The new Mercedes-Benz M-Class

Refinement meets efficiency

Press Information

April 2012

Melbourne – The third generation Mercedes-Benz M-Class scores particularly well on outstanding energy efficiency, and on average the new model range consumes 25 percent less fuel than the previous models. One true champion in terms of fuel consumption is the ML 250 BlueTEC 4MATIC, which boasts a combined consumption of just 6.4 l/100 km (168 g CO_2/km) and has a range of up to 1450 kilometres on a full tank. Further strengths of the premium SUV with permanent all-wheel drive include exceptional safety and well-balanced ride comfort as well as excellent driving dynamics both on and off the road. What's more, the ML features an array of new chassis developments and innovative dynamic handling control systems which further enhance both driving enjoyment and handling safety. A characteristic body design and a variable interior with a high wellness factor add to the richness of the driving experience in the new M-Class.

Dr. Thomas Weber, member of the Board of Management of Daimler AG with responsibility for Group Research and Mercedes-Benz Cars Development says: "With the M-Class, it's always been a case of combining the comfort and luxury of a saloon car with the off-road characteristics and the emotiveness of an SUV." The fact that the new M-Class is as fuel-efficient as the economical saloon cars displaying the Mercedes star makes the all-wheel-drive model even more desirable. A range of state-of-the-art engines, a class-leading c_d figure (drag coefficient) of 0.32 and extensive BlueEFFICIENCY measures lay the foundations for outstanding energy efficiency.

According to Dr. Joachim Schmidt, Board Member of Mercedes-Benz Cars, Sales & Marketing: "The M-Class is a story of success. With more than 1.2 million vehicles sold, it is the best-selling SUV in its segment and also enjoys a loyal customer base. We will be continuing this success with the new M-Class, which will make an important contribution to our sales growth over the coming years."

BlueTEC diesel units and the new generation of BlueDIRECT petrol engines ensure excellent economy and an outstanding life cycle assessment of the new M-Class.

As far as the diesel engines are concerned, now available solely as BlueTEC units with SCR emissions technology, the focus is firmly on downsizing and on the new version of the V6 CDI engine:

- In the ML 250 BlueTEC 4MATIC, the 3.0-litre V6 of the previous ML 300 CDI BlueEFFICIENCY 4MATIC model is replaced by the thrifty four-cylinder unit already familiar from, for instance, the E-Class. The combined consumption of 6.4 l/100 km is 30 percent lower than that of the previous model.

- The ML 350 BlueTEC 4MATIC features an extensively revamped 3.0–litre V6 which offers far better performance coupled with a substantial reduction in fuel consumption. This version boasts a combined figure of just 7.3 l/100 km.

Thanks to AdBlue® emission control technology both diesel models comfortably meet the EU6 standard slated for the European introduction in 2014.

The ML 350 4MATIC BlueEFFICIENCY petrol-engine model, on the other hand, delivers a convincing performance thanks to the technical details of the new BlueDIRECT engine generation. The key here is the third-generation direct petrol injection system with spray-guided combustion and new piezo injectors that have an injection pressure of 200 bar, together with multi-spark ignition (MSI) and a new stratified combustion process. In this case, the combined consumption of 8.9 l/100 km is 23 percent lower than that of the previous ML 350 4MATIC model. The ML 350 4MATIC BlueEFFICIENCY meets the requirements of the EU5 standard, currently the strictest standard in force for petrol models.

Long-distance champion: a high level of efficiency ensures a long range

The range calculated for a full tank of fuel is particularly impressive. With a consumption of 6.4 l/100 km, the ML 250 BlueTEC with the standard 93-litre tank, can cover up to 1450 kilometres between refuelling stops.

The excellent fuel economy is underpinned by a comprehensive package of BlueEFFICIENCY measures as well as by this state-of-the-art engineering. In addition to the ECO start/stop function that comes as standard on all BlueTEC, these measures include the new seven-speed 7G/TRONIC PLUS automatic transmission with a new fuel-economy converter, friction-optimised bearings and a transmission oil thermal management system. Low-friction axle drives, electric steering, the optimised belt drive with decoupler, the on-demand control of all ancillary components and pumps, and tyres with low rolling resistance also play their part in reducing fuel consumption. What's more, intelligent lightweight design has stopped the weight from spiralling upwards.

The new M-Class (ML 250 BlueTEC) has a drag coefficient, or c_d figure, of 0.32. Intensive simulations undertaken with the digital prototype, along with final touches added in the wind tunnel, ensure a perfect flow of air around the vehicle. The key factor determining the low wind resistance is the aerodynamic efficiency of the basic body shell, including the optimised design of the front bumper, of the A-pillars and of the roof spoiler, plus numerous other detailed improvements.

The result: a high level of comfort and outstanding driving dynamics on and off the road

Even the standard version of the new M-Class offers a high level of comfort, dynamic on-road handling and outstanding off-road capabilities. For the first time, the M-Class chassis with steel suspension features selective damping. The driver is assisted by electric steering, which ensures the optimum level of steering assistance for the current driving situation. In addition to this, the SUV impresses with the smallest turning circle in its market segment.

For driving off the beaten track, the ML 350 BlueTEC 4MATIC and ML 350 4MATIC BlueEFFICIENCY models are equipped with extensive off-road features as standard, including 4MATIC permanent all-wheel drive, 4ETS electronic traction control and an off-road button which activates a special off-road driving mode. Furthermore, the start-off assist system makes hill

starts easier, while the Downhill Speed Regulation (DSR) automatically keeps the M-Class at the speed set using the cruise control stalk.

The optional ON&OFFROAD package for the new M-Class has six driving modes for optimising driving dynamics and handling safety, as the optimum drive system control is provided for an extremely wide range of on-road and off-road operating conditions. The driver can select from one automatic mode, two special off-road modes and three on-road modes using a rotary control in the centre console. In terms of "hardware", the ON&OFFROAD package comprises an underguard, a two-stage transfer case with reduction gear, an inter-axle differential lock and enhanced AIRMATIC functionality that allows a maximum ground clearance of 285 millimetres as well as a fording depth of 600 millimetres.

Active roll stabilisation in the form of the ACTIVE CURVE SYSTEM can be optionally combined with both the AIRMATIC air suspension with Adaptive Damping System (ADS) and the ON&OFFROAD package. This system uses active anti-roll bars on the front and rear axles and compensates for the roll angle of the body through bends, increasing agility and driving pleasure in the process. The system has the additional effect of increasing handing stability and therefore safety, particularly at higher speeds. Further benefits of the ACTIVE CURVE SYSTEM include superb ride comfort both when cornering and driving in a straight line, together with enhanced off-road abilities.

Gently does it: attention to detail ensures comfort

The new M-Class promises relaxed and, therefore, safe driving in all possible conditions. By paying close attention to detail every step of the way, the development engineers in the Mercedes Technology Center have significantly improved what they call the NVH comfort level (Noise, Vibration, Harshness). This is an important factor contributing to the general sense of wellbeing on board, whilst also playing its part in driver-fitness safety, especially on long journeys. The basis for the high level of NVH comfort is provided by the very rigid bodyshell of the M-Class. Further improvements have also been made to the drive system and chassis. This is all topped off by aero-acoustic refinements and the intelligent use of new-style insulation.

Well thought-out: safety at its best

In line with the Mercedes-Benz brand philosophy, the new M-Class represents the embodiment of the Mercedes-Benz holistic safety concept of Real Life Safety, which is derived primarily from what happens in a real accident situation. The extremely robust occupant compartment of the M-Class, together with the front and rear deformation zones, forms an effective basis for the occupant protection system. Nine airbags, activated on demand in accordance with the accident type and accident severity, can reduce the loads exerted on the occupants. In addition to active safety systems such as the standard-fit Brake Assist (BAS) or BAS PLUS (optional ML 250 BT), which can help to prevent an accident or reduce the severity of an accident, the new M-Class features further enhanced passive-safety measures to help protect pedestrians, including an Active Bonnet as standard.

Both active safety and driver-fitness safety in the new M-Class are further improved by assistance systems that will already be familiar, primarily from the S- and E-Class. The standard equipment package includes the drowsiness detection system ATTENTION ASSIST, the anticipatory safety system PRE-SAFE® and a tyre pressure loss warning system, as well as adaptive brake lights and Brake Assist (BAS). Active assistance systems such as Active Lane Keeping Assist and Active Blind Spot Assist are standard on all models except ML 250 BT.

Impressive credentials: the design

The new generation is instantly recognisable as an M-Class by its characteristic body design with the hallmark C-pillar shape. It combines high levels of design, appeal and ease of use to create a powerful presence. The front of the vehicle is dominated by the powerfully self-confident design of the radiator grille with its centrally positioned Mercedes star, giving it that typical M-Class look. Seen from the side, the elongated lines give formal emphasis to the on-road credentials of this vehicle, whose compact proportions are defined by a large wheelbase and short overhangs. The C-pillar that is so characteristic of this model series takes its cue from earlier generations of the M-Class and differentiates it very clearly in stylistic terms from its competitors. At the same time, the way the roof line slopes down to the rear underlines the sporty appeal of the new M-Class. No pillar is visible in the transition from the rear side window through to the rear windscreen. This, together with the similarly wrap-around effect of the two-part rear light unit with LED fibre-optic technology,

and the lowered roof with its large roof spoiler, add up to an overall harmonious design. The rear bumper, which features an integrated chrome-effect load sill guard in a new "wing design", defines the characteristic appearance of the SUV's rear end. The available wheels range from 18-inch through to 20-inch with an elegant, high-quality appeal. Optionally 21-inch AMG wheels can be fitted to emphasise the sporty look of the new M-Class.

Upgrade as standard: interior with a first-class ambience

The interior design concept clearly combines an authentic SUV experience with a sense of wellbeing that is usually the reserve of top-class Mercedes-Benz saloons. While an expressive dome shape embodies the power of an SUV, the gently sloping contours of the dashboard in the front passenger area afford an outstanding sense of space, thereby highlighting the vehicle's suitability for long journeys. The spacious, bright interior offers substantially more elbow room than its predecessor (an extra 34 millimetres in the front and an extra 25 millimetres in the rear), thus enhancing spaciousness. Eye-catching features on the dashboard include a large trim element that matches the trim used for the doors and therefore creates a harmonious wrap-around effect. The seats in the new M-Class have been designed to offer high long-distance comfort and optimum lateral support. All of the key settings can be adjusted electrically. New features include rear seat backrests adjustable for angle and the through-loading feature via the armrest for transporting skis. Folding both backrests as well as the seat cushions forward creates a level load compartment with a capacity of 2010 litres up to the roof lining.

The new M-Class comes as standard with the COMAND Online multimedia system with a high-resolution 17.8 cm colour display provides internet access in the M-Class for the first time. Customers can either browse freely when the vehicle is at a standstill or use a Mercedes-Benz App with pages that load extremely quickly and are also easy to use when the vehicle is on the move. Also standard for all M-Class models is a reversing camera.

The efficiency champion

The low fuel consumption figures and exemplary emissions figures are particularly impressive. Compared with the outgoing model, the entire model range consumes 25 percent less fuel on average. A sophisticated engine line-up, engine downsizing, the best-in-class C_d figure of 0.32, extensive BlueEFFICIENCY measures and new development tools such as the "energy-transparent vehicle" all play their part in delivering excellent energy efficiency.

BlueTEC diesel units and the new generation of BlueDIRECT direct-injection petrol engines form the basis for the excellent economy and outstanding life cycle assessment of the new M-Class. In this respect, downsizing takes centre stage as far as the diesel models are concerned:

- In the ML 250 BlueTEC 4MATIC, the 3.0-litre V6 of the previous model is replaced by the thrifty four-cylinder unit already familiar from, for instance, the E-Class.

- The ML 350 BlueTEC 4MATIC features an extensively revamped 3.0-litre V6, which offers far better performance coupled with a substantial reduction in fuel consumption.

Thanks to AdBlue® emission control technology, both diesel models comfortably meet the EU6 standard slated for European introduction in 2014.

	ML 250 BlueTEC 4MATIC	ML 300 CDI BlueEFFICIENCY 4MATIC (predecessor model)	**ML 350 BlueTEC 4MATIC**	ML 350 CDI 4MATIC (predecessor model)
Number of cylinders	**4**	6	**6**	6
Displacement cc	**2143**	2987	**2987**	2987
Rated output kW	**150**	150	**190**	170
Max. torque Nm	**500**	500	**620**	540
Combined consumption				
l/100 km	**6.4**	9.2	**7.3**	9.5
g CO_2/km	**168**	243	**192**	249
Fuel saving %	-**30**		-**23**	
0–100 km/h s	**9.0**	8.3	**7.4**	7.6
Top speed km/h	**210**	210	**210**	210
Emissions standard	**EU6**	EU5	**EU6**	EU5

BlueDIRECT engine for the ML 350 4MATIC BlueEFFICIENCY

The ML 350 4MATIC BlueEFFICIENCY petrol-engine model features the groundbreaking technology of the new generation of V engines from Mercedes-Benz. At the heart of the BlueDIRECT technology package lies the enhanced third-generation spray-guided direct petrol engine with piezo injectors. In combination with multi-spark ignition, this technology offers further possibilities for fuel savings.

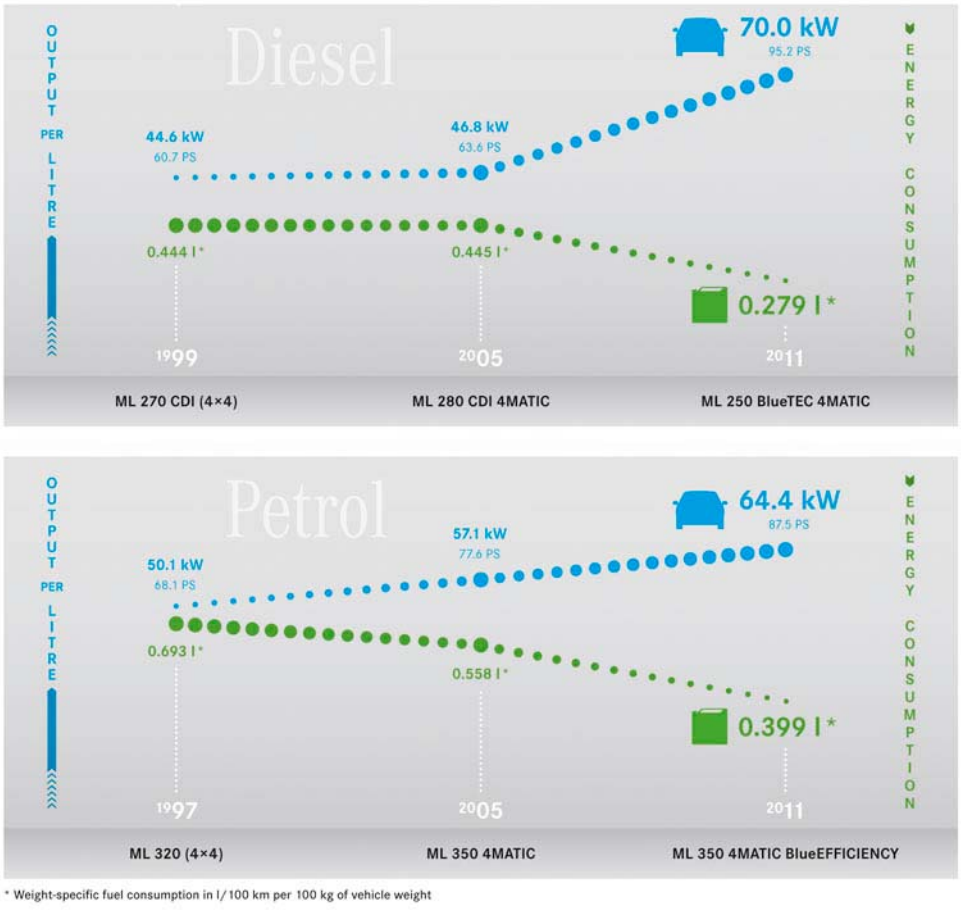
The V6 engine in the ML 350 4MATIC BlueEFFICIENCY utilises direct fuel injection to enable a higher level of compression than port injection resulting in higher efficiency. The fuel injection pressure attains a maximum of 200 bar. The high pressure pump takes the form of a single plunger pump with a pressure and flow control valve integrated in the pump module. The fuel is conveyed to the newly developed piezo injectors centrally located in the combustion chamber. A newly developed engine control system is also employed. This fully torque based system possesses interfaces with ESP®, transmission and air conditioning.

The third-generation direct-injection system also features rapid multi-spark ignition (MSI). How it works: following the first spark discharge and a brief combustion period, the coil is rapidly recharged and a further spark is discharged. The MSI system enables up to four sparks to be discharged in succession within one millisecond, creating a plasma with a larger spatial expansion than conventional ignition. Controlling this rapid multi-spark ignition enables both the time lapse before the next spark and the combustion duration for the relevant operating point to be optimally adjusted. This provides scope for optimising the centre of combustion and improving residual gas compatibility, especially during stratified charge operation.

As a major distinction from the preceding engine in the ML 350 4MATIC, the V-angle between the cylinder banks has been reduced from 90 degrees to 60 degrees. This has enabled the balancer shaft compensating primary vibrations to be omitted. As a result the driver notices an outstanding level of comfort. The design highlights of the 3.5-litre V6 include a completely new air intake and exhaust system in conjunction with a variable resonance intake manifold and optimised inflow and outflow. Result: with the same displacement, the output compared with the previous **200 kW** model is increased by 12.5 percent to **225 kW**, while maximum torque has increased by 5.7 percent to 370 Nm (predecessor: 350 Nm) and now is available over a broader engine speed range from 3500 to 5250 rpm. In parallel with this increase in power, Mercedes engineers have achieved an equally impressive reduction in fuel consumption – by some 22 percent compared to the predecessor model. The new V6 petrol engine in the ML 350 4MATIC BlueEFFICIENCY consumes 8.9 litres per 100 kilometres, making it the most economical petrol model in its class.

	ML 350 4MATIC BlueEFFICIENCY	ML 350 4MATIC (predecessor model)
Number of cylinders	**6**	6
Displacement cc	**3498**	3498
Rated output kW	**225**	200
Max. torque Nm	**370**	350
Combined consumption		
l/100 km	**8.9**	11.5
g CO_2 / km	**208**	272
Fuel saving %	**-22**	
0–100 km/h s	**7.6**	8.4
Top speed (electronicly limited km/h)	**210**	210
Emissions standard	**EU5**	EU4

The performance of the M-Class engines becomes particularly apparent when looking at the reduced energy requirements coupled with a marked increase in power output per litre for the three M-Class generations since 1997. Comparison of the weight-specific consumption figures (l/100 km per 100 kg) reveals the tremendous development potential of the conventional internal combustion engine:



* Weight-specific fuel consumption in l/100 km per 100 kg of vehicle weight

Long-distance champion: a high level of efficiency ensures a long range

The range for a full tank of fuel on the new M-Class is particularly impressive. This parameter is very important for a vehicle that knows virtually no bounds. Here, the ML 250 BlueTEC 4MATIC – the most economical SUV in its class by far – stands out. With a combined fuel consumption figure of 6.4 l/100 km, the frugal diesel engine with the standard 93-litre tank can even cover up to 1450 kilometres between refuelling stops.

The fuel economy is underpinned by a comprehensive package of BlueEFFICIENCY measures as well as by this state-of-the-art engine technology. In addition to the ECO start/stop function that comes as standard, these measures include the new seven-speed 7G-TRONIC PLUS automatic transmission. Low-friction axle drives, electric steering and tyres with low rolling resistance also play their part in reducing fuel consumption.

The re-engineered 7G-TRONIC PLUS, standard on all M-Class models, boasts an integrated ECO start/stop function, lower converter slip and optimised efficiency. A central role is played by the new torsion damper, which eliminates torsional eccentricities and vibrations in the transmission even more effectively. The lower the rpm and the lower the number of cylinders, the more severe these can be. This results in a conflict of aims between comfort and fuel-efficient operation. Mercedes-Benz developers resolved this by using what is called a twin-turbine damper, which is also fitted with a centrifugal pendulum on the diesel models. Depending on the rpm, this moves the centre of mass and allows comfortable operation even in the most economical operating range. Furthermore, the optimised damping allows a marked reduction in the slip of the torque converter lockup clutch even under low loads, which also contributes to fuel savings. In addition, the optimised damping of rotational irregularities and vibrations in the transmission allows an even faster response to driver commands via the accelerator pedal. Friction-optimised bearings and new transmission oil thermal management also help reduce fuel consumption.

The optimised belt drive system with decoupler, together with intelligent, on-demand control of all ancillary components and pumps, also helps to reduce the energy requirements of the new M-Class. The oil and water pumps in the engine, as well as the fuel pump in the rear section of the vehicle, are only activated according to actual need. The same control logic is used in the THERMATIC and THERMOTRONIC air conditioning systems. In these, the coolant compressor only runs when necessary. An internal heat exchanger and the sophisticated sensor system including a demisting sensor on the front windscreen ensure optimum efficiency of the air conditioning systems in the interior. A key factor in the diesel engines is also the optimisation that has been undertaken of the flow and counterpressure in the exhaust system with its SCR emission control technology.

A consistent use of lightweight construction techniques has enabled the development engineers to keep the weight of the new M-Class on a par with that of its predecessor, despite more equipment. The links on the front and rear axles, for example, along with the bonnet and wings, are made out of light and yet very strong aluminium alloys, while the cross member for the instrument panel is made of magnesium.

Safety: A reassuring feeling

Just one star is enough

In line with the Mercedes-Benz brand philosophy, the new M-Class represents the embodiment of the Mercedes-Benz holistic safety concept of Real Life Safety, which is derived primarily from what happens in a real accident situation. The extremely robust occupant compartment of the M-Class, together with the front and rear deformation zones, forms an effective basis for the occupant protection system. Both active safety and driver-fitness safety in the new M-Class are further improved by Assistance Systems, already primarily familiar from the S and E-Class.

As with all passenger car models from Mercedes-Benz, the philosophy behind the safety concept of the M-Class is broken down into four phases:

- Safe driving: avoiding danger, warning and assisting the driver in good time
- In the event of danger: anticipating and enabling preventive protective measures
- In an accident: providing protection as needed
- After an accident: avoiding even worse consequences and making rapid assistance possible

The high level of safety already achieved in the previous model has been increased even further. The many "invisible" Mercedes-Benz solutions in particular bring measurable benefits in real accident situations. To support new technologies or the evolution of existing systems, the engineers carried out numerous crash tests which went way beyond the tests normally specified, such as the roof-drop test for example, as well as various rollover tests. When it detects the need to do so, a rollover sensor system can activate side and window airbags, as well as belt tensioners. In total, as part of the M-Class development Mercedes-Benz tested 36 totally different loads under real test-

conditions. This included comprehensive simulations for the digital prototype. Following this intensive development programme, the M-Class now has the potential to pass all international ratings with the best possible results.

The M-Class is also able to demonstrate the highest possible protection potential when it comes to more vulnerable road users such as pedestrians or cyclists. In addition to yielding areas in the front section, folding exterior mirrors and smooth contours, the risk of injury caused by the vehicle has been reduced by adjusting the bonnet and increasing the distance to the components in the engine compartment. In addition, for the first time in the SUV segment, an active bonnet is fitted as standard equipment. It is able to reduce the acceleration forces of an impacting pedestrian or cyclist by intercepting them earlier.

"Electronic crumple zone"

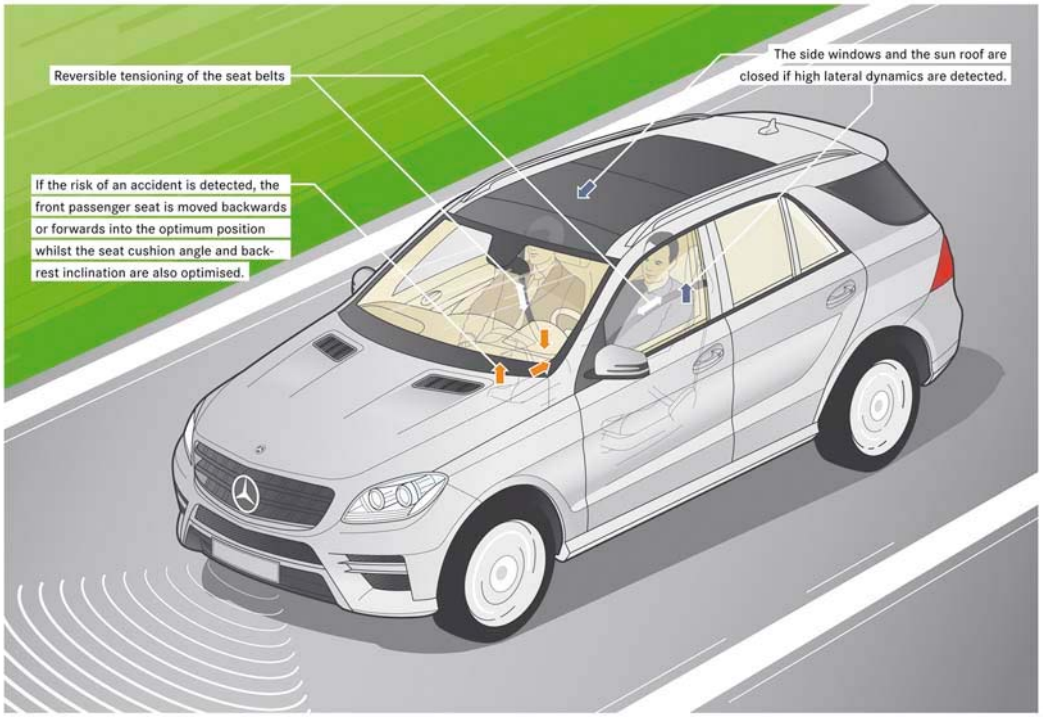
As ever, the best accident is one which does not happen at all. The safety engineers at the Mercedes Technology Center are working intensively on this rather simple sounding statement, which in practice is actually a lot more difficult to implement. Both active safety and driver-fitness safety in the new M-Class are further improved by the numerous active and passive assistance systems:

- ATTENTION ASSIST, warns the driver of drowsiness
- Tyre pressure loss warning system
- Intelligent Light System with specific lighting functions to match the relevant road and weather conditions
- Night View Assist Plus with automatic person recognition
- ADAPTIVE BRAKE with the functions Hill-Start Assist, priming, brake drying and hold function
- Brake Assist (BAS) to support the driver in critical braking manoeuvres
- DISTRONIC PLUS with BAS PLUS
- Lane Keeping Assist warns the driver as soon as it detects that the driver has unintentionally left a recognised marked lane. In addition, Active Lane Keeping Assist can react with lane-correcting brake application
- Blind Spot Assist warns the driver when vehicles are detected in the area of poor visibility, the so-called "blind spot". Additionally, Active Blind Spot Assist can counteract a possible collision by specific application of the brakes on one side of the vehicle, if the driver does not react to the warning.

- Park Assist with PARKTRONIC, a system which can detect parking spaces and carry out the steering manoeuvres required for the parking process, simply leaving the driver to operate the brake and accelerator
- Reversing camera, e.g. with "back-in" mode with dynamic guide lines for reversing into narrow parking bays or to aid with the coupling of trailers
- Adaptive brake light warns vehicles behind in an emergency braking situation with flashing brake lights

Standard equipment forming part of the safety concept of the new M-Class includes the anticipatory safety system PRE-SAFE®, which combines active and passive safety synergies to reduce the loads exerted on the vehicle occupants in the event of an accident by up to 40 percent. Depending on the potential accident situation detected, the following reversible measures can be initiated for preventive occupant protection:

- Driver and front passenger seat belts are tensioned
- Windows are closed
- Sliding sunroof is closed
- Front passenger seat is adjusted (when fitted with Memory package)



The extremely robust occupant compartment of the M-Class, together with the front and rear deformation zones, forms an effective basis for the occupant protection system. The focus of the work here has been the tangible reduction of the loads exerted on the occupants. In the case of front impacts, the engineers were able to achieve more uniform deceleration, and therefore a lower peak load on the occupants. This was made possible by means of:

- Design of the front axle carrier as a crash element, which is able to deform in a specific manner and in the case of an offset crash, for example, can divert the energy to the side of the vehicle opposite the side of impact
- A novel aluminium gearbox crossmember mount with offset function: isolated against noise and vibration during normal operation, in the event of a crash this component is activated via hooks so that the centre tunnel can absorb additional energy in this area (diesel versions only)
- Guide ramp on the brake booster, thus preventing unwanted block formation between the brake booster and the damper dome. The brake booster is also rotated to minimise possible brake pedal intrusion
- A crash joint ensures that the mudguard is pushed away at the driver's door, and prevents the door from jamming after the impact. For the most part the doors can be opened without much effort
- Ultra-high-strength steels in the A-pillar enhance the stability of the passenger compartment in both front impacts as well as in different rollover scenarios, primarily enabling doors to be opened easily after an offset crash
- Projected sills create a direct load path to the front wheel. As a result, any possible forcing or intrusion of the wheels into the footwell can be avoided
- Optimum energy conversion in the event of a front crash despite relatively short front-end length, thanks to enabling the load paths from the crashbox to the longitudinal body member, from the wheel to the sill, and due to the deformable subframe, which guides forces into the centre tunnel via the engine/transmission joint
- The energy-absorbing steering column deforms up to 100 millimetres when subjected to external forces, thus freeing up additional deformation space for energy conversion. As a result, the loads on the driver can be reduced in the area of the head, neck and thorax

Side-impact protection thanks to intelligent bodyshell

Similar to the design of the front area of the new M-Class, the vehicle's intelligent bodyshell design also performs impressively in side-impact accident scenarios. The specific distribution of high rigidity and high deformability helps to ensure that the occupants benefit from favourable kinematics in the event of a side impact:

- The lower part of the B-pillar, an important component in side impacts, is highly compressible, whereas its upper part is extremely rigid. As a result, intrusions and the speed of intrusions in the lower area are reduced, while in the upper area high-strength steels on the exterior sides of the pillar prevent it from buckling unfavourably in a side impact. In addition, this design solution increases the stability of the passenger compartment in the event of a rollover
- The stiffening of the floor structure by means of a supporting element made of an ultra-high-strength material running across the entire width of the vehicle, and ultra-high-strength reinforcements in the driver's seat crossmember, help to reduce deformations, primarily in the event of a pole impact. As a result, the occupant survival space benefits from even better protection, and the thorax load on the occupants is reduced
- The geometry and body connections of the pillars and the roof frame made of ultra-high-strength material have been optimised to provide the best possible crash safety

Brilliant finish: the rear assembly

The rear area of the M-Class also protects the sturdy passenger compartment in crash situations thanks to specific deformation work, therefore minimising the loads on the occupants. A special impact test conducted to check tank leakage gives an indication of the exceptional load capabilities of the rear part of the M-Class body. The test involved running a crash carriage into the rear of the M-Class at 80 km/h. The tank system survived this fatal impact without suffering any leaks.

To enhance rigidity, increase the energy absorption capability and improve deformation behaviour, the multi-piece rear longitudinal members feature a continuous closed cross-section with stepped plate thicknesses (tailored blanks). The spare wheel well forms an integrated part of the steel floor, and a steel flexible bumper bracket carries the rear bumper covering and is connected to the rear structure via two steel crashboxes.

The passive occupant protection systems, together with the "electronic crumple zone" and intelligent body design which have already been described, provide optimum protection potential, placing the M-Class at the top of its market segment. As part of this, a number of new deployment strategies are used. For example, the system can detect an impending rollover in the event of crash and if necessary deploy the head, side and window airbags, as well as the seat belt tensioners. Thanks to the new generously-sized side airbags and the window airbags with extended area of coverage, in the event of a crash the occupants can be more uniformly supported from the shoulder area down to the pelvic area, and thereby better protected. In side impacts too, the danger of injury is reduced thanks to extended coverage.

Additional protection potential is also provided for rear seat passengers with seat belt tensioners and force limiters on the outer seat positions. The integration of optional thorax bags in the tilt-adjustable folding seat backrests enables optimum airbag positioning for each backrest position.
The components of the passive occupant protection systems include:

- Two-stage adaptive airbags for the driver and front passenger
- Kneebag for the driver
- Sidebags for driver and front passenger (combined thorax/pelvis bags)
- Sidebags in the rear row of seats
- Windowbags across both rows of seats from the A- to the C-pillar
- 3-point seat belts on all five seats
- Pyrotechnic reel tensioners and permanent belt force limiters as well as electrically reversible belt tensioners in the front, reel tensioners and single-stage force limiters for the outer seats in the rear
- ISOFIX child seat anchorage
- Belt height adjustment for the driver and front passenger
- Belt status display for rear-seat passengers in the instrument cluster
- In a rear-end collision, a passive head restraint system developed specifically for this purpose can reduce the forces exerted on occupants

Occupant protection even after a crash

As part of the POST-SAFE® functions, the new M-Class can activate a variety of systems which can contribute towards avoiding post-accident risks. After a more serious crash, the hazard warning lights are automatically activated to warn surrounding traffic. At the same time, the doors are automatically unlocked so that the emergency services have the best possible unrestricted access to the passengers. And thanks to partial opening of the side windows, the interior is better ventilated after deployment of the restraint systems.

On detecting a collision, the central control unit switches off the fuel system to reduce the risk of a possible fire. After determining the cylinder positions, the engine management system opens the injection valves of those cylinders which are not under compression and discharges the high-pressure fuel area by direct evacuation of the remaining fuel in the combustion chamber. This reduces the risk of fuel escaping. To avoid fuel losses, all M-Class models are also fitted with cut-resistant fuel lines in all relevant locations. This also helps to reduce the risk of a possible fire breaking out.

Dynamism meets comfort

Besides the steel suspension with selective damping, there are also some new chassis developments and innovative dynamic handling control systems available, which are designed to enhance the driving experience in the M-Class. These include the AIRMATIC air suspension with Adaptive Damping System (ADS), the ACTIVE CURVE SYSTEM for active roll stabilisation and the ON&OFFROAD package with six driving modes. A comprehensive package of measures has also been included to ensure that the M-Class is at the forefront of its segment for acoustic and vibration comfort too.

A high level of comfort, dynamic on-road handling and excellent off-road capability are ingrained into the new M-Class as standard. The chassis of the steel-sprung M-Class now includes selective damping for the first time, meaning the shock absorbers' compensatory forces are of a flexible nature, rather than having a rigid setting. During normal driving on moderately uneven roads or off-road excursions at low speeds, the system is tuned for a gentler ride to the benefit of the occupants' sense of wellbeing and the vehicle's off-road abilities. In order to keep the occupants feeling at their ease when driving at a brisker pace or performing abrupt evasive manoeuvres, the dampers switch to a firmer setting in such circumstances for a high level of handling stability. The M-Class driver is helped here by an electric steering system that provides the optimum level of power assistance to suit the particular driving situation. The system therefore makes light work of parking or off-road manoeuvres by maximising steering assistance. The SUV also scores here with the tightest turning circle in its market segment. The 180-degree turn is negotiated within a circle diameter of just 11.8 metres. As the speed increases, however, assistance is reduced in favour of greater directional stability.

For those who want to venture off surfaced roads, the ML 350 BlueTEC 4MATIC and ML 350 BlueEFFICIENCY 4MATIC models offer a comprehensive off-road programme as part of their standard equipment. It includes the permanent all-wheel drive system 4MATIC and the electronic traction control system ETS, as well as an off-road button that activates a special off-road transmission mode.

- To improve traction, the wheel slip thresholds and the shift points of the 7G-TRONIC PLUS transmission are raised
- A flatter accelerator response curve enables more sensitive throttle control
- Off-road ABS ensures optimum braking characteristics, especially on loose surfaces

Start-off assist and the HOLD function are further features helping the driver to pull away on a slope. Downhill Speed Regulation, or DSR, enables the M-Class to maintain automatically the speed set via the cruise control lever.

For anyone wishing to go exploring off the beaten track even more in the new M-Class, there is the optional ON&OFFROAD package.

Comfort system: AIRMATIC air suspension with ADS

The AIRMATIC full air suspension system including the Adaptive Damping System (ADS) offers a soft basic suspension setup with a low natural frequency, where full spring travel is available even when the vehicle is fully laden. This provides the basis for excellent ride comfort on road combined with noticeably superior handling stability. AIRMATIC compensates for variations in vehicle load and driving state, at the same time as acting as a level control system. Away from the tarmac, the air suspension increases the vehicle's off-road prowess by offering additional ride heights. The body can be raised or lowered with the engine running at any time, either automatically or at the driver's request with a simple turn of the rotary control in the centre console. The system is speed sensitive, meaning that it lowers the body at higher speeds to minimise aerodynamic drag while increasing handling stability too. The air suspension system's basic components include:

- Air-filled spring struts on the front axle with integral ADS dampers
- Air springs with separate ADS dampers on the rear axle
- Electric compressor with central pressure reservoir and pressure sensor
- Air spring valves
- Electronic control unit
- Sensors for level control and damping control

The adaptive damping system ADS II is a fully automatic, electronically controlled system, which adapts the damping force at each wheel to suit changing requirements using a skyhook algorithm. In contrast to a passive system with a constant damper setting, the vehicle's motion is controlled uniformly in all driving situations, leading to improved handling stability and a considerable reduction in body movement. The skyhook algorithm regulates the damping forces at each wheel so as to lessen the forces exerted on the body by the movement of the wheels. When there are low levels of body excitation, the M-Class drives with damping level 1 active. Should the body speed exceed a certain threshold, however, the system will switch to the skyhook algorithm and constantly alternate between the second and third damping levels by means of fast-acting solenoid valves in order to counter the body's rolling and pitching movements. Under more dynamic handling conditions, level 4 is engaged, and when driving in Sport mode, level 4 damping is activated at all times. Damping control at each individual wheel takes place extremely fast – depending on the control command, the valves are capable of setting one of the characteristic curves described here in less than 0.05 seconds:

Level 1	Soft rebound/soft compression for comfortable ride characteristics, gentle body movements and little longitudinal and lateral acceleration
Level 2	Soft rebound/firm compression (skyhook mode)
Level 3	Firm rebound/soft compression (skyhook mode)
Level 4	Firm rebound/firm compression: for minimising wheel load fluctuations when cornering and braking, high longitudinal and lateral acceleration for enhanced handling safety

The current driving state is determined using a steering angle sensor, four turning angle sensors und the road speed as derived from the ESP® signal and the brake pedal switch. Based on these signals, the control unit calculates the current damping forces required and actuates the appropriate damper

characteristic curves. The driver is able to choose between Sport and Comfort modes manually by pressing a switch.

New dynamic handling control system: cornering without rolling

Active roll stabilisation in the form of the ACTIVE CURVE SYSTEM can be optionally combined with both the AIRMATIC air suspension with Adaptive Damping System (ADS) and the ON&OFFROAD package. This system uses active anti-roll bars on the front and rear axles, which it controls automatically as a function of the lateral acceleration, road speed and the ADS Comfort/Sport switch setting. The ACTIVE CURVE SYSTEM compensates for the roll angle of the body through bends, greatly increasing agility and driving pleasure in the process. The system has the additional effect of increasing handing stability and therefore safety, particularly at higher speeds. Further benefits of the ACTIVE CURVE SYSTEM include even greater ride comfort both when cornering and driving in a straight line, together with enhanced off-road abilities. The various control strategies in detail:

- Comfort is improved when **driving straight ahead** as the rotary actuators decouple the two halves of the front and rear anti-roll bars in this situation, meaning that the anti-roll bars are "open" and do not react to a stimulus on just one side, such as bumps or potholes.

- Increased ride comfort and more dynamic handling when **cornering,** because the system actively influences the anti-roll bars' torsional moments and twisting angles. The anti-roll bars' torsional moment furthermore remains constant in response to a stimulus on one side, such as is the case when driving over a pothole on the outside of the bend. Thanks to the individual control at the front and rear axles, distribution of the roll momentum can be varied, allowing the self-steering properties to be actively adapted to the prevailing driving situation. The handling characteristics are adjusted for extra agility when driving along country roads and for even greater stability on the motorway.

- When driving in extreme **off-road conditions** at low speeds, the two anti-roll bars at the front and rear axles are decoupled. This leaves the anti-roll bars "open", allowing greater axle articulation.

The key componentry of the ACTIVE CURVE SYSTEM comprises a belt-driven hydraulic pump and an oil reservoir in the engine compartment, as well as a valve block and active anti-roll bars at both the front and rear axles. In contrast

to a passive anti-roll bar, the active variant is split into two in the middle, and the two halves are connected with one another by means of hydraulic rotary actuators. Using the CAN signals relayed to it by pressure sensors and a lateral acceleration sensor, the electronic control unit regulates the hydraulic pressure.

The complex workings of the ACTIVE CURVE SYSTEM:
The hydraulic pump feeds oil to the system from the oil reservoir.
The pressure control valves and directional control valves integrated into the valve blocks at the front and rear axles set the desired pressure and twist the active anti-roll bars in the appropriate direction for the driving situation. Inside the hydraulic rotary actuators that are built into the active anti-roll bars there are six oil-filled chambers, three of which are pressurised for each direction of travel, i.e. a left or right-hand bend. The front valve block additionally assumes the task of distributing the oil flow between the two axles, irrespective of load.

Full programme: ON&OFFROAD package for all eventualities

The ON&OFFROAD package for the new M-Class uses six different driving modes to optimise driving dynamics and handling safety by providing the optimum drive control needed to cope with the wide spectrum of operating conditions encountered both on and off the road. The added benefit compared to the Off-Road Pro Engineering package offered previously is plain to see: whereas before there was one optimum driving mode for the road and one for off-road, drivers now have the choice of an automatic mode, as well as two specially programmed off-road and three on-road modes.

The specific driving modes for all-wheel drive resolve a conflict of objectives that has previously hampered further development of 4MATIC and the 4ETS electronic traction system as well as ESP® and ASR. To take an example: on off-road tracks, it is important that the control systems respond very gently due to the low friction coefficients, but this makes a sporty setup virtually impossible. Conversely, a sporty basic setup impairs performance abilities in off-road terrain. In the past, the engineers always succeeded in finding excellent compromises which worked brilliantly under all conditions and continue to do so. The new ON&OFFROAD package with its specific driving modes, however, enables driving dynamics and handling safety to be optimised almost as far as is physically possible under all operating conditions by maximising networking between the individual control systems.

The system is operated using a rotary control on the centre console, which adapts the AIRMATIC settings and the drivetrain to suit the specific requirements. The six driving modes in detail:

- Automatic – covers the wide operating spectrum of everyday driving
- Offroad 1 – light terrain, tracks, driving over fields
- Offroad 2 – challenging off-road terrain with climbs
- Winter – for driving in wintry conditions on roads affected by freezing rain, snow or ice, or with snow chains
- Sport – for serious driving along winding roads
- Trailer – optimises start-off, manoeuvring and braking characteristics when towing a trailer

Despite so many options, the driver is never in any doubt about mode selection: the setting is made intuitively, while the driving mode selected is visualised in the multifunction display as well as in virtually photo-realistic quality on the screen of the COMAND system. If the driver selects the Winter mode, for instance, the display shows the M-Class in snow. The Sport setting displays a racetrack with red-and-white curbs, while images of off-road terrain with different profiles appear for Offroad 1 and 2. The display is interactive too: steering input and spring travel correspond to the actual values, while the graphics include additional information on the steering, gradient and tilt angles, the AIRMATIC level, the pre-selected speed for Downhill Speed Regulation (DSR), as well as the selected drivetrain settings including reduction gear and differential lock.

Irrespective of which basic mode is set, the reduction gear, differential lock, DSR and the AIRMATIC system's level control can all be adjusted individually. As with the basic settings for the ON&OFFROAD package, it is not possible for the driver to make mistakes here either. Illogical settings, which would have a negative impact on handling stability, safety or traction, are precluded. If case of doubt, the system will revert to automatic mode.

In terms of "hardware", the ON&OFFROAD package comprises an underguard, a two-stage transfer case with reduction gear, an inter-axle differential lock and enhanced AIRMATIC functionality that allows a maximum ground clearance of 285 millimetres and a fording depth of 600 millimetres.

Off-road data at a glance*

		Steel suspension with SDC	AIRMATIC ADS	ON&OFFROAD package
Front overhang	mm	880		
Rear overhang	mm	1009		
Ground clearance	mm	202	255	285
Angle of approach	º	26	30	31
Angle of departure	º	25	28	29
Breakover angle	º	17	20	22
Slope climbing ability	%	80	80	100
Tilt angle	º	35	35	35
Fording depth	mm	500	500	600

* maximum values for ECE version

Haven of calm: optimum vibration and acoustic comfort

By paying close attention to detail every step of the way, the development engineers in the Mercedes Technology Center have significantly improved what they call the NVH comfort level (Noise, Vibration, Harshness) for the new M-Class. This is a decisive parameter for the general sense of wellbeing on board, whilst also contributing to driver-fitness safety, especially on long journeys.

The basis for the high level of NVH comfort is provided by the very rigid SUV bodyshell of the M-Class. The development engineers were faced with some particular challenges here. For example, they had to make allowance for the optional panoramic glass sunroof's large aperture in the construction.
The objectives set for drive comfort were no less ambitious. Substantial improvements have been achieved in this regard compared to its predecessor, thanks to features such as map-controlled, hydraulic engine bearings, a resized aluminium transmission cross member with integral vibration damper, as well as the overhauled 7G-TRONIC PLUS with twin-turbine damper and centrifugal pendulum. Potential noise penetration from the engine compartment through to the interior is minimised by a major assembly partition wall made from plastic and the intelligent use of soundproofing to suit requirements. Aero-acoustic enhancements include the vehicle glazing with its high-insulation acoustic windscreen, additional sealing in the side sections, plus the streamlined add-on parts such as the restyled exterior mirror housings.

The measures at a glance:

- Improved rigidity of the front end structure thanks to struts between the upper and lower levels of side members
- Hybrid construction of front module increases comfort at the same time as reducing weight
- Cockpit cross member made from particularly rigid magnesium alloy
- Intelligent use of soundproofing to suit requirements: in the production facilities, insulation is applied to the bodyshell very precisely by computer-controlled robots. Insulation with varying mass distribution in parts is used in the firewall area in accordance with the potential noise penetration
- Aluminium transmission cross member with integrated vibration damper on the diesel models
- Vibration-optimised 7G-TRONIC PLUS with twin-turbine damper, plus, on the diesel models, centrifugal pendulum
- Map-controlled engine bearings on the diesel models
- Decoupled exhaust system on the diesel models
- Standard chassis with selective damping, as an option: AIRMATIC air suspension with Adaptive Damping System or AIRMATIC air suspension with Adaptive Damping System and ACTIVE CURVE SYSTEM dynamic roll stabilisation
- Electric steering
- Major assembly partition wall made from plastic in order to minimise penetration of noise from engine compartment into the interior
- External noise minimised by acoustic encapsulation of engines
- High-insulation acoustic windscreen
- Additional aero-acoustic sealing in the side sections

From Economy to First Class

The vehicle body design for this third-generation model, with the very typical shape of its C-pillars, is full of character and immediately recognisable as an M-Class. Its styling, high-quality appeal and excellent ease of operation combine to give it a forceful presence. The interior in particular is even more impressive than in the predecessor models and combines the best of both worlds, boasting a strong off-road heritage at the same time as making its passengers feel as if they are travelling in a luxury premium saloon. Ground aluminium or exquisite woods as well as the finely detailed switches and trim highlights blend with electrifying surfaces and powerful, harmonious lines to create a high-class interior ambience and a tremendous sense of wellbeing.

The front of the vehicle is dominated by the design of the radiator grille with its centrally positioned Mercedes star, giving it that typical M-Class look. The new styling of the headlamps conveys a high-quality and exclusive impression, especially when the Intelligent Light System is taken (standard all models except ML 250 BT). The LED daytime driving lights are set in chrome inserts integrated into the bumpers. A deeper, broad, chrome-effect underguard continues down from the lower edge of the radiator grille, so serving to reinforce the impressive overall appearance.

Character line: effortlessly superior and high-quality body design

Seen from the side, the elongated lines give formal emphasis to the on-road credentials of this vehicle, whose compact proportions are defined by a large wheelbase and short overhangs. The C-pillar that is so characteristic of this model series takes its cue from early generations of the M-Class and differentiates it very clearly in stylistic terms from its competitors. At the same time, the way the roof line slopes down to the rear underlines the sporty appeal of the new M-Class. No pillar is visible in the transition from the rear side window through to the rear windscreen. This, together with the similarly wrap-around effect of the two-part rear light unit with LED fibre-optic technology, and the lowered roof with its large roof spoiler, add up to an overall harmonious design. The rear bumper, which features an integrated chrome-effect load sill guard in a new "wing design", defines the characteristic appearance of the SUV's rear end. The chrome-look finish of further product

features, such as the roof rails, the beltline trim strip or the load compartment handle, emphasise the high-quality appeal of the exterior.

The available wheels range from no cost option 18-inch wheel through to 20-inch with an elegant, high-quality appeal. As an option, 21-inch AMG wheels can be fitted to emphasise the sporty look of the new M-Class.

A feeling of wellbeing as standard: the interior

The interior design concept combines an authentic SUV experience with the sense of wellbeing of a high-quality Mercedes-Benz saloon. While an expressive dome shape embodies the power of an SUV, the sloping dashboard in the front passenger area affords an outstanding sense of space, thereby highlighting the vehicle's suitability for long journeys.

The evolution of the dashboard in Mercedes-Benz off-road vehicles, from the early days of the G-Class through to today's new M-Class, makes it clear how much aspects of comfort and wellbeing have now come to the fore:

- In the G model dating from 1979, square-edged shapes defined the flat dashboard. The angular instrument panel was laid on top of this, while the dashboard console, also angular in shape, and the glove compartment area were hung beneath. As if pieced together from modular sections, the individual elements reflected the clear look of a commercial vehicle. Their simple practicality dispensed with any embellishments, instead giving off an air of rustic charm with a rather metallic-like effect. At the time, this was totally appropriate for an off-road vehicle.

- The dashboard in the first generation M-Class dating from 1998 was also primarily functional in nature, and made only tentative concessions to a design based around comfort. Nevertheless, the first hints of the more comfortable and friendlier interior design to be found in saloons were noticeable. Curves and sweeping lines helped to avoid an impression of austerity. Trim elements were not often incorporated into the sober visual design, however, and functionality continued to dominate.

- The design of the instrument panel in the new M-Class is completely on a par with its counterparts found in luxury-class saloons: modern,

friendly, equipped with high-quality materials and stylishly designed. At the same time, matching details reflect the superior character of the premium SUV.

The modern Mercedes-Benz definition of the appropriate interior of an SUV becomes evident as soon as the pleasantly high seating position is accessed via the wide-opening doors. The spacious, bright interior provides noticeably more elbow room than its predecessor (34 mm more in the front, 25 mm more in the rear) and thus an enhanced sense of space and comfort. The driver takes to the wheel behind a 4-spoke multifunction steering wheel with twelve trapezoidal control buttons for trip computer, radio and telephone. The 7G-TRONIC PLUS automatic transmission is controlled via the DIRECT SELECT lever as well as DIRECT SELECT shift paddles on the steering wheel.

The broad instrument panel stretches out behind the steering wheel. With its clear emphasis on width, it continues the horizontal lines from the exterior design in the interior. Exciting areas and powerful lines highlight the vehicle's sporty aspirations.

An eye-catching feature of the instrument panel is a large decorative trim element that is then continued along the doors in a very harmonious wrap-around effect. These generously proportioned trim elements, in a three-dimensional design, are available in four high-quality wood finishes, or in aluminium. The interior of the new Mercedes-Benz M-Class can thus be appointed to reflect either exclusive refinement or sporty sophistication, according to the customer's taste.

The door openers and seat adjustment switches have been inset with precision craftsmanship into the side trim elements. The door centre panels feature distinctive decorative stitching, with a separate, exclusive look for the Sports package.

All clear: instruments and COMAND screen

The instrument cluster with its two clear and extremely legible round dials and a large, 11.4 cm monochrome display between them, impresses with the high quality of its design. Dominating the centre of the instrument panel in the centre of the vehicle is the large 17.8 cm colour screen for COMAND Online. The control and display concept was developed specifically with user-friendly operation in mind. Infotainment, navigation and communication systems are intuitive and easy to operate using the metal Controller located on the centre console. Two buttons are used to switch the display on and off.

Vertical rectangular air intake vents either side of the large screen serve to emphasise the more functional aspects of the SUV. The outer air vents are the same shape but in this case horizontally positioned, thus giving added design flair. The dashboard console and air intake vents feature edging with a quality Silver Shadow finish. The row of high-gloss silver switches in the dashboard console are characterised by their ergonomic design and discernible precision. The same applies to the air conditioning and ventilation setting, as proven in Mercedes-Benz saloons.

The centre console incorporates an integrated arm and handrest, in front of which is located the Controller and various switches, such as those for the off-road programmes and AIRMATIC air suspension. All controls feature a quality, uniform look.

Numerous stowage facilities, high degree of variability and temperature-controlled cup holders

Numerous, easily accessible stowage facilities in the M-Class can accommodate bottles, mugs, keys, coins and much more. Each of the four doors can also accommodate a large 1-litre bottle.

Lifting the handrest in the centre console opens up a stowage compartment which houses easily accessible connections for mobile audio devices. To make long journeys and extensive off-road excursions more enjoyable, the centre console also features two cup holders which can keep drinks either cool or warm at temperatures of between 8° and 55° Celsius.

The seats in the new M-Class are designed to provide a high level of comfort on long journeys as well as excellent lateral support. All important parameters can be electrically adjusted, including height, backrest angle, seat cushion angle and reach. Generous seat adjustment travel of more than 350 millimetres lengthways and more than 90 millimetres in height ensure that drivers of all sizes will always find the ideal seating position.

A high level of variability characterises the rear seats, which are fitted with an armrest and cup holder. The angle of their backrests can be adjusted, and they can be also folded in the ratio 1/3:2/3, thus creating a through-loading feature for long objects, such as skis, without having to sacrifice all of the rear seat positions. Folding both backrests as well as the seat cushions forward creates a level load compartment with a capacity of 2010 litres up to the roof liner.

Mercedes-Benz ML 250 BlueTEC 4MATIC

Engine		
No. of cylinders/arrangement		4 in-line, 4 valves per cylinder
Displacement	cc	2143
Bore x stroke	mm	83.0 x 99.0
Rated output	kW	150 at 4200 rpm
Rated torque	Nm	500 at 1600–1800 rpm
Compression ratio		16.2 : 1
Mixture formation		Direct high-pressure injection, common-rail technology, two-stage turbocharging, EDC,
Emission control/rating		DPF, SCR with AdBlue© injection, EU6
Power transmission		
Transmission		7G-TRONIC PLUS electronically controlled seven-speed automatic transmission with torque converter lockup, twin-turbine damper with centrifugal pendulum, DIRECT SELECT gearshift, ECO start/stop
Drive system		4MATIC permanent all-wheel drive, ASR, ESP®, 4ETS, E/S/M drive mode switch, optional: ON&OFFROAD package with two-speed transfer case, multi-plate centre differential lock (up to 100 %) and six on and off-road driving modes for specific applications
Torque distribution front/rear		50:50
Reduction ratio with ON&OFFROAD package	i=	2.93
Final-drive ratio	i=	3.27
Gear ratios, i=	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.416 / 2.231
Chassis		
Front axle		Double-wishbone suspension, anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers
Rear axle		Multi-link suspension, anti-squat and anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers
Optional suspension		AIRMATIC air suspension with self-levelling and Adaptive Damping System (ADS)
Braking system		Hydraulic dual-circuit braking system with vacuum booster, stepped master brake cylinder, internally ventilated front/solid rear disc brakes, electric parking brake, ABS, BAS, option of BAS PLUS and/or PRE-SAFE© Brake
Steering		Electric steering
Wheels		8.5J x 19
Tyres		255/50 R 19

Dimensions and weights

		Data when equipped with: Steel suspension SDC	AIRMATIC ADS	ON&OFFROAD package
Wheelbase	mm		2915	
Track width, front/rear	mm	1653/1667	1648/1663	1648/1663
Overall length	mm		4804	
Overall width	mm		1926	
Overall height, min/max	mm	1788	1758/1818	1758/1848
Overhang, front/rear	mm		880/1009	
Ground clearance	mm	191	255	285
Angle of approach	degrees °	26	30	31
Angle of departure	degrees °	25	28	29
Breakover angle	degrees °	17	20	22
Tilt angle	degrees °	35	35	35
Fording depth	mm	500	500	600
Slope climbing ability	%	80	80	100
Boot capacity	l		690/2010	
Kerb weight acc. to DIN (EC Directive*)	kg		2150	
Payload acc. to DIN (EC Directive)	kg		800	
Perm. GVW	kg		2950	
Towing capacity braked	kg		3000	
unbraked	kg		750	
Tank capacity	l		93	

Performance and fuel consumption

Acceleration 0–100 km/h	s	9.0
Top speed	km/h	210
Fuel consumption		
Combined	l/100 km	6.4
CO_2	g/km	168

*In accordance with 1992/21/EC, standard equipment including driver (68 kg), luggage (7 kg) and fuel tank 90% full

Engine		
No. of cylinders/arrangement		6/V, 4 valves per cylinder
Displacement	cc	2987
Bore x stroke	mm	83.0 x 92.0
Rated output	kW	190 at 3600 rpm
Rated torque	Nm	620 at 1600–2400 rpm
Compression ratio		15.5 : 1
Mixture formation		Direct high-pressure injection, common-rail technology, VNT turbocharger. EDC
Emission control/rating		DPF, SCR with AdBlue© injection, EU6

Power transmission		
Transmission		7G-TRONIC PLUS electronically controlled seven-speed automatic transmission with torque converter lockup, twin-turbine damper with centrifugal pendulum and DIRECT SELECT gearshift, ECO start/stop
Drive system		4MATIC permanent all-wheel drive, ASR, ESP®, 4ETS, off-road driving mode, optional: ON&OFFROAD package with two-speed transfer case, multi-plate centre differential lock (up to 100%) and six on and off-road driving modes for specific applications
Torque distribution, front : rear axle		50:50
Reduction ratio with ON&OFFROAD package	i=	2.93
Final-drive ratio	i=	3.27
Gear ratios, i=	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.416 / 2.231

Chassis	
Front axle	Double-wishbone suspension, anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers
Rear axle	Multi-link suspension, anti-squat and anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers Front and rear axle optionally available with ACTIVE CURVE SYSTEM for active roll stabilisation
Optional suspension	AIRMATIC air suspension with self-levelling and Adaptive Damping System (ADS)
Braking system	Hydraulic dual-circuit braking system with vacuum booster, stepped master brake cylinder, internally ventilated front/solid rear disc brakes, electric parking brake, ABS, BAS, option of BAS PLUS and/or PRE-SAFE© Brake
Steering	Electric steering
Wheels	9J x 20
Tyres	265/45 R 20

Dimensions and weights

		Data when equipped with: Steel suspension SDC	AIRMATIC ADS	ON&OFFROAD package
Wheelbase	mm		2915	
Track width, front/rear	mm		1648/1663	
Overall length	mm		4804	
Overall width	mm		1926	
Overall height	mm	1796	1758/1818	1758/1848
Overhang, front/rear	mm		880/1009	
Ground clearance	mm	202	255	285
Angle of approach	degrees °	26	30	31
Angle of departure	degrees °	25	28	29
Breakover angle	degrees °	17	20	22
Tilt angle	degrees °	35	35	35
Fording depth	mm	500	500	600
Slope climbing ability	%	80	80	100
Boot capacity	l		690/2010	
Kerb weight acc. to DIN (EC Directive*)	kg		2175	
Payload acc. to DIN (EC Directive)	kg		775	
Perm. GVW	kg		2950	
Towing capacity braked	kg		3265	
unbraked	kg		750	
Tank capacity	l		93	

Performance and fuel consumption

Acceleration 0–100 km/h	s	7.4
Top speed	km/h	210
Fuel consumption		
Combined	l/100 km	7.3
CO_2	g/km	192

*In accordance with 1992/21/EC, standard equipment including driver (68 kg), luggage (7 kg) and fuel tank 90% full

Engine		
No. of cylinders/arrangement		6/V, 4 valves per cylinder
Displacement	cc	3498
Bore x stroke	mm	92.9 x 86.0
Rated output	kW	225 at 6500 rpm
Rated torque	Nm	370 at 3500–5250 rpm
Compression ratio		12.2 : 1
Mixture formation		Microprocessor-controlled, spray-guided direct petrol injection, stratified operation
Ignition		Multi-spark ignition (MSI)
Emission control/rating		3-way cat. converter, DeNOx cat. converter, EGR, EU5
Power transmission		
Transmission		7G-TRONIC PLUS electronically controlled seven-speed automatic transmission with torque converter lockup, twin-turbine damper and DIRECT SELECT gearshift, ECO start/stop
Drive system		4MATIC permanent all-wheel drive, ASR, ESP®, 4ETS, off-road driving mode, optional: ON&OFFROAD package with two-speed transfer case, multi-plate centre differential lock (up to 100%) and six on and off-road driving modes for specific applications
Torque distribution, front : rear axle		50:50
Reduction ratio with ON&OFFROAD package	i=	2.93
Final-drive ratio	i=	3.67
Gear ratios, i=	1st gear	4.38
	2nd gear	2.86
	3rd gear	1.92
	4th gear	1.37
	5th gear	1.00
	6th gear	0.82
	7th gear	0.73
	Reverse	3.416 / 2.231
Chassis		
Front axle		Double-wishbone suspension, anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers
Rear axle		Multi-link suspension, anti-squat and anti-dive control, coil springs, torsion-bar stabiliser, SDC gas-pressure shock absorbers Front and rear axle optionally available with ACTIVE CURVE SYSTEM for active roll stabilisation
Optional suspension		AIRMATIC air suspension with self-levelling and Adaptive Damping System (ADS)
Braking system		Hydraulic dual-circuit braking system with vacuum booster, stepped master brake cylinder, internally ventilated front/solid rear disc brakes, electric parking brake, ABS, BAS, option of BAS PLUS and/or PRE-SAFE© Brake
Steering		Electric steering
Wheels		9J x 20
Tyres		265/45 R 20

Dimensions and weights

		Data when equipped with:		
		Steel suspension SDC	AIRMATIC ADS	ON&OFFROAD package
Wheelbase	mm		2915	
Track width, front/rear	mm		1642/1657	
Overall length	mm		4804	
Overall width	mm		1926	
Overall height	mm	1796	1758/1818	1758/1848
Overhang, front/rear	mm		880/1009	
Ground clearance	mm	202	255	285
Angle of approach	degrees °	26	30	31
Angle of departure	degrees °	25	28	29
Breakover angle	degrees °	17	20	22
Tilt angle	degrees °	35	35	35
Fording depth	mm	500	500	600
Slope climbing ability	%	80	80	100
Boot capacity	l		690/2010	
Kerb weight acc. to DIN (EC Directive*)	kg		2130	
Payload acc. to DIN (EC Directive)	kg		770	
Perm. GVW	kg		2900	
Towing capacity braked	kg		3265	
unbraked	kg		750	
Tank capacity	l		93	

Performance and fuel consumption

Acceleration 0–100 km/h	s	7.6
Top speed	km/h	210
Fuel consumption		
Combined	l/100 km	8.9
CO_2	g/km	208

*In accordance with 1992/21/EC, standard equipment including driver (68 kg), luggage (7 kg) and fuel tank 90% full