and suspension components, both models feature standard self-leveling rear air suspension and Adaptive Drive with Electronic Damping Control (EDC) and Active Roll Stabilization (ARS). The special version of Adaptive Drive tailored to the requirements of BMW M lowers the entire vehicle by 10 millimeters or 0.4" versus the standard BMW X5 and BMW X6.

To quickly and reliably process data, Adaptive Drive uses the high-speed FlexRay data transmission protocol. FlexRay enables Adaptive Drive to transfer data through the vehicle's on-board network at an extremely fast rate. This enables lightning-quick changes to settings for individual shock absorbers, swaybars, and other components as conditions and driving demands warrant. For example, if the front wheel encounters a bump, the system responds quickly enough before the



rear wheel reaches the same bump. On the X5, X6, and 7 Series, BMW is the first carmaker in the world to use FlexRay as a regular technology.

The special Servotronic steering developed for the BMW X5 M and BMW X6 M provides variable steering assistance geared to the road speed of the vehicle. This allows the driver to negotiate parking maneuvers with lower effort while preserving exact feedback and the highest standard of steering precision at higher speeds.

The degree of power steering assistance is defined by two control maps. Apart from the standard configuration, the driver is able, through the Adaptive Drive button or the M Drive button on the steering wheel, to call up the Sport Mode. This activates a sports driving control map with higher control forces for particularly dynamic driving conditions.

When changing from Normal to Sport Mode, the system alters not only the Servotronic steering control map, but also the damper setting, with the shock absorbers of the vehicle being significantly stiffened in Sport Mode. In conjunction with Active Roll Stabilization, this allows an exceptionally high standard of linear lateral forces in dynamic bends and on fast, winding roads, and keeps body roll to a minimum.

### **M Brakes and tires to match the M Power.**

Outstanding stopping power with fade reduced to a minimum is guaranteed by the high-performance M brake system, which combines giant four-piston fixed calipers at the front with floating calipers at the rear, combined in each case with large, internally-vented lightweight brake discs. The brake rotors themselves measure 15.6" in diameter at front and 15.2" at rear. They feature a riveted connection to join the aluminum rotor hats with the cast-iron rotor discs.

The BMW X5 M and the BMW X6 M are the only vehicles of their type equipped with staggered-size tires front and rear, running on 20-inch light-alloy wheels. The choice of runflat tires in sizes 275/40 R 20 at the front and 315/35 R 20 at the rear is a result of the special setup of both models, with the emphasis on rear-wheel power and dynamic handling balance. This promotes exceptionally good transmission of power to the rear axle and precise, razor-sharp steering behavior of both models. Transitional stability is also world-class.

### **Maximum performance at the touch of a button: M Drive button on the steering wheel.**

In addition to the DSC mode (On, MDM, or Off) and the specific setup of the shock absorbers and Servotronic steering, the driver may also configure the setup of the drivetrain on the BMW X5 M and the BMW X6 M. Activating the Power mode influences both engine and transmission behavior, and the driver can choose from the Sport and Efficiency driving programs. The Sport program allows precise control of engine power under the most dynamic driving conditions, and ensures a linear build-up of the power delivery. The Efficiency program, in turn, upshifts at earlier points not only to significantly reduce fuel consumption under normal driving conditions, but also to allow a relaxed style of driving by taking advantage of the new M engine's prodigious torque and power available from low engine speeds. The result, therefore, is an ideal combination of flexibility for daily use and all-out performance when desired.

When customizing the response of the steering wheel-mounted M Drive button, the driver uses the M Drive menu to preselect the desired Power Mode and the setup of DSC and EDC, making a personalized combination of settings that can be activated on-demand. The driver's favorite setup settings are saved and subsequently activated at any time simply by pressing the M Drive button on the

steering wheel. Pressing the M Drive button again returns the vehicle to its previous configuration.

**M-specific cockpit and sophisticated driver assistance systems for even greater ability at the wheel.**

The BMW M philosophy naturally continues into the design and configuration of the driver's "office." Both of these all-wheel-drive high-performance sports vehicles come with a special M cockpit with the instrument cluster featuring a variable redline, specific vehicle function displays, and white display backlighting. Both the BMW X5 M and the BMW X6 M feature power, heated front M sport seats, an M sport leather steering wheel, M door sills, and driver's footrest.

Infotainment functions, standard on-board Navigation with Real-Time Traffic data and communication functions are all controlled by BMW's 4<sup>th</sup>-generation iDrive. The standard HiFi audio system features 12 loudspeakers and a 230 watt amplifier. In addition, both the BMW X5 M and the BMW X6 M may be equipped with a Head-Up Display programmed specifically by BMW M. This option enables the driver to customize the type and scope of data projected onto the windshield through settings available in the M Drive menu.

Innovative driver assistance systems are fitted as well, with both models featuring standard Dynamic Cruise Control, Rain Sensor, Auto-Dimming Mirrors, Park Distance Control, and BMW's Xenon Adaptive Headlights. The list of optional features includes a Driver Assistance Package which includes High-Beam Assistant, Head-Up Display, and Rear View Camera with the spectacular new Top View feature. Top View provides the driver with an "birds-eye view" of the vehicle on the iDrive control screen, using input from a camera on each side of the vehicle and the traditional rear-view camera. Top View provides the driver with additional confidence for tight parking scenarios.

**Stable bodyshell and advanced safety equipment.**

The BMW X5 M and BMW X6 M come with extremely stiff bodyshells. To ensure maximum solidity, BMW's body engineers focused on the use of intelligent lightweight materials technology. Both the choice of materials and the arrangement and geometry of the support bars, braces, and mounts on both models are based on an overall concept that combines maximum crash safety with supreme agility - which helps avoid crashes in the first place. At BMW, the ability to avoid a crash is the best safety feature of all.

Forces acting on the unibody in the event of a crash are diverted through the engine carriers and the chassis along several load paths in order to avoid extreme loads acting on individual structures and help keep impact energy away from the stable passenger cell.

Both the BMW X5 M and BMW X6 M come with frontal and hip/thorax airbags, as well as curtain head airbags to protect the occupants both front and rear from injury. Three-point inertia-reel seatbelts are at all seating positions with force limiters and, on the front seats, an additional seatbelt pretensioning function. To help protect occupants from cervical spine injury in the event of a rear impact, the front seats feature crash-activated active head restraints. ISOFIX child seat anchors are standard on the rear seats.

All restraint systems are controlled by the vehicles' central safety electronics, which take the type and severity of a collision into account so that the most effective safety elements are activated in any given crash. The frontal airbags feature two-stage activation, to allow deployment in varying intensity as a function of crash severity. Networked with Dynamic Stability Control, the standard rollover sensors activate both the curtain airbags and the seatbelt pretensioners, to ensure occupants are best positioned for and protected from the unlikely event of a vehicle rollover.

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