Driving Safety

Mercedes-Benz

Competence in Safety.

Safety is the cumulative effect of many systems operating together.
From its origins, Mercedes-Benz has been driven to create increasingly better automobiles. Since their invention by Gottlieb Daimler and Karl Benz, cars have not only become faster, but also safer and more comfortable. Though traffic density has constantly increased, accident risk continues to decline, the result of enormous progress in active safety (avoidance of accidents) and in passive safety (minimization of risk of injury in accidents). For decades now, Mercedes-Benz has made a decisive contribution with its fundamental development work on vehicle safety.

Active Safety divided by four.
Mercedes-Benz views a vehicle's active safety capabilities as being the sum of four basic characteristics that affect both a vehicle's daily use and its handling in critical driving conditions. These characteristics cover the areas:

Handling and Stability.
Driving safety is improved when a vehicle's performance is as predictable and controllable as possible, especially in situations that approach the car's dynamic limits. In Mercedes-Benz vehicles, this is achieved through a well tuned chassis design and the use of additional electronic handling and stability enhancement systems.

Vehicle Operation.
Ergonomic layout of switches and controls provide simple, intuitive operation of vehicle functions that allow the driver to concentrate on what is essential: Driving the car.

Driver Fitness.
Driving can be stressful and fatiguing, particularly over long distances. Among other things, the driver must concentrate on accelerating, braking, keeping in lane and maintaining a safe distance. Stress and fatigue can be worsened by vibration and noise, inadequate air conditioning or uncomfortable seats. Mercedes-Benz designs its vehicles to be quiet and smooth, while still affording appropriate road feel and feedback, to have comfortable and supportive seats and effective climate control systems. An alert and relaxed driver is less likely to make a driving error that can result in an accident.

Vision and Visibility.
The driver's ability to see and the vehicle's visibility are both crucial for driving safety. Mercedes-Benz attaches great importance to the driver's ability to see, for example by providing good roadway illumination through the use of advanced lighting systems. In addition, Mercedes-Benz traditionally focuses on good visibility, for example with very noticeable turning signal lamps on the side view mirrors.

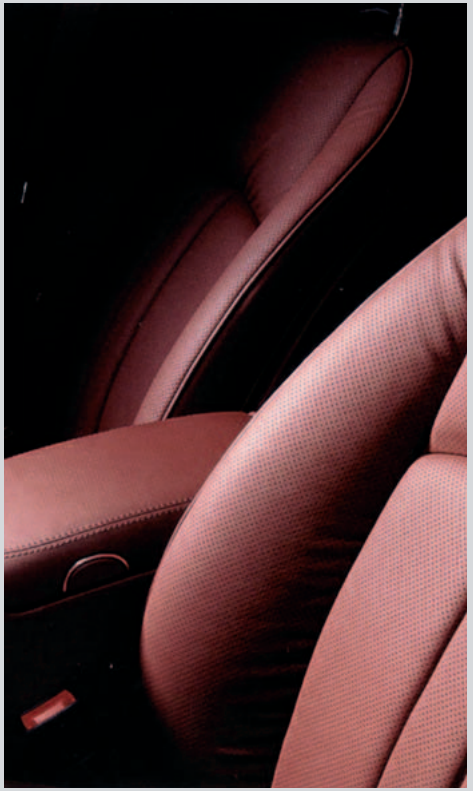
Active Safety Systems – a Mercedes-Benz tradition.
Designing active safety capability into its vehicles has a long tradition at Mercedes-Benz. Many safety systems had their world premiere in Mercedes-Benz vehicles. In 1978, Mercedes-Benz was the first manufacturer to fit a production vehicle with an anti-lock braking system (ABS), and in 1995 Mercedes-Benz pioneered the first commercially available electronic driving stability assistance system, ESP®, the Electronic Stability Program.
Please take a few minutes to read on to learn more about these and other systems and to learn more about other aspects that can affect the safe operation of your vehicle such as vehicle loading and tire maintenance.

A C T I V E S A F E T Y

HANDLING AND STABILITY

VEHICLE OPERATION

DRIVER FITNESS



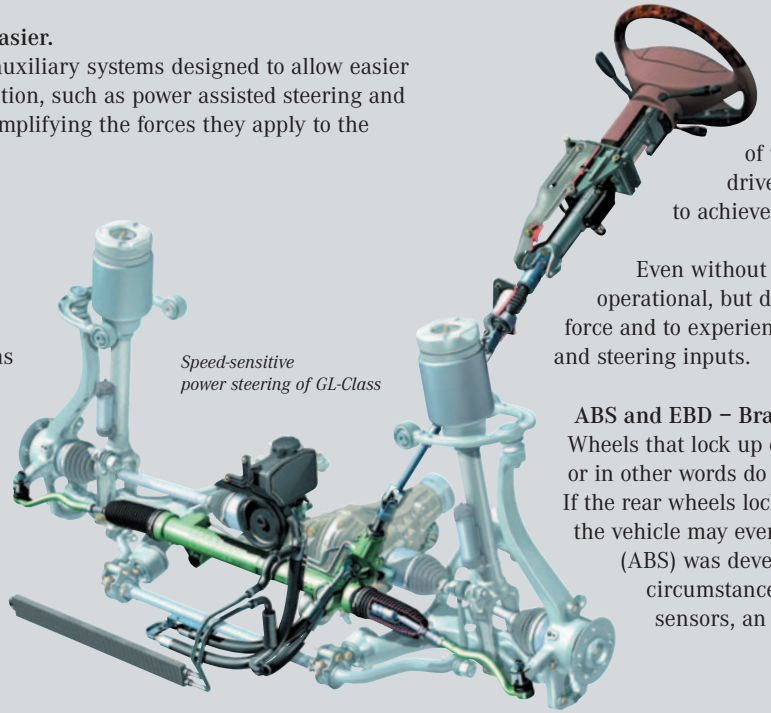
VISION AND VISIBILITY

Active for your safety.

Handling and stability systems.
In an effort to achieve the goal of optimized driving capability and thus safer driving even under adverse weather conditions (rain, snow, ice) or in demanding driving situations such as braking in curves or during evasive maneuvers, Mercedes-Benz vehicles combine a well-balanced chassis with the application of electronic driving safety systems. While no system, regardless of how advanced, can overcome physics, these systems can afford all drivers significant safety advantages.

Making steering and braking easier.
Mercedes-Benz employs robust auxiliary systems designed to allow easier and more effective vehicle operation, such as power assisted steering and brakes that support drivers by amplifying the forces they apply to the vehicle controls.

While these systems assist the driver in normal operating conditions, drivers should keep in mind that both can become unavailable if the engine is not running. Most traditional systems derive their power from the operation of the engine. Some Mercedes-Benz vehicles are equipped with electronically assisted systems: An electronic steering system or an electro-hydraulic braking system. These systems continue to operate even if the engine is not running, so long as the power source (i.e. battery) remains intact and powered.
Pneumatic assisted brakes are powered by the vacuum produced in gasoline engines by the engine air intake system, while Diesel vehicles produce a vacuum with an engine-driven vacuum pump. Power assist to these brake systems is only available when the engine is running and for one or two hard braking applications after engine turn off before the vacuum reserve is dissipated.



Speed-sensitive power steering of GL-Class

Due to their operational characteristics, repeated rapid and successive brake actuation of vacuum pump-based systems can sometimes lead to a momentary stiffening of the brake pedal. When this happens, the driver has to push the brake pedal much harder to achieve the desired braking effect.

Even without power assist, the steering and brakes remain operational, but drivers must be prepared to apply much more force and to experience much slower vehicle reaction to braking and steering inputs.

ABS and EBD – Braking without lockup.
Wheels that lock up during braking cannot transmit lateral forces, or in other words do not allow the vehicle to be effectively steered. If the rear wheels lock up, or if one side of the roadway is slippery, the vehicle may even spin out. The anti-lock braking system (ABS) was developed by Mercedes-Benz to help address this circumstance. The system consists of wheel rotation sensors, an electronic and a hydraulic control unit.

If, at vehicle speeds exceeding walking speed, the system detects differences in wheel spin speed suggesting possible wheel lock up, ABS modulates the brake application pressure at each wheel, so that the wheels are less likely to lock up, even on a slippery road. This permits the vehicle to remain controllable and it will follow its steered path as far as the laws of physics and available traction permit.

The driver may feel a pulsating of the brake pedal when ABS engages. That is normal. Some brake systems (e.g. electro-hydraulic brakes) indicate ABS operation with a flashing yellow ABS/ESP® indicator light. With those systems, brake pedal pulsation is not noticeable. In both cases, the driver should continue to depress the brake pedal as hard as possible until the braking situation has passed.

On loose surfaces (gravel, snow etc.), braking distance with ABS can sometimes be longer, because with the wheels continuing to rotate, no material can pile up to a wedge-like shape in front of the wheels. However, this is far outweighed by the preservation of steering control and tracking stability that ABS affords.

During sharp braking on a surface that is slippery on one side only, the vehicle can pull to the non slippery side despite ABS intervention, because a greater extent of brake force can be transmitted to the road at the non slippery side. The driver must then intervene by adjusting the steering.

If ABS is unavailable for any reason, the yellow ABS warning lamp in the instrument cluster is steadily illuminated, and in some models a text message appears in the multi-function display. The power assisted brake system itself continues to be fully effective, but without the benefit of ABS. Thus, in order to maintain steering control, the driver must counter wheel lockup by applying the brake pedal in a manner that is appropriate to the situation, especially when on slippery surfaces.

Electronic brake force distribution (EBD) is an additional system that helps to prevent the rear wheels from locking up. EBD remains active, even if ABS is not available. The brake warning light will come on, or a text message will appear in the multi-function display to tell the driver if EBD is not available. When this is the case, all other brake-monitoring systems (ABS, BAS, ESP®, ASR) are also deactivated.
Of course, both ABS and EBD can only maintain tracking stability during braking as far as the laws of physics and available traction permit.

All Mercedes-Benz vehicles sold in North America since 1989 and since 1992 in all other countries have been equipped with anti-lock braking systems.

BAS - Emergency braking support.
Mercedes-Benz research on accidents shows that, in emergency braking situations, drivers often step on the brake pedal quickly but not hard enough. That wastes valuable stopping distance. The brake assist system (BAS), standard in all current Mercedes-Benz vehicles, is designed to assist in these situations.
BAS constantly monitors the brake pedal application speed. When this speed exceeds a preset threshold, the system recognizes that an emergency braking situation exists and applies full brake power assist. The anti-lock braking system (ABS) is there to prevent wheel lock-up, so the vehicle remains steerable. If the driver significantly reduces pressure on the brake pedal, the BAS power assist supplementation is cut off immediately and the brake functions normally again. If ABS is not operating, BAS is also deactivated. The ABS warning lamp is illuminated when this occurs.

ASR - accelerating without wheel spin.
Like locked-up wheels, spinning cannot support effective vehicle directional control and contribute little to the forward movement of the car. Excessive accelerator pedal application on a loose or slick surface, such as ice, snow, wet cobblestones, gravel, and so on, can also lead to a sideways slide or a departure from the roadway. Anti-spin regulation (ASR) senses drive wheel spin through the use of rotational speed sensors and reports it to the engine control unit. The spinning wheel is automatically braked and engine power can be simultaneously reduced to a level that the tire can transmit to the road without slipping given the existing roadway conditions. The momentary brake application on the spinning drive wheel also increases torque transfer to the opposite drive wheel. This makes it possible to move from a standing start when one side of the road is slippery. At higher speeds, wheel spin is countered by a reduction in engine power only. The flashing of the yellow ESP®/ASR warning lamp during acceleration indicates that traction conditions at the drive wheels resulted in ASR intervention. ASR improves forward propulsion as far as the laws of physics and available traction permit, and contributes to driving stability.

The throttle control aspect of ASR is advantageous in most driving circumstances. However, in very limited circumstances, such as where the digging effect of spinning wheels on loose surfaces (e.g. in deep snow) is needed, ASR can be manually deactivated by a switch. Some newer models are equipped with an automatic drive-off aid for loose surfaces that temporarily deactivates ASR. Even when ASR is deactivated, automatic brake applications to a spinning drive wheel to improve traction still take place.

ESP® – four brake pedals for your safety.
In the 80's, engineers of Mercedes-Benz had an idea for improving driving safety that was both ingenious and simple: the Electronic Stability Program (ESP®). If ESP® detects the vehicle deviating from the driver's intended direction, one or more wheels are deliberately braked to stabilize it - as if the vehicle had four individual brake controls.

Additionally, if necessary, the throttle is automatically adjusted in order to help hold the vehicle on the desired course, within the limits of physics. The heart of ESP® is a yaw rate sensor that continuously measures the rotation of the vehicle around its vertical axis, which is then compared to the driver's desired course based upon various factors including steering wheel position and the speed of the car.

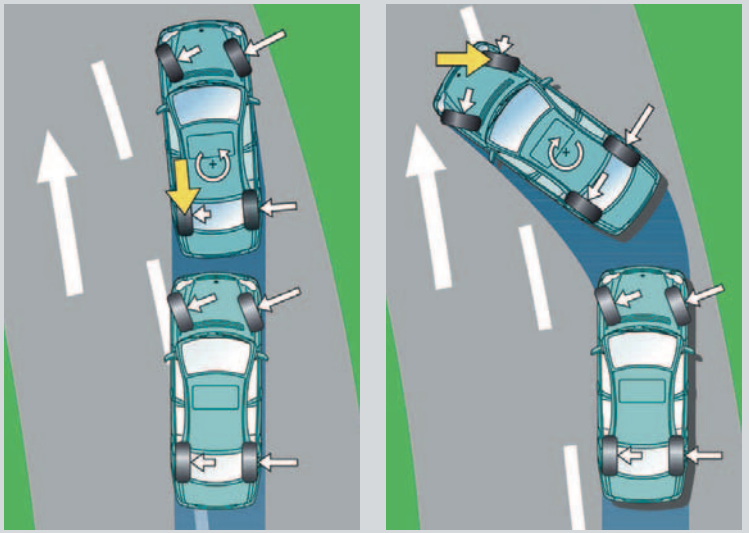
If for example, the vehicle is tending to understeer (to plow out on a curve), brake application is initiated on the inside rear wheel, producing a moment which pulls the vehicle's front end further into the curve to be more consistent with the driver's steering. If the rear of the vehicle is about to oversteer (to slide or skid out), brake application is made on the outside front wheel, which counteracts the skidding motion again within the laws of physics. When ESP® cuts in the yellow ESP® instrument cluster indicator flashes.
ESP® can be switched off manually in some models, at which point the yellow ESP® indicator will be permanently lit. Even then, ESP® assists during braking and, depending on the model, ESP® may still intervene in critical driving situations (in a skid, for instance). It is recommended to leave ESP on at all times.

Since the end of 1999, all Mercedes-Benz vehicles in production are equipped with ESP®.
Just like ABS and ASR, which are integral parts of the Electronic Stability Program, ESP® can only be as effective as traction between the tires and road permit. Depending on road conditions, inappropriate tires, such as summer tires in winter, limit the effectiveness of driving safety systems. ESP® cannot prevent skidding due to hydroplaning, since the tires are not in contact with the road. ESP® also cannot detect crosswinds.

If the vehicle is over-responding to strong gusts of wind, the driver must reduce speed and stabilize the vehicle with appropriate braking and steering. If ESP® is not functioning, a text message appears in the multi-function display or, in some models, a yellow indicator in the instrument cluster lights up. The driver must then adapt his driving accordingly.

Understeer:
The front wheels plow out. Vehicle stabilization by automatic brake application on the left rear wheel.

Oversteer:
The rear of the car is about to break away. Vehicle stabilization by automatic brake application on the right front wheel.



4MATIC and 4ETS – all-wheel drive.
With 4MATIC full-time all-wheel drive, each wheel contributes to vehicle propulsion and in this way, working with ESP®, can offer additional driving stability in many situations: when starting, accelerating and traveling through curves, on ice, snow and leaves, on bad roads, on wet roads or when pulling a trailer.
A special feature of 4MATIC is that it can simulate the effect of locking differentials.

Wheel slippage and the possibility of engine power all going to a slipping wheel is controlled by 4ETS electronic traction system. 4ETS is engaged when one or more wheels begin to spin on slippery surfaces. It then brakes each of the spinning wheels automatically and thereby continues the transfer of torque to the wheels with better surface adhesion.

The 4ETS automatic brake action can achieve the effect of up to three differential locks. Above a defined speed limit, 4ETS is no longer available to increase driving stability.
4MATIC uses all four wheels to transfer torque into propulsion force, so that the vehicle can better accelerate on slippery surfaces like snow. However, tire characteristics are decisive for traction, braking action and tracking stability on slippery roads. Therefore, all-wheel drive cannot replace winter tires and driving in a manner suitable to the reduced traction afforded by such conditions.

AIRMATIC and ADS - carried on air.
The Mercedes-Benz AIRMATIC, along with the ADS active damping system, is able to regulate the suspension in response to the driving situation. The conventional steel springs at the wheels are each replaced by rubber bellows filled with compressed air, resulting in a relatively compliant and comfortable suspension setting and high levels of ride comfort independent of the vehicle load levels. In addition, ADS adapts the shock absorption characteristics to driving conditions to improve ride quality and handling, particularly on uneven roads and in demanding driving conditions.
The AIRMATIC DC (dual control) is able to reduce the air volume in the air spring when driving on winding roads or in other demanding situations, resulting in a stiffer suspension characteristic and further improved handling and stability.

AIRMATIC and AIRMATIC DC include an all-around level control providing consistent vehicle level, even when the vehicle is loaded. During high-speed driving the body is lowered automatically to reduce aerodynamic drag, and raised again at low speeds to the normal level.
By pressing a switch while driving slowly, the vehicle can be further raised, if more ground clearance is required. After longer travel at higher speed, the normal level is automatically reset. Raising the vehicle level leads to a degradation of handling performance and poorer stability due to a higher position of the center of gravity, and should therefore not be

selected under more dynamic driving conditions.

ABC - against pitching and rolling.
Chassis design must strike a compromise between stability, handling and comfort. Typical sports cars have a stiff suspension and are firmly damped, while comfort requires softer springs and shock absorbers. Moreover, varying vehicle loadings and driving conditions must also be taken into consideration. Active Body Control (ABC) is a system that combines handling, comfort and stability through active suspension control. Unlike the operation of a conventional steel spring suspension, body position is actively controlled by high-pressure hydraulics, a high-speed computing unit and sophisticated sensor technology. Body pitch during acceleration, dive during braking and lean while driving through curves are substantially reduced by ABC. In addition to strut position the system also measures the actual loading of the vehicle. The ABC's electronic control unit instructs the system to send precisely measured quantities of hydraulic fluid to each individual suspension strut, extending the hydraulic actuating cylinders and reducing movement of the car body during accelerating and braking, or on curving or rough roads. ABC also provides all-round vehicle level control. At high speeds the body is lowered automatically to reduce aerodynamic drag and raised again to normal level at slower speeds. If the vehicle needs more ground clearance while traveling slowly on poor roads, the vehicle can be raised further by depressing a switch. When traveling at higher speeds the normal level is automatically reset.

ABC cannot exceed the limits imposed by physics or improve road conditions. Further, the reduction of the usual vehicle feedback such as vehicle lean in curves requires the driver to pay careful attention to vehicle speed in turns to make sure that the speed taken into a turn does not exceed the vehicle's and driver's ability to maintain control on the road. Unavailability of ABC or AIRMATIC is indicated by a text message in the multi-function display. Then the vehicle level may be too low. The driver must then adapt his driving style and speed accordingly.

Carrying cargo. Increased caution required.

Towing a trailer imposes special demands on driver and vehicle. First, the vehicle must only be used to tow items that do not exceed maximum tow weights and maximum permissible tongue weights. The correct loading of the trailer, compliance with permissible tow, hitch and axle loads, and correct tire pressure settings in the tow vehicle, are the prerequisites for safe trailer operation. Second, the driver must become familiar with how to drive a vehicle while towing and must adapt to a significant change in vehicle behavior. Among other things, acceleration and climbing performance are reduced, braking distance is lengthened, steering requires greater care, sensitivity to crosswinds increases and directional stability worsens. A level control at the rear axle of the towing vehicle affects stability in a positive way. Trailers are prone to oscillations when impacted by crosswinds, or on uneven road surfaces, and all the more so at excessive speed. If the trailer begins to oscillate, the driver should decelerate and brake, but should not try to counter-steer. An oscillating trailer cannot be stabilized by acceleration.

Securing cargo - as important as using your seatbelts.
Vehicle loading has a decisive effect on road safety. Permissible total weight and permissible axle and roof loads must not be exceeded.
It is important that all interior cargo is properly secured as such items can become projectiles, potentially injurious or even lethal to passengers. In addition, sliding and unsecured cargo could impair vehicle handling. Secure cargo in the interior and trunk to prevent it from sliding around. Load the cargo as symmetrically as possible around the vehicle's longitudinal center line. Secure items by nesting them positively against each other and the body work, or secure cargo by strapping it down with a sufficient quantity of tie-down straps. Roofs should only be loaded employing

Load securing by nesting

Load securing with tie strap

Mercedes-Benz roof racks approved for use on your vehicle and the roof load must be securely fastened to the roof rack.
For your own safety and the safety of other road users, cargo on a trailer must be secured just as carefully as cargo in or on the vehicle.

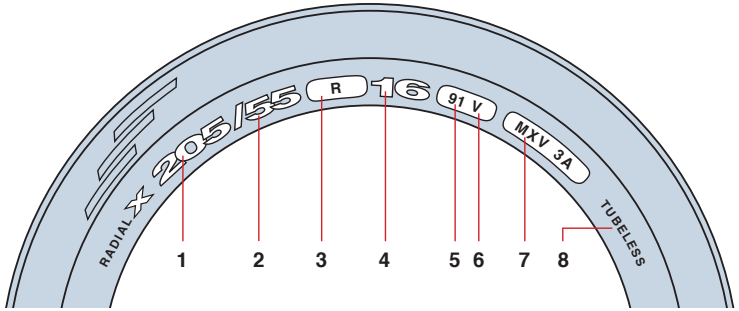
Correct loading - a matter of distribution.
With a loaded trunk or cargo compartment, or when bicycle racks are carried on the rear of the vehicle, load distribution is displaced to the rear axle. This impairs handling in critical driving conditions. Heavy loads in the trunk should therefore be placed as far forward as possible and driving adapted to the new conditions. Automatic leveling control increases driving safety under load, since full spring travel is maintained.
Tire pressure must also be adapted to the load. Roof cargo impairs aerodynamics and raises the vehicle's center of gravity. Thus handling deteriorates while sensitivity to crosswinds increases and directional stability declines. Roof cargo should be avoided if possible, to reduce fuel consumption as well. Mercedes-Benz recommends using only tested and approved carrier systems and accessories for securing loads.

Where the car and road meet.

Today all Mercedes-Benz passenger vehicles in production are equipped with ABS, BAS and ESP® including ASR. However these systems can display their full safety potential only if the tires can provide their expected performance. They are an integral component of driving safety. We all know how important correct footwear is. That is exactly the case with automobiles. The tire is where the car and the road interact. The better that interaction, the better the vehicle can perform.
The basic function of the tires is to transfer forces between the vehicle and the roadway: longitudinally, when accelerating and braking, and laterally, when negotiating curves. The four contact areas through which the forces are transmitted are each about the size of the palm of your hand. And as if that is not enough, the tires must bear the entire vehicle weight including the forces of its motions while being driven, at variable speeds, and over thousands of miles: A challenging task, on which much depends.

Get to know your tires better.
The markings on the tire sidewall contain important information, which each driver should know. Apart from the tire dimension and rim diameter there is also information like the maximum permissible speed, specified direction of rotation, production date and the maximum permissible load for that tire. For more information, see your Mercedes-Benz service outlet.

Help your tires to help you.
If you want the maximum safety performance from your tires, observe the following simple maintenance and servicing rules. As tires age their road gripping power declines. Mercedes-Benz recommends replacing the tires, including the spare, after no longer than six years, even if they are not badly worn. The production date is documented on the side wall.

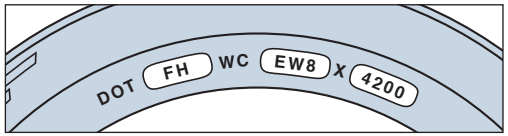


1 Nominal tire width in millimeters
2 Ratio of height to width in %
3 Radial ply body
4 Nominal diameter in inch
5 Load index 91 = 1355 lbs (615 kg)
6 Speed rating symbol V = up to 149mph
7 MXV 3A=Manufacturer's tire designation
8 Tubeless tire

Speed rating								
Q	R	S	T	H	V	W	Y	ZR
Up to 99 mph (160 km/h)	Up to 106 mph (170 km/h)	Up to 112 mph (180 km/h)	Up to 118 mph (190 km/h)	Up to 130 mph (210 km/h)	Up to 149 mph (240 km/h)	Up to 168 mph (270 km/h)	Up to 186 mph (300 km/h)	above 149 mph (240 km/h)

Also check the flat tire breakdown set in your vehicle (Tirefit or collapsible spare tire including electric pump, temporary use spare or full sized spare, depending on model) and replace as necessary. Note particularly that temporary use spare tires must not be used for more collective miles than stated. New tires must be carefully broken in for the first 60 miles (100 km), since only then will they be able to function to their designed performance level.

The DOT number indicates week and year of production
For example:
4200 –> Date of manufacture
42nd Calendar week (CW), 2000



Tires before 2000:
three-digit DOT number (WWY), Example: 039 –> Date of manufacture 3rd CW, 1999

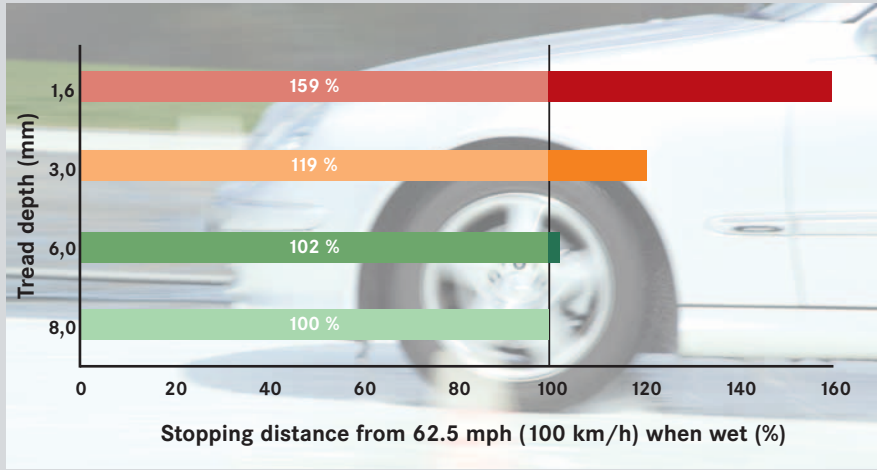
Tire rotation.
Regular rotation of tires can extend the service life of a set of same wheels (tires and rims). The tires should always be rotated between the front and rear positions on the same side, and never diagonally. The same tire type and design must be fitted on each axle. In addition, Mercedes-Benz recommends installing the same tire make and model on both axles, since otherwise road behavior can change substantially. Sporty cars often have tire or rim dimensions that differ between front and rear axles, and so wheels cannot be rotated between axles. To improve hydroplaning and traction behavior, a mandatory direction of rotation is specified for some tires. Please make sure to follow those specifications.
Mercedes-Benz recommends installing only tires specially selected and approved for your vehicle by Mercedes-Benz. You can be sure that tires marked “MO” (Mercedes Original) on the sidewall are of the same design, type and performance character as those considered by Mercedes-Benz in designing its safety systems and determining its dynamic behavior. Your Mercedes-Benz dealer has such tires and is able to install them professionally.

Tire care and inspection.
Tires should be cleaned regularly and be checked for damage, especially if you have been driving off-road or on roads in poor condition. To prevent punctures, any objects caught in the tread should be immediately removed. For tire cleaning, do not use aggressive cleaning agents and devices like high pressure cleaners, since they could damage the tire's outer skin. Tires should not come into contact with agents containing oil, or with solvents, fuels or chemicals.
Tires have a memory! Once damage has occurred it does not heal. When parking, ensure that the tire is not scrubbed. Avoid curbs, speed bumps or potholes, or take them slowly and at an angle, since otherwise sensitive sidewalls could be damaged. If you use tire chains to travel through deep snow, please make sure to remove them when you reach cleared pavement, otherwise the tires will be damaged.

Correct tire pressure.
The tire pressure should be checked regularly, at least every two weeks, with the tires cold – the applicable values are shown at the B-pillar or at the fuel filler door. Correct tire pressure is critical for tire service life and wear. Insufficient pressure not only increases wear but can also overheat the rubber by crimping the tread and sidewalls, destroying the tire. There is also an increased risk of hydroplaning. Excessive pressure increases tread wear, and decreases the tire contact patch, reducing driving safety. In vehicles with Tire Pressure Monitoring System or Runflat Tire Indicator, the systems must be reactivated after the tire pressure has been corrected.

Store tires correctly.
There are some important basic rules with the storage of your tires in order to prolong their performance. They should always be stored in a cool and dry place, protected against direct sunlight and against contact with oil, fuel or chemicals.

Check the tread.
Tires without tread are like shoes with worn-out soles. Shallow tread depth substantially degrades braking distance, traction, lateral control and hydroplaning characteristics. Legal minimum tread depth is 1.6 mm or 1/16 inch. This is indicated by tread wear marks around the tire circumference, identified by the TWI (Tread Wear Indicator) symbol on the sidewall. Studies show a degradation of braking distance from 62.5 mph (100 km/h) of almost 60% on wet roads for a tire with 1.6 mm (1/16 inch) of depth compared to a new tire with 8 mm (5/16 inches) of tread depth. Just to illustrate: If a vehicle can still come to a full stop in front of an obstacle from a speed of 62.5 mph (100 km/h) on wet roads with new tires, a vehicle with worn tires (tread depth 1.6 mm) would hit the obstacle at 38 mph (61 km/h), despite full braking.



Additionally the risk of hydroplaning rises as tread depth decreases. Modern road safety systems like ESP® and ABS are no help if there is no contact with the road surface.
Therefore, check tread depth on all tires regularly. Mercedes-Benz recommends replacing tires when tread depth reaches 3 mm (2/16 inches) (4 mm (1/6 inches) for winter tires).

Tire selection – the right tire for the anticipated use.
In addition to tread depth and proper inflation, the choice of the proper tire for the conditions to be encountered is extremely important for safe driving. Sandals in winter are just as inappropriate as summer tires for winter driving. Only rubber mixtures adapted to low temperatures and a tire tread designed for snow and ice can provide optimum adhesion and safety in winter. Winter tires are marked by "M+S" and by a “snowflake-on-the-mountain” symbol.

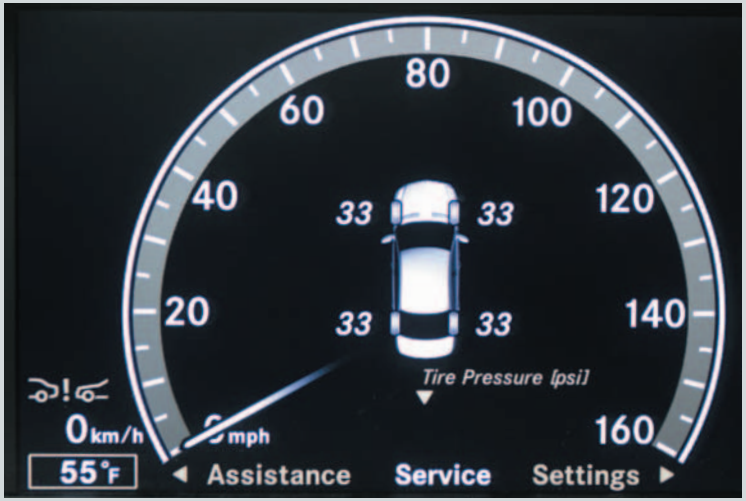
The use of summer tires on ice and snow dramatically degrades stopping distance, traction and lateral control. All-season-tires are only a compromise and do not have the capability for ice and snow performance offered by winter tires. For optimum performance, tires must be changed as the weather changes.

For off-road driving in sport utility vehicles, the correct tire selection for traction and safety is crucial, too. Tires designed for off-road use are specially strengthened, have a coarse tread pattern, and are self-cleaning, improving traction. This advantage is offset, however, by poorer on-road handling. You should always select the tires most appropriate for the anticipated use of your vehicle.

Regular checking helps you to keep your tires correctly inflated.
Statistically, a vehicle has a flat tire every 60,000 miles, or about once every 6 years. A deflated conventional tire can transfer only very limited longitudinal and lateral forces to the road. If you have a tire blowout while driving, to the extent that the driving situation permits, avoid abrupt steering movements, shift into neutral and brake with caution. Frequently an imperceptibly gradual loss of pressure occurs. Insufficient tire pressure causes overheating and can possibly destroy the tire. Tire pressure monitoring systems have been developed to alert the driver to irregular tire pressure earlier on. Mercedes-Benz offers two technically different systems: Tire Pressure Monitoring System and Tire Pressure Loss Warning System.

Tire Pressure Monitoring System (TPMS) and Tire Pressure Loss Warning System.
Tire Pressure Loss Warning System (USA: Run Flat Tire Indicator) measures tire pressure indirectly by using the sensor technology of ESP®. A change in tire pressure at one wheel produces a different rolling circumference and thus a change of rotational speed relative to the other wheels. To analyze whether a pressure loss is present, characteristic handling values are taken into consideration. The system informs the driver if a significant pressure loss is detected. Effectiveness of this system is reduced or delayed in any of the following cases: Wintry road conditions, tire chains installed, driving on loose surfaces such as sand, sporty driving style with high speeds in curves and sharp acceleration, towing a trailer, heavy loads or high roof load. Its operating principle doesn't allow pressure loss detection while the vehicle is stationary. After every modification of wheels and tires (pressure correction at the service station, tire change, wheel replacement, etc.) the Tire Pressure Loss Warning System must be restarted over the control system to teach the new correct tire pressure as the new reference value. If Tire Pressure Loss Warning System is not functioning, a text message will appear in the multi-function display.

The Tire Pressure Monitoring System measures pressure and temperature directly by sensors mounted at the rim. Antennas in the vehicle receive the data transmitted by radio signals and pass them on to the control unit. The system illuminates a low tire pressure telltale when one or more tires are significantly under-inflated below a preset level. The TPMS telltale will stay illuminated as long as the tire remains significantly under-inflated. Some vehicles also show the pressure in each tire in the multi-function display. Radio transmitters operated in the vehicle or nearby can interfere with Tire Pressure Monitoring System. The sensors of the system are precision electronic components that can be damaged or otherwise rendered inoperative if mishandled. Therefore tires should be changed only at qualified workshops. A text message appears in the multi-function display when Tire Pressure Monitoring System is not functioning.

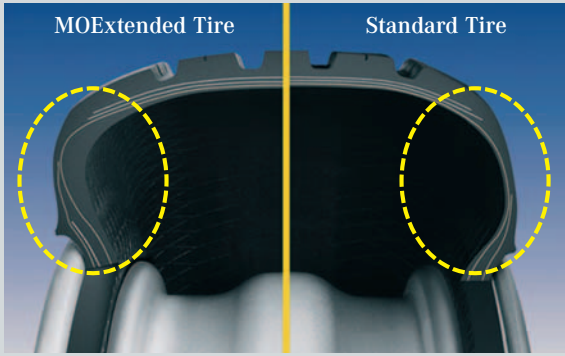


Tire Pressure Loss Warning System and TPMS cannot warn against sudden pressure loss such as may be caused by a penetrating sharp object. These systems do not replace regular tire inflation and condition checks. Drivers should check tire pressure frequently and adjust them to the recommended pressures indicated on the placard located at the driver's B-pillar (or at the fuel-filler door). Tires should be inspected regularly for damage and wear, including the spare wheel, if one is fitted.

Tires with run-flat capability.
In order to be able to continue driving to a limited extent in case of a flat until a suitable area to safely stop the vehicle is reached, tires with a “limp home” capability known as Mercedes Original Extended (MOExtended) have been developed. These tires work even with complete pressure loss as a reinforced sidewall can support the vehicle weight on that wheel and allow continuing driving for about 30 miles (50 km) or 18 miles (30 km), if fully loaded, at a maximum speed of 50 mph (80 km/h). The driver should expect a change in handling characteristics. Since the pressure loss is not immediately recognizable when driving, run-flat tires are permissible only in connection with a tire pressure monitoring system or tire pressure loss warning system (Run Flat Tire Indicator) and may only be driven on approved rims.

MOExtended tires should also be changed as soon as possible when they run flat. In particular attention must be paid to the maximum permitted speed and the maximum permissible distance applicable to driving a vehicle with deflated MOExtended tires. Regardless of whether driving after a flat tire is continued using a collapsible spare tire, Tirefit, temporary use tire or a MOExtended tire, drive with special care and attention. Please also note that MOExtended tires must not be repaired.

Additionally, Mercedes-Benz does not recommend the use of retreads, since pre-existing interior damage to the retreads cannot be detected with 100 % certainty, and thus an unpredictable risk of accident may exist, particularly at high speeds.



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