Mercedes-Benz

The new Mercedes-Benz GLS

Press Information

June 2019

The S-Class of SUVs

Contents

The descriptions and information in this press kit apply to the international model range of Mercedes-Benz. They may vary from country to country.

The main points at a glance

Superior luxury with a sense of practicality:
Three rows of power seats as standard offer lots of room and comfort for up to seven passengers thanks to a wheelbase of 3135 mm. The middle row can be moved electrically by 10 cm. All rear seats can be folded separately or at the same time at a single touch of a button to create a level loading area measuring over 2.20 m in length (maximum boot capacity of 2400 litres).

Air suspension as standard:
The standard-fit AIRMATIC ensures the right ground clearance independent of the load – and lowers the car for convenient entering and exiting, for loading and unloading the boot or for saving fuel on the motorway. Or it raises it to get over bumps in the terrain better – automatically or at the wish of the driver.

Intelligent suspension:
The optional active E-ACTIVE BODY CONTROL suspension is the only system on the market able to individually control the springing and damping forces at each wheel. Together with ROAD SURFACE SCAN and the curve tilting function CURVE, E-ACTIVE BODY CONTROL makes a quite exceptional level of comfort possible. And the rocking mode can help to extricate the GLS from difficult off-road situations.

GLS 580 4MATIC with electrified V8, ISG and EQ Boost (48 V):
The new V8 with a displacement of four litres and **360 + 16 kW** (489 +22 hp) combined fuel consumption: 10.1-9.8 l/100 km; combined CO_2 emissions: 230-223 g/km)[1], has lots of power – but it is also able to "sail" when the situation allows.

A new operating experience:
MBUX is a user experience revolution in the car with regard to 3D graphics, intuitive operation including via touchscreen and "Hey Mercedes" voice control,

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the ability to learn, as well as functions such as MBUX Augmented Reality or MBUX Interior Assistant. Standard equipment in the GLS, with two large 12.3-inch/31.2-cm screens arranged side by side for a sublime wide-screen look. And optionally with a tablet remote for the rear passengers.

To each passenger his own:
A five-zone climate-control system (a separate climate zone for the third seat row) is optionally available, climate-controlled seats with massage function also in the second row, and a remote control that enables all rear passengers to set their individual comfort and even intervene in the infotainment events on the big screen at the front - as long as the driver permits it …

Keeping conversations:
The optional sound systems from Burmester® integrate a two-way system for voice amplification. This makes it easy to have conversations from one end of the large interior to the other even when travelling at high speeds.

Clever in tailbacks:
In the new GLS, the latest generation of driving assistance systems from Mercedes-Benz ensures safe and relaxed driving. Some Intelligent Drive functions, such as Active Stop-and-Go Assist, are also without parallel beyond the SUV segment.

Feel-good factor:
ENERGIZING comfort control networks various comfort systems in the vehicle and uses lighting and musical moods plus a number of massages for a wide range of feel-good programmes. In addition, there is the ENERGIZING COACH, which recommends programmes according to the given situation, and ENERGIZING seat kinetics that sets the seat in motion.

Confident in any terrain:
The new GLS comes as standard with fully variable all-wheel drive (torque on demand). This makes it even more agile and safe on the road. The optional Off-Road Package adds a low-range off-road gear ratio. In addition, the E-ACTIVE BODY CONTROL controls the ground clearance individually at all wheels. This makes the GLS more off-road capable than ever. The off-road score in MBUX allows the driver to make the best of these possibilities.

The S-Class of SUVs

Stuttgart/Salt Lake City. The new Mercedes-Benz GLS is Mercedes-Benz's largest and most luxurious SUV and offers more of everything: more space, more comfort, more luxury. The confident presence of its exterior stems from its impressive dimensions, which are even larger than those of its predecessor (length +77 mm, width +22 mm). One of the benefits of 60 mm more wheelbase is interior spaciousness, especially in the second row. The three fully electrically adjustable seat rows offer all passengers a generous amount of space and seating comfort. The seats in the third row can be lowered into the floor electrically to increase the boot space (up to 2400 litres), while the seats in the second row fold flat. Furthermore, a six-seater variant with two luxury individual rear seats in the second seat row is available for the first time. Celebrating its world première in the GLS 580 4MATIC (combined fuel consumption: 10.1-9.8 l/100 km; combined CO_2 emissions: 230-223 g/km)[1] is an electrified V8 engine featuring EQ Boost, a 48-volt system with integrated starter-generator. Prices for the new GLS start at 85,923.50 euros[2].

The E-ACTIVE BODY CONTROL active suspension on 48-volt basis offers outstanding suspension comfort, agile handling and a high degree of off-road capability. Like the GLE, the GLS features the latest generation of Mercedes-Benz driving assistance systems giving cooperative support to the driver. The new 4MATIC ensures great agility on the road and strong performance off the beaten track. The new GLS has impressive aerodynamics in its segment, with a C_d figure of 0.32. It has a new carwash function, which makes it possible to prepare the car to enter a carwash at a single touch of a button.

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[2] All prices shown in this press information: Recommended retail price in Germany, incl. 19% VAT

As the S-Class of SUVs, the new GLS indulges its passengers, especially those in the rear. The key comfort features at a glance:

- MBUX Rear-Seat Entertainment System: Two 11.6-inch touchscreens for movies, music and internet enjoyment
- Rear Comfort Package Plus: Separate tablet for controlling all MBUX comfort and entertainment functions from the rear. The tablet is integrated into a luxury centre armrest. Further components of the package: expanded centre console between the front seats and luxury head restraints with adjustable side bolsters
- Electrically adjustable seats throughout as standard, as is the EASY-ENTRY function, which makes it easy to get into and out of the third seat row
- Simple folding of all rear seats at the touch of a button
- Choice of three-seat bench or two luxury individual seats with armrests in the second row
- Two fully fledged seats in the third row (for people up to 1.94 m tall)
- Heated seats and separate USB charging ports also for the third row
- Five-zone automatic climate control available.

"The GLS combines modern luxury with the character of an off-roader," says Gorden Wagener, Chief Design Officer at Daimler AG. "Powerful highlights of the off-road design idiom combine with an elegance reminiscent of a classic luxury saloon. The interior is a synthesis of modern, luxurious aesthetics, hallmark SUV practicality, and digital high-tech. In our view, the new GLS therefore offers the best of all these worlds."

Since 1997, when the M-Class was launched, Mercedes-Benz has been building premium SUVs in Tuscaloosa, Alabama, USA. The US are also the largest market for the model series, which experiences rapidly growing success in China as well. The GL full-size variant offering space for seven people was launched in 2006. In 2015, a model update emphasised the luxury character of the large SUV's second generation and also heralded the changing of the name to GLS. On top of that, it is the market leader in the US in its segment - just like the S-Class saloon. Since its market launch in 2006, more than 550,000 units of the full-size SUV (GL/GLS) have been sold.

Exterior design: luxurious, large, impressive

The design of the new GLS expresses modern luxury both on and off the road. Its superior presence is based on stately dimensions (length 5207 mm, width 1956 mm), which compared with the predecessor grew particularly in wheelbase (+60 mm) to now 3135 mm. This stretches the vehicle favourably and gives it harmonious proportions, emphasised by the understated, elegant side design. The Mercedes-Benz GLS follows the design strategy of sensual purity, and dispenses with individual edges and beading in favour of generously sculptured surfaces. The nearly vertical windscreen and the generous continuous glass surface at the sides characterise it as a classic large full-size SUV.

The wheels in the AMG Line with a diameter of up to 23 inches are a première for Mercedes-Benz. They blend in harmoniously and signal off-road competence, as does the front with the nearly upright radiator grille in octagonal SUV interpretation, the prominent chromed skid plate and the bonnet with two power domes. The striking appearance and the high technical standard are boosted by MULTIBEAM LED headlamps (standard or optional equipment depending on the market) with a total of 112 LEDs per headlamp. These produce the maximum light intensity permitted by law – the brightness of the main beams does not fall below the reference value of 1 lux for a distance of more than 650 metres. The daytime running lights with three LED segments underline the status of the GLS as the S-Class of SUVs.

Aerodynamics: exquisite fine-tuning

The new GLS achieves c_d figures as low as 0.32 - a clear improvement compared with its predecessor (c_d 0.35) and an impressively low figure in the large luxury SUV segment. The excellent aerodynamics help to firstly reduce fuel consumption and secondly limit wind noise, one of the areas on which development work focussed specifically.

Special attention was paid to the underbody and the air flowing through the engine compartment. Not least because the hallmark SUV shape, with its upright front end and high ground clearance, makes these areas susceptible to low-frequency airflow noise. A host of details was optimised with numerous computation loops, CAE simulations (computer-aided engineering) and measurements in the wind tunnel in Sindelfingen.

Interior design: luxuriously elegant and powerfully progressive

The interior of the new GLS is all about luxuriously elegant aesthetics and features leather appointments as standard. It combines the comfort of a Mercedes-Benz luxury saloon with the robustly progressive detailing of an SUV. The central element in the dashboard's design is an impressively sized screen unit embedded in a distinctive dashboard support.

The large touchscreen of the MBUX infotainment system allows all the GLS comfort features to be controlled from the driver's seat. The prominently wide raised centre console creates a robust contrast with the free-floating appearance of the dashboard.

Interior: generous amount of space, three electrified seat rows

The new GLS has a considerably longer wheelbase than its predecessor (3135 mm, an increase of 60 mm). This creates more space, especially in the second seat row, which can furthermore be electrically adjusted fore and aft by 10 cm. Legroom there is increased by 87 mm when the seats are in their rearmost position. All seats are electrically adjustable as standard. The same applies to the EASY-ENTRY function, which makes it easy to get into and out of the two individual seats in the third row. For this, the seats in the second row move a long way forwards and fold forwards. The seats in the third row are fully fledged seats that are suitable for people up to 1.94 m tall and are heated for the first time.

As standard for the European market, the second row has a 60:40-split folding rear bench seat with adjustable 40:20:40-split backrests. Alternatively it is possible to order the American standard configuration with two luxury individual rear seats with armrests, between which it is possible to access the rearmost seats with ease. All rear seats can be folded separately or at the same time at a single touch of a button to create a level loading area in the boot of the GLS with a capacity of up to 2400 litres. The automatic lowering of the rear end by about 50 mm (thanks to the standard-fit air suspension) allows loading and unloading the boot comfortably.

Even more comfort in the rear: MBUX served on a tablet

Luxury in the new GLS is shared generously among all passengers, particularly if the Rear Comfort Package Plus is ordered. It includes a 7-inch Android tablet in

its own docking station in the second row's larger luxury centre armrest. The tablet allows control of all the MBUX comfort and entertainment functions (see next section) from the rear seat rows, such as access to radio, TV, media, phone and web browser. It can also be used to control the Rear Seat Comfort package and the five-zone automatic climate control for the rear seats.

As an additional option for the second row, luxury seats with lumbar massage function and climate control can be added to the Rear Comfort Package Plus.

The MBUX Rear Seat Entertainment System is available for all seating variants. It includes two 11.6-inch touchscreens that allow passengers in the second row to enjoy movies or music, use the integrated web browser, or call up and input trip information. And, of course, a host of USB ports numbering up to eleven depending on the equipment level and the WLAN of the vehicle also allows integrating the mobile devices of the passengers. It equally goes without saying that the driver can take control of all options and features from his or her seat at any time.

The optional MBUX Interior Assistant also enables the driver and front passenger to operate various comfort and MBUX functions intuitively by movement recognition. A camera in the overhead console registers movements of the driver's and front passenger's hands and arms. When a hand approaches the touchscreen or the touchpad on the centre console, the presentation of information on the media display alters. The system is able to distinguish the driver's hand from that of the front passenger, and therefore knows for whose seat the massage function is to be activated, for example.

In addition there are functions that can be controlled by simple hand gestures: the reading lamp can be switched on and off by extending a hand towards the interior mirror, for example. Furthermore, the driver and front passenger can each store personal favourite functions, e.g. "navigate home" or "call office".

Power with EQ Boost: choice of six or eight cylinders

The high standards of the new Mercedes-Benz GLS are likewise clearly apparent in its engine line-up. Powerful six and eight-cylinder engines deliver the harmonious motoring comfort and the effortless power that suit the characteristics of this luxurious car.

The introduction of the **GLS 580 4MATIC** marks the world première of a new electrified V8 petrol engine with 48-volt on-board electrical system and integrated starter-generator. This engine has a displacement of about four litres and produces an output of **360 kW** (489 hp) and 700 Nm of torque, with another 250 Nm of torque and 16 kW/22 hp of additional output temporarily on tap via EQ Boost.

The straight-six petrol engine with EQ Boost of the GLS 450 4MATIC is electrified in the same way. It is available exclusively outside of Western Europe. The integrated starter-generator (ISG) is responsible for hybrid functions such as boosting, sailing or energy recovery and makes fuel savings possible that were previously reserved for high-voltage hybrid technology.

Diesel: six-cylinder engine for Europe, Russia and other markets

The two GLS models powered by the OM 656 diesel engine are slated to be available at the market launch in Western Europe. The straight-six engine is available in two output levels, as the **GLS 350 d 4MATIC** with **210 kW** (286 hp) and 600 Nm (combined fuel consumption: 7.9-7.6 l/100 km; combined CO_2 emissions: 208-200 g/km)[1] and as the **GLS 400 d 4MATIC** with **243 kW** (330 hp) and 700 Nm of torque (combined fuel consumption: 7.9-7.6 l/100 km; combined CO_2 emissions: 208-201 g/km)[1]. In both versions, the powerful engine already complies with the Euro 6d- standard (RDE/Real Driving Emissions Step 2), which does not come into force until 1 January 2020 for new models and one year later for all vehicles, even in demanding driving conditions.

4MATIC all-wheel drive: agile on the road, superior when off-road

In all variants of the new GLS, power is transmitted by the 9G-TRONIC automatic transmission. The broad ratio spread of gears one to nine allows a clearly perceptible reduction in engine speed and is a decisive factor behind the high level of energy efficiency and ride comfort. A transfer case with electronically controlled multi-plate clutch is likewise fitted as standard. This allows a variable

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transfer of drive torque from 0-100 percent (torque on demand) between the axles.

Available as an option is a transfer case specially designed for superior off-road driving characteristics. In addition to the controlled multi-plate clutch with torque-on-demand function, it also features a reduction gear for off-road driving. In concert with the capabilities of the E-ACTIVE BODY CONTROL suspension optimised for off-road use, the new GLS reaches a superior level of off-road capability.

Driving assistance systems: even better support

The new GLS is equipped with the latest generation of Mercedes-Benz driving assistance systems giving cooperative support to drivers. These systems further enhance the level of active safety.

When **Active Distance Assist DISTRONIC** with route-based speed adaptation is activated, the new GLS is able to recognise and respond to tailbacks or slow-moving traffic with the help of information from Live Traffic before the driver becomes aware of this traffic hazard. When a traffic jam is detected on the motorway (and if the driver does not choose a different response), for example, DISTRONIC reduces the speed to around 100 km/h as a precaution.

New feature of Driving Assistance package Plus: When actually driving in a tailback on the motorway, **Active Stop-and-Go Assist** is largely able to perform the tasks of keeping in lane and maintaining the safety distance with a high level of availability at speeds up to around 60 km/h. It can also start again automatically for up to one minute after coming to a stop and even help with creating an emergency lane. Once the tailback clears, the GLS accelerates back up to the speed preset for Active Distance Assist DISTRONIC with route-based speed adaptation.

The **turning manoeuvre function of Active Brake Assist** also is new: If there is a danger of a collision with oncoming traffic when making a turn across a carriageway, the GLS can be braked at the speeds typical of such manoeuvres.

Trailer Manoeuvring Assist is available as an option for the GLS in Europe. This makes reverse manoeuvring easier for drivers who are not so familiar with towing trailers. And it is also of benefit to more experienced drivers when towing longer trailers.

Suspension: AIRMATIC air suspension as standard

The GLS is equipped with the further advanced AIRMATIC air suspension system with ADS PLUS adaptive damping system as standard (option in USA/Canada). This set-up uses highly complex sensor systems and algorithms to adapt the damping characteristics to the road condition and driving situation in real time.

All components have been enhanced compared with the previous generation, and the wheel suspension mountings have been optimised to maximise ride comfort. In addition to this, the air suspension keeps the car at the same level, regardless of the load on board.

New feature - neat and clean: the carwash function

One new, standard feature is the carwash function - which comes in very handy, especially for a large vehicle like the GLS. When this function is selected, the suspension moves to the highest position, which reduces the track widths due to the axle geometry and ensures that possible dirt in the wheel wells from the last off-road use are removed more thoroughly. If the vehicle is equipped with a 360-degree camera, its image is automatically displayed on the screen after a few seconds. This makes it easier to drive into a carwash.

Furthermore, all features of the vehicle that may cause a mishap in the carwash, from the automatic windscreen wipers to the panoramic sliding sunroof, are switched off or closed, in so far as these functions are legally permitted in the individual markets. These settings are automatically deactivated when the driver drives out of the carwash and accelerates to a speed above 20 km/h.

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Luxurious elegance with off-road highlights

Modern luxury both on and off the road: that is the design message of the new GLS. Its aesthetics are based on the confident presence that its impressive dimensions alone create (length 5207 mm, width 1956 mm). The wheelbase of 3135 mm, which is 60 mm longer than that of its predecessor, stretches the vehicle favourably and gives it harmonious proportions, emphasised by the understated, elegant side design.

The Mercedes-Benz GLS follows the design strategy of sensual purity, and dispenses with individual edges and beading in favour of generously sculptured arched surfaces. The surfaces interact with precise graphic elements. The steep windscreen and the generous continuous glass surface at the sides characterise it as a classic large full-size SUV.

The flush wheels, in the AMG Line with diameters of up to 23 inches – a première in the product range of Mercedes-Benz – blend in harmoniously with the imposing profile. They signal off-road competence, as do the wheel wells with striking wheel arch liners, which are painted dark grey or in vehicle colour with the AMG Line. Their size is tailored precisely to the particular tyre size installed on the vehicle. The flush fit underscores the harmony of the overall impression.

The front end of the new GLS exudes presence and power. This is ensured by the nearly upright radiator grille in an octagonal SUV interpretation, the prominent, chromed skid plate in the front apron with the bone-shaped air inlet grille, and the bonnet with two power domes. The black plastic elements of the grille feature a diamond-shaped pattern as a reference to the off-road character.

This striking appearance is emphasised by the distinctive headlamp design by day and night. The GLS is equipped with MULTIBEAM LED headlamps (standard or optional equipment depending on the market, for details about the technology, please see "under the microscope“) with integrated fog lamps. In place of additional fog lamps, it is fitted with a short, subtle chrome strip under

the headlamps on either side. The daytime running lights with three LED segments underline the status of the GLS as the S-Class of SUVs.

The GLS cuts an imposing figure from the rear, too. This is particularly ensured by the powerful shoulder muscle extending from the rear doors to the tail lamps, which enables the GLS to strike an imperious pose on the road. The two-piece tail lamps are based on LED technology, and their high-calibre, three-dimensional look conveys depth and solidity. The reflectors are relocated lower down, giving the tail lamps a flatter appearance. They are crowned by a slender, continuous chrome trim strip. The striking finishing touch at the bottom on the rear end also is provided by a chromed skid plate, which is framed by the two chromed tailpipes exiting from the bumper on either side.

"The GLS combines modern luxury with the character of an off-roader," says Gorden Wagener, Chief Design Officer at Daimler AG. "Powerful highlights of the off-road design idiom combine with an elegance reminiscent of a classic luxury saloon. The interior is a synthesis of modern, luxurious aesthetics, hallmark SUV practicality, and digital high-tech. In our view, the new GLS therefore offers the best of all these worlds."

Power from six or eight cylinders

The high standards of the new Mercedes-Benz GLS are likewise clearly apparent in its engine line-up. Powerful six and eight-cylinder engines deliver the harmonious motoring comfort and the effortless power that suit the characteristics of this luxurious car. The introduction of the GLS 580 4MATIC marks the world première of a new electrified V8 petrol engine with 48-volt on-board electrical system and integrated starter-generator (combined fuel consumption: 10.1-9.8 l/100 km; combined CO_2 emissions: 230-223 g/km)[1]. This engine has a displacement of about four litres and produces an output of 360 kW (489 hp) and 700 Nm of torque, with another 250 Nm of torque and 16 kW/22 V8 hp of additional output temporarily on tap via EQ Boost (more about the V8 in the next chapter). At the market launch, two straight-six diesel engines, which are reserved to the European and Russian markets, and a straight-six petrol engine with EQ Boost for the American and Chinese market will be available.

The two GLS diesel models are powered by the OM 656, the straight six engine from the current engine family. It is available in two output levels, as the **GLS 350 d 4MATIC** with **210 kW** (286 hp) and 600 Nm (combined fuel consumption: 7.9-7.6 l/100 km; combined CO_2 emissions: 208-200 g/km)[2] and as the **GLS 400 d 4MATIC** with **243 kW** (330 hp) and 700 Nm of torque (combined fuel consumption: 7.9-7.6 l/100 km; combined CO_2 emissions: 208-201 g/km)[2]. In both versions, the powerful engine even in demanding driving conditions already complies with the Euro 6d-standard (RDE/Real Driving Emissions Stage 2), which does not come into force until 1 January 2020 for new models and one year later for all vehicles.

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This is achieved with, among other things, an additional selective catalytic reduction (SCR) converter with an ammonia slip catalyst (ASC) in the exhaust tract of the GLS. This allows dosing of the AdBlue® reducing agent that is even more closely aligned with the individual driving characteristics because any excessive ammonia surplus in the second SCR converter is broken down further. The AdBlue® tank has a capacity of 31.6 litres. As before, refilling is convenient via a separate pipe behind the fuel filler flap.

Most of the components relevant for efficient emissions reduction are installed directly on the engine. The integrated technology approach combining the new stepped-bowl combustion process, dynamic multi-way exhaust gas recirculation and near-engine emission-control system, combined for the first time with variable valve-lift control, makes further reduced consumption with low emissions possible. Thanks to the near-engine insulated configuration, the emission control system does not suffer great levels of heat loss and generates extremely favourable operating conditions. The measures taken include

- high- and low-pressure exhaust gas recirculation including cooling,
- a diesel oxidation catalytic converter (DOC) to avoid the emission of carbon monoxide (CO) and unburned hydrocarbons (HC),
- a particulate filter with SCR catalytic function (sDPF),
- an SCR catalytic converter (selective catalytic reduction) for reducing nitrogen oxides. For this purpose, ammonia in the form of the carrier AdBlue® is added to the exhaust gases before entering the sDPF,
- an additional selective catalytic reduction (SCR) converter with an ammonia slip catalyst (ASC) in the exhaust tract.

The other features of the top-of-the-range engine of the premium diesel family include two-stage turbocharging, the combination of aluminium block and steel pistons as well as further advanced NANOSLIDE® cylinder coating.

Six-cylinder petrol engine for countries without diesel market

The **Mercedes-Benz GLS 450 4MATIC** as the first petrol model at market launch is available exclusively outside the EU market. Its in-line six-cylinder engine has been electrified with 48-volt technology. Its performance data: **270 kW** (367 hp) and 500 Nm of torque, with a further 250 Nm of torque and **16 kW**/22 hp available via EQ Boost over short periods. The integrated starter-generator (ISG) is responsible for hybrid functions such as EQ Boost or energy recuperation,

while allowing fuel savings that were previously reserved for high-voltage hybrid technology.

ISG eliminates the need for a belt drive for ancillary components at the front of the engine, which reduces its overall length. The slim design of the in-line engine, together with the physical separation of intake/exhaust, creates space for close-coupled emission control. The 48 V on-board electrical system serves not only high power consumers, such as the water pump and air-conditioning compressor, but also the integrated starter-generator (ISG), which also supplies energy to the battery by means of highly efficient energy recuperation.

Nine gears for comfortable and efficient gear shifts

In all variants of the new GLS, power is transmitted by the 9G-TRONIC automatic transmission. The broad ratio spread of gears one to nine allows a clearly perceptible reduction in engine speed and is a decisive factor behind the high level of energy efficiency and ride comfort. The high overall efficiency is reflected in the fuel economy. Shortened shift and response times ensure optimum spontaneity combined with outstandingly smooth gear changes. Particularly in manual mode and S mode, 9G-TRONIC responds immediately and enhances driving pleasure.

The particularly good gear-shifting comfort of the nine-speed automatic transmission is the result of extensive measures. These include the novel direct control system which enables short, barely perceptible gear changes. The combination of twin-turbine torsional damper and centrifugal pendulum technology in the torque converter ensures outstanding drive comfort. An additional electric transmission oil pump is activated in start/stop operation and when the petrol engine is switched off in sailing mode, ensuring a basic supply to the control elements and actuators. The time delay between the desire to move off and the vehicle's actual movement is reduced by the electric transmission oil pump.

The models of the new GLS at a glance:

	GLS 350 d 4MATIC[2]	**GLS 400 d 4MATIC[2]**	**GLS 450 4MATIC (not for Western Europe)**	**GLS 580 4MATIC[1]**
Number of cylinders/arrangement	6/in-line	6/in-line	6/in-line	8/V
Displacement (cc)	2925	2925	2999	3982
Rated output (kW/hp)	**200/**272	**243/**330	**270**/367	**360**/489
at rpm	3400-4600	3600-4000	5500-6100	5500
Additional output EQ Boost (kW/hp)	-	-	16/22	16/22
Rated torque (Nm)	600	700	500	700
at rpm	1200-3200	1200-3000	1600-4500	2000-4000
Add torque EQ Boost (Nm)	-	-	250	250
Combined fuel consumption (l/100 km)	7.9-7.6	7.9-7.6	n/a	10.1-9.8
Combined CO_2 emissions (g/km)	208-200	208-201	n/a	230-223
Emissions class	Euro 6d	Euro 6d	omitted	Euro 6d temp
Acceleration 0-100 km/h (s)	7.0	6.3	5.7	5.3
Top speed (km/h)	227	238	250	250

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Excitement on velvet paws

The top-of-the-range engine of the new Mercedes-Benz GLS is the M 176 in the GLS 580 4MATIC (combined fuel consumption: 10.1-9.8 l/100 km; combined CO_2 emissions: 230-223 g/km)[1] – a new electrified V8 petrol engine with a displacement of 3982 cc, 48-volt on-board electrical system and integrated starter-generator (ISG). ISG is responsible for hybrid functions such as EQ Boost or energy recovery, while allowing fuel savings that were previously reserved for high-voltage hybrid technology. The development focused on the long-term improvement of the consumption and emissions figures. At the same time, the displacement was to be reduced to adapt to the tax legislation in important target markets, while fulfilling the customers' expectations on performance. As a result, the engine produces an output of 360 kW (489 hp) and 700 Nm of torque. An additional 250 Nm of torque and 16 kW/22 hp output are available temporarily via EQ Boost.

The new twin-turbo is one of the most economical V8 petrol engines in the world. The special features of the V8 (internal code: M 176) include cylinder shut-off under partial load. The variable valve control system CAMTRONIC deactivates four cylinders at once. This reduces the gas exchange losses while improving the overall efficiency of the remaining four cylinders in combustion mode by shifting the operating point towards higher loads.

Cylinder shut-off is active in the DYNAMIC SELECT drive modes Comfort or ECO in the rev range from 900 – 3250 rpm. Above that engine speed or when the driver strongly presses the accelerator pedal, cylinders 2, 3, 5 and 8 are switched on within milliseconds. The transition between the two operating modes is seamless and with no loss of comfort for the occupants. A pendulum-type absorber reduces both fourth-order vibrations in eight-cylinder mode as well as second-order vibrations in four-cylinder mode.

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[1] Figures for fuel consumption and CO_2 emissions are provisional and were determined by the Technical Service for the certification process in accordance with the WLTP test method and correlated into NEDC figures. EC type approval and a certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.

The two instantly responding mono-scroll turbochargers are positioned in the "hot inside V" between the cylinder banks to achieve a compact design. Their boost pressure is adapted to the demand in real time by a control valve. A spray-guided petrol direct injection system of the third generation with piezo injectors also injects several times as needed with 100 to 200 bar and optimises the thermal efficiency and the emissions level.

To keep the mechanical losses low, the cylinder surfaces feature NANOSLIDE® coating. The so-called spectacle honing is another measure for reducing friction and therefore consumption.

Ancillaries such as the refrigerant compressor of the climate control system are powered electrically, which in concert with the ISG eliminates the need for high-loss belt drives. In addition, this saves space, which can be used for installing the catalysts near the engine. Above all, it allows operating the ancillaries as needed regardless of whether and at what speed the engine is running.

This results in the great savings potential of EQ Boost. In ECO drive mode, the gliding function assists the driver's active fuel economy measures. When the driver takes their foot off the accelerator, the combustion engine is decoupled from the powertrain and switched off. During deceleration, the kinetic energy from the starter-generator is converted into electric power ("recuperated") as appropriate to the driving situation and used to charge the battery. When the accelerator is depressed again, the connection between the engine and drive system is re-established.

Luxuriously elegant and powerfully progressive

The interior of the new GLS is all about luxuriously elegant aesthetics, as evidenced straight away by the leather appointments, which come as standard. They combine the comfort of a Mercedes-Benz luxury saloon with the robustly progressive detailing of an SUV. The central element in the dashboard's design is an impressively sized screen unit embedded in an energetic, distinctively styled instrument panel. The instrument panel flows into the door panels, and the integral trim element likewise extends into the doors.

As in the luxury-class saloons, this greatly accentuates the impression of width while conveying security and elegance. At the same time, it creates the impression that the upper cockpit section is floating. The instrument cluster and media display (2 x 12.3-inch as standard) are housed behind a shared continuous glass surface to form a large free-standing screen. There is a touchpad in the centre console as a further means of controlling many vehicle functions. The ambience lighting impressively illuminates the dashboard, with optical fibres coursing throughout the cockpit. The four rectangular air vents are prominently embedded in the trim element.

The prominent, raised centre console creates a robust contrast with the free-floating appearance of the dashboard. As a typical feature of off-roaders, there are two prominent grab handles on the centre console. They are trimmed with ARTICO man-made leather. The modern, luxurious impression is rounded off by the flowing leather surface behind them, the large trim element and the flush-fitted roller blind.

All the controls and displays were designed from scratch to be shared by the GLE and the GLS. The controls with haptic and audible feedback appear to have been milled from a solid metal block. Very fine chiselling and pyramid structures show the desire for perfection and craftsmanship. The new sport steering wheel with its striking, sculptured spoke design accentuates the off-road-heavy appearance of the SUV's interior and caresses the hands with its soft nappa leather rim.

The door panels exude calm with a harmonious transition from the dashboard and accentuated horizontal design lines. The interplay between the sculptured armrest and the smoothly recessed door trim creates a dramatic contrast. The door trim houses the miniature seat for the seat adjustment typical for Mercedes-Benz, and the memory buttons. The closing handles of the doors blend into the shape of the armrest. It harmonises with the handles on the centre console and also houses the control for the windows and side mirrors.

Colours and materials: high quality and stylish

With its geometrical structure, the design of the seats accentuates the striking character of the SUV's interior. Customers can choose between a combination of smooth and suede leather, the latter on the seat side bolsters and head restraints, and smooth leather only for the standard-fit leather upholstery. The off-road character is portrayed by a coarser natural leather structure. In addition, there is a choice of plain black or espresso brown leather and two-tone appointments such as magma grey/macchiato beige, magma grey/espresso brown and black/tartufo.

With the EXCLUSIVE interior, the lower section of the instrument panel and the beltlines come trimmed in ARTICO man-made leather. The trim elements, including the roller cover of the cup holders, are made of wood. The appointments further include the airbag cover in nappa leather, stainless steel speaker grilles and velour floor mats.

Room for living large

The new GLS has a considerably longer wheelbase than its predecessor (3125 mm, an increase of 60 mm). This creates more space, which benefits especially the second seat row, which can be electrically adjusted fore and aft by 10 cm. Legroom in these seats grew by 87 mm over the predecessor in the rearmost position. The longer wheelbase also makes it easier to get to the rear seats. The greater length behind the front seats also increases the maximum loading capacity of the luggage area.

The new GLS offers plenty of room even for tall people and when every seat is occupied. Thanks to the high and upright seating position typical of an SUV and the generous adjustment ranges of the seats, even people two metres tall find an ergonomically correct seating position in rows one and two. And even the seats in the third row are comfortable for people up to 1.94 metres tall.

As standard, the front seats are electrically adjustable for seat cushion length, height and angle, backrest angle and head restraint height. Their fore-and-aft and height adjustment ranges have been increased by 15 mm and 10 mm respectively, so that very tall drivers in particular enjoy more space and comfort. The electrical fore/aft adjustment of the second seat row enables optimal use of the available space depending on the number of occupants and the needed luggage space. The seat cushions of the second row fold with a 60:40 split, the backrests fold with a 40:20:60 split.

The two luxury individual seats of the six-seat configuration, which are available as an alternative to the seat bench with 60:40 split, provide a passageway to the rear seats measuring 19 cm in width. In conjunction with the legroom in the middle row, this allows getting to the rear seats without having to fold the middle seats. This is practical when child seats are installed there, for example. The US market attaches particular importance to this room for manoeuvre. That is why the six-seat specification is standard there, while the seven-seater is the option.

There is lots of room for the luggage of five people even without setting the backrests of the seat bench more upright or reducing the knee room behind the

front seats. If row three is not needed, four golf bags, for example, can be accommodated horizontally under the luggage roller cover behind the second seat row without having to move up the rear seats electrically. This is where the new GLS takes advantage of a greater width between the wheel tubs. To be able to transport an especially large amount of luggage and five people, the angle of the backrests of the bench with 60:40 split can be adjusted from the standard position of 26 degrees to a more upright cargo position at a minimum angle of 12 degrees.

When the rear seat rows are fully folded, there is a maximum luggage capacity of 2400 litres behind the front seat backrests, 100 litres more than in the predecessor. The floor length of the luggage compartment is nearly 2.22 m, more than 9 cm longer than in the predecessor.

To be able to make ideal use of the large and level luggage compartment and secure the load well against shifting when it only takes up part of the area, four tie-downs are installed as standard. A selection of tailor-made retaining and protective devices for more secure accommodation of, for example, leisure equipment in the interior is available in the accessories range.

Even when all three seat rows are in use, there is still a maximum luggage capacity of 470 litres and thus 80 litres more than in the preceding generation.

On the next page: the main interior dimensions.

The main interior dimensions		New GLS	Predecessor	Diff.
Headroom, front	mm	1051	1046	+5
Headroom row 2	mm	1022	1015	+7
Headroom row 3	mm	988	988	0
Legroom, front	mm	1024	1024	0
Legroom row 2 (maximum)	mm	1065	978	+87
Legroom row 3 (maximum)	mm	878	888	-10
Elbow width, front	mm	1545	1540	+5
Elbow width row 2	mm	1523	1529	-6
Elbow width row 3	mm	1291	1295	-4
Shoulder width, front	mm	1506	1485	+21
Shoulder width row 2	mm	1485	1482	+3
Shoulder width row 3	mm	1278	1282	-4
Width of luggage compartment between the wheel tubs	mm	1050	1027	+23
Luggage compartment depth behind front seats	mm	2025	2011	+14
Luggage compartment depth behind row 2	mm	1053-1153*	1250	-97
Luggage compartment depth behind row 3	mm	391	340	+51
Luggage compartment floor length behind front seats	mm	2217	2124	+93
Luggage compartment floor length behind row 2	mm	1277-1377*	1330	+47
Luggage compartment floor length behind row 3	mm	570	500	+70
Max. luggage compartment capacity VDA behind row 2, to upper edge of backrest	L	max. 890	680	+210
Max. luggage compartment capacity VDA behind row 3, to upper edge of backrest	L	355	295	+60
Maximum luggage compartment capacity	L	2400	2300	+100

* with rear seat bench moved forward by 100 mm

From luxury saloon to cargo champion at the touch of a button

A push of a button is all that is required to stow away the comfortable seats and make full use of the 2400-litre boot space in the GLS. The switches on the left and right of the load compartment and on the front of the wheel arches on the front-passenger side in the C-pillar area allow the seats in the rear rows to be folded completely flat. This creates a completely level loading area covered with carpet and flush with the loading edge of the liftgate. It is also possible to fold down all the seats simultaneously by pressing the "ALL" button.

An automatic reversing function protects children, pets or luggage from being injured or damaged when the seats are folded. For the convenient folding function of the seats the head restraints are also retracted so that the seats fit into the provided recesses in the floor.

The fore/aft adjustment of the second row by up to 100 mm makes it possible to allocate space conveniently when five people are on board. An electrical EASY-ENTRY function facilitates the boarding of additional passengers. It comprises either both sides of the seat bench in the second row or in the six-seater the luxury individual seat on the front passenger's side. The switch for this function is in the top of the backrest and the seat is also returned to its original position electrically in both cases.

The comfortable interior configuration makes the GLS a perfect combination of luxury saloon and cargo champion. It is also a consistent continuation of the standard-fit HANDS-FREE ACCESS operation of the liftgate and the lowering of the loading sill by AIRMATIC.

Sophisticated detail solutions

Nobody buys a car because of its windscreen wipers or because it is ready for the carwash at single touch of a button. But the perfection in particular behind these commonplace functions demonstrates the standard of Mercedes-Benz: The best or nothing. Three of these highlights here under the microscope.

The windscreen wipers and washer system: not just clean …

Already as standard, the new GLS features a fine windscreen wiper: twin wiper arms with flat wiper blades powered by an electronically controlled reversing motor, which means that it changes its direction of rotation without a mechanical gear. Their precise and even action allows low-noise cleaning of the largest possible swept area, helped by the extending wiper arm on the front passenger side. A rain sensor fitted as standard adapts the wiper interval to the level of rainfall. As an optional feature, the washer system can be heated by the waste heat from the engine coolant, which increases the cleaning action of the washer fluid especially in winter to ensure the five-litre capacity goes further.

However, the special highlight in matters of windscreen cleaning is the further advanced MAGIC VISION CONTROL. It saves nearly 50 percent of washer fluid compared to a conventional system and provides clear forward visibility. The intelligent system precisely meters the washer fluid according to the prevailing conditions, e.g. the ambient temperature and road speed. The warm washer fluid is distributed onto the windscreen along the entire length of the wiper blades by sophisticated channels and hoses, always on the side towards which the blade is currently moving.

There is no film of water to obscure the driver's vision. The cleaning process runs fully automated in line with the current conditions when the driver briefly taps the switch once. MAGIC VISION CONTROL selects the suitable programme and wipes the windscreen with just as much water as necessary. The driver can focus on what is happening further up ahead. In addition to heating the washer fluid, MAGIC VISION CONTROL also keeps the wiper blades free of snow and freezing slush in winter thanks to a newly developed wiper blade heater. In summer, MAGIC VISION CONTROL demonstrates its intelligence in a different way: When

the large panoramic sliding sunroof is open, the system never sprays so much water that it could enter the roof opening.

The large panoramic sliding sunroof: good to see, little heard from

The newly developed panoramic sliding sunroof, available as an option, is 50 percent larger than the corresponding roof of its predecessor and consists entirely of heat-insulating tinted single-pane safety glass. Its two glass sections extend over the entire width and length of the roof. The back of the front segment can be raised and moved far back over the rear fixed glass roof, which extends to the C-pillar. What is special about it is that the panoramic sliding sunroof in raised position automatically adjusts its opening to the vehicle speed to prevent wind noises.

The glass roof allows a clear view of the sky on every seat, also in the optional third row. And when the sun shines too brightly, it can be shaded along its entire length with an electrically adjustable roller blind.

However, if the carwash beckons when the weather is nice, reaching for the controls of the sliding sunroof is not required. There is another command that helps not to forget anything.

Carwash function: ready for cleaning with one command

The new standard feature is the carwash function - which comes in very handy, especially in a large and lavishly equipped vehicle like the GLS. When this function is selected, the suspension moves to the highest position, which reduces the track widths due to the axle geometry. This makes it easier to drive into a carwash as well as remove any dirt remaining in the wheel arches from the last off-road trip. And all equipment features that could cause a mishap when driving through the carwash are automatically secured:

- Folds in the exterior mirrors.
- The side windows and the sliding sunroof are closed (except in USA, where only the status is displayed due to legal provisions).
- Suppresses the rain sensor information so that the windscreen wipers remain switched off in the carwash.
- The alerts of PARKTRONIC are suppressed.

- Switches the climate control to air-recirculation mode and, after eight seconds, activates the 360° camera's front image to assist the driver when driving into the carwash
- These settings are automatically deactivated when the driver drives out of the carwash and accelerates to a speed above 20 km/h.

Intelligence in the interior

The GLS is equipped with the latest generation of the MBUX (Mercedes-Benz User Experience) infotainment system. Upgrades compared with the A-Class, in which the revolutionary system made its début, include two large 12.3-inch/31.2 cm screens. The information on the instrument cluster and media display is easily legible on the large, high-resolution screens. An emotive presentation with brilliant graphics underlines the comprehensibility of the intuitive control structure.

Depending on mood or to suit the chosen interior, the user has a choice of four different styles:

- **Modern Classic** is a further development of the classic display style in an elegant and light material mix.
- **Sport** has a high-tech turbine look with decidedly sporty black/yellow contrasts.
- **Progressive** stages the digital realm in reduced form.
- In the **Discreet** style, all displays are reduced to the absolutely necessary.

Available to the driver as an option is a full-colour head-up display, which sets new standards with a resolution of 720 x 240 pixels and an extended projection distance.

General MBUX operation has been improved in numerous respects. For example, the settings menus are in a new design and the initial set-up assistant has been improved. The 40 or so new MBUX functions in the GLS include

- Support for off-road specific drive modes (rocking mode and individual wheel actuation as well as off-road score)
- Extended off-road displays in the instrument cluster and head-up display (linear and lateral inclination, Torque on Demand, vehicle level). The off-road-specific displays can also be consolidated into a special screen on the media display.

- Also part of the Off-Road Package is a virtual "look through the bonnet". At low speeds, the camera in the front end of the car shows the rocks and bumps directly in front of the vehicle and allows assessing these obstacles and steering accordingly.
- The setting for the full-screen map in the instrument cluster can be changed directly there
- ENERGIZING COACH
- ADAPT driver's seat adjustment: if the body size is entered, the seat automatically moves to a usually suitable position.
- Extension of online functions: for example, "In-car office" can now read out emails and have them dictated.
- Integration of online music (TIDAL) in Europe
- Extended range of apps, e.g. specific functions in the individual regions. Online music is available via the provider Kuwo in China, for example. Extensive information about points of interest (POIs) is made available by Baidu Wiki in China.

A unique feature of MBUX (Mercedes-Benz User Experience) is its learning capability thanks to artificial intelligence. With its predictive functions, MBUX anticipates what the user would like next, for example. For instance, anyone who often telephones their mother on Tuesdays during the journey home will receive her telephone number as a suggestion in the display on this day of the week. Anyone who regularly switches over to a radio station with news at a certain time also receives this as a suggestion.

Hey Mercedes: voice control is getting ever smarter

The voice control system was also further advanced. A recognition system based on the individual seat has been implemented. The voice assistance only responds to the commands of the person who last said "Hey Mercedes" to activate the system. Much more complex commands and questions are now understood, initially in the three top languages Mandarin, US English and German. For example: "Which child-friendly Asian restaurants are nearby which are neither Chinese nor Japanese?"

There is also a growing number of domains for which MBUX can understand complex questions and quickly reply: these include sport ("Hey Mercedes, what were the final scores in the football games this evening?"), the stock exchange ("How have the share prices developed in the past week on Wall Street?"),

calculations ("What is the square root of 3?") or general knowledge ("What's the size of Texas?“, "How much fat content is in avocados?“)

MBUX Interior Assistant: intuitive support

The optional MBUX Interior Assistant also allows intuitive operation of different comfort and MBUX functions by movement recognition. A camera in the overhead console registers movements of the driver's and front passenger's hands and arms. When a hand approaches the touchscreen or the touchpad on the centre console, the media display changes and individual elements are highlighted. The system is able to distinguish the driver's hand from that of the front passenger, and therefore knows for whose seat the massage function is to be activated, for example.

In addition there are functions that can be controlled by simple hand gestures: the reading lamp can be switched on and off by extending a hand towards the interior mirror, for example. Furthermore, the driver and front passenger can each store personal favourite functions, e.g. "navigate home" or "call office".

Augmented reality: additional navigation assistance

Other strengths include touchscreen control of the media display as standard and the use of augmented reality technology for the navigation display when the navigation function is active: a video image of the surroundings is enhanced with helpful navigation information, for example arrows or house numbers are automatically superimposed directly onto the image in the media display. This makes it easier for the driver to search for a certain house number, or to find the correct side road for turning off.

Served on a tablet

Luxury in the new GLS is shared generously among all passengers, particularly if the Rear Comfort package Plus is ordered. It includes a 7-inch Android tablet in its own docking station in the second row's larger luxury centre armrest. The tablet allows control of all MBUX comfort functions of the rear seat rows and of many infotainment functions of MBUX (see previous chapter) such as access to destination entry into the navigation system, media, telephone and web browser from the rear seat rows. The driver can assume control of all options and features from his or her seat at any time, of course.

The tablet primarily controls the Rear Seat Comfort Package and the five-zone automatic climate control for the rear seats. Thanks to the electrified rear seats, functions are possible in the second row that previously were only known from the first row. As an additional option for the second row, luxury seats with lumbar massage function and climate control can be added to the Rear Comfort Package Plus. The two outer head restraints are power-adjustable and can be ordered as luxury head restraints with additional cushions, adjustable angle and adjustable "ears" like in the S-Class.

The new GLS underscores its suitability as a chauffeur car also with the fact that the front passenger seat can be moved up electrically from the rear seat bench to enable full use of the ample legroom. However, the GLS also has a heart for families and accommodates three child seats on the middle bench.

The docking station of the tablet is integrated into the centre armrest and has a locking function to keep the tablet as secure as possible in a crash. The docking station also charges the tablet. To be able to charge additional devices, the centre armrest of the Rear Seat Comfort Package Plus also offers a wireless charging tray for smartphones and has additional USB ports.

The centre console between the front seats was extended towards the rear and features a control panel for the THERMOTRONIC functions of the second row. It can optionally pamper the rear passengers with a thermal cup holder – warm beverages stay warm, cold beverages are cooled. The specification with heated and climate-controlled multicontour seats in the second row features additional

switches in the door frame, which allow operating these comfort functions when the tablet is stowed in the centre armrest and the middle seat is occupied by a person.

Comfort doesn't stop in the rearmost row either. The available heated seats for this row underscore that the GLS offers only full-fledged seats. This also applies to the fifth climate zone of the THERMOTRONIC system, which is controlled separately (see next chapter).

A feast for eyes and ears: MBUX Rear Seat Entertainment System

The MBUX Rear Seat Entertainment System is available for all seating variants - for even more entertainment and convenience. It includes two 11.6-inch touchscreens that allow passengers in the second row to enjoy movies or music, use the integrated web browser, or call up and input trip information. Each screen displays the content selected by the individual user. In addition to the options offered by the MBUX infotainment system, users can also play their own media from a mobile phone, tablet or laptop. If the GLS is equipped with the optional MBUX rear seat tablet, the MBUX Rear Seat Entertainment System can also be controlled with it and, for example, manages several different mobile devices connected to the network of the vehicle.

Special Bluetooth headphones are available for a high-quality sound, which provide one passenger with classical music, while the other listens to rap and yet another hears the soundtrack of a cartoon that is playing on a screen.

Speaking of sound: The quiet-running of the new GLS is definitely an invitation to listen to music on the road. Already the standard specification of MBUX (Mercedes-Benz User Experience) with seven loudspeakers delivers good overall acoustics and performance. Two audio systems specially tailored to the interior of the new GLS are available as optional equipment – a Burmester® surround sound system with 13 speakers and an additional amplifier, and a Burmester® high-end 3D surround sound system which ensures an impressive musical experience in every respect with its design features and a total of 26 speakers. The subwoofer of the system is installed under the boot floor.

The two Burmester® systems integrate a two-way system for voice amplification between the first and third row of seats. This makes it easy to have conversations from one end of the large interior to the other even when travelling at high speeds.

To each their own

The completely newly developed climate control system of the new GLS has the qualities of a very good butler: working as quietly as possible, effortless guessing the wishes of the occupants and carrying them out unobtrusively. Depending on the equipment level, two different versions of the air conditioning system are available: the standard-fit THERMOTRONIC four-zone climate control and the optionally available innovative THERMOTRONIC five-zone climate control.

As the new GLS is so quiet, the heater fan needs to be quieter than ever. Accordingly the fan motor rests on rubber bearings so that no vibrations are transferred to the housing that might lead to a noise in the interior. A coating on the air ducts additionally dampens airflow noises.

The air is then conducted to the vents after thorough filtering and temperature control according to the weather and the occupants' wishes: separately for the driver and front passenger sides and also separately conditioned for the left and right side of the second seat row with THERMOTRONIC, which also has additional vents in the B-pillars and footwells. The five-zone THERMOTRONIC adds a separate zone for the third row.

Convenient: the air conditioning system thinks for itself

In all versions, the aim of the air conditioning control system is for the occupant to choose a setting and the automatic system then creating a pleasant indoor climate at all times. This is why several sensors measure the inside and outside temperatures, the angle of the sun and even the air humidity at the windscreen, so as to prevent misted-up windows before they can disturb the driver.

In both versions of THERMOTRONIC, the control unit of the climate control system also detects poor outside air quality or receives a warning from the navigation system if the vehicle is approaching a tunnel. In both cases, the system automatically switches to air recirculation mode, and the side windows and sliding sunroof are closed.

Like a good butler, the control system also remembers the personal preferences of up to seven different, regular users and one guest.

Climate comfort in every row of seats: the five-zone climate control system

The standard of the GLS is to offer a high level of comfort for all occupants. Even with the basic climate control system, no one in the very last row has to be chilly or sweating. But if it is possible to fulfil individual requests in row or two, then why not also in row three? After all, occupants frequently have different temperature comfort zones. That is why a THERMOTRONIC with five zones is available for the GLS, which features an additional electrically powered system to realise the separate climate control request for the third seat row. Different settings also are possible for the left and right in rows one and two.

For example, when the driver lets out all passengers and continues alone, he or she can widen his personally desired climate to encompass the entire vehicle from his seat at the touch of a button. That is because he or she could be disturbed during braking or cornering by a sudden rush of cold air generated for a seat that is now empty. Cold air is heavier and like any object obeys the law of inertia and mass – and accordingly moves through the interior. That is why the GLS features the "SYNC" button for the driver.

The ultimate on request: surface heating and AIR-BALANCE

Customers living in a cold region who attach particular importance to maximum thermal comfort can opt for the Warmth Comfort Package rather than normal seat heating – which is of course also available. This includes particularly fast-acting heating of the outer seats in rows one and two and also of the front centre armrest and the four door centre panels with their armrests. Heating wires in these surfaces ensure more homogeneous and cosy warmth after entering the cold vehicle.

Even more wellness is assured by the AIR-BALANCE Package. This has two particularly clever features. One is active fragrancing of the interior: activated, deactivated and variably controlled via a separate menu in the infotainment system, a fragrance generator perfumes the air entering the interior with a pleasant fragrance from a glass flask. There is a choice of eight different, meticulously composed fragrances, such as "Forest Mood". They can be changed by replacing the flask, which is reminiscent of a high-quality perfume bottle.

In addition, the AIR-BALANCE Package has an even larger activated charcoal filter than the standard specification. It is filled with activated charcoal made from coconut shells and is able to adsorb unpleasant harmful gases from the ambient air before they reach the interior.

Yet another benefit of the AIR-BALANCE Package is air ionisation by a high-voltage ioniser in the air duct. The ioniser generates negative ions which are attracted by the mainly positively charged airborne particles. Owing to the magnetic attraction, the particles form heavier agglomerations and fall to the floor. The particles concerned are certain viruses, bacteria and spores whose deactivation measurably benefits asthmatics and allergy sufferers. Ionisation freshens the air and keeps the driver fit for longer.

Active comfort, now with instructions

ENERGIZING comfort control networks various comfort systems in the vehicle, and uses lighting and musical moods plus a number of massages for a wide range of feel-good programmes. New features include the ENERGIZING COACH, which recommends programmes according to the situation, as well as ENERGIZING seat kinetics. The system supports advantageous changes in the seating posture by means of minute movements of the seat cushion and backrest when on a journey.

The GLS is available with the ENERGIZING Package, which includes the ENERGIZING comfort programmes Freshness and Vitality as well as three training programmes – muscle relaxation, muscle activation and balance – each with several exercises. This also includes the AIR BALANCE Package for fragrancing, ionisation and filtering of the air.

The ENERGIZING Package Plus additionally includes the ENERGIZING programmes Warmth and Joy as well as multicontour seats for driver and front passenger with massage function, climate-controlled seats for driver and front passenger with seat heating and seat ventilation as well as the Warmth Comfort Package.

The programmes all run for ten minutes. They are visualised on the media display with colour graphics, and backed by suitable music. Individual functions of the programmes can be deactivated.

ENERGIZING comfort control also incorporates ambience lighting, which is harmoniously tailored to each of the individual screen designs. The light stages the interior like a work of art by composing colour worlds from different colours.

ENERGIZING COACH: Comfort with instructions

The ENERGIZING COACH is a new feature included in the ENERGIZING Package Plus. This function based on an intelligent algorithm recommends one of the programmes depending on the situation and individual. If a Garmin® wearable is worn, personal values such as stress level or quality of sleep optimise the accuracy of the recommendation.

The aim is for passengers to feel well and relaxed even during demanding or monotonous journeys. In addition, the pulse rate supplied by the integrated Garmin wearable is shown on the media display.

ENERGIZING seat kinetics: active sitting whilst driving.

Good for the back: The new ENERGIZING seat kinetics supports orthopaedic changes in the seating posture by means of minute changes to the inclination of the seat cushions and backrest. The system is available for the front seats in conjunction with all-electric seat adjustment with memory function.

"The best seat position is the next one" - this is what many doctors say about sitting in the car. Because sitting in almost the same position for several hundred kilometres and many hours is not good for one’s back or discs. Mercedes-Benz now supports changing the seating position with ENERGIZING seat kinetics.

ENERGIZING seat kinetics uses the electric seat adjustment. If the driver selects this programme, the angle of the seat cushions and/or backrests are continuously adjusted minutely during the run time of the programme using the seat settings selected by the driver and the front passenger as the starting point (the so-called "Home" position). The changes are only minimal - a few degrees or millimetres.

Active sitting during the trip can improve spinal health, because the natural strain and relief of muscles, joints and discs can lead to muscle relaxation and improved supply of nutrients to the joints and discs.

ENERGIZING seat kinetics is based on a patented algorithm and offers three programmes for short, medium-length and long journeys. These differ with regard to the number of adjustment cycles and above all the length of the pauses between the cycles. Convenient selection of the programmes is visually supported via the MBUX (Mercedes-Benz User Experience) media display.

The system is based on an invention by Comfort Motion Global (CMG) and was significantly refined by Mercedes-Benz for series use in the automobile. The brand's seating experts optimised the angle of adjustment and the number of cycles, among other things, and they also established that the system should be stopped when braking. If PRE-SAFE® measures are initiated in an emergency situation, the ENERGIZING seat kinetics are completely deactivated. Mercedes-Benz tested the system with the aid of extensive test subjects on the roads, thereby confirming the system's benefits and acceptance.

Sure-footed both on and off the road

Already the base version of the new GLS (except in USA/Canada) offers the newly developed AIRMATIC air suspension system with Adaptive Damping System Plus (ADS+). A special highlight is the optional E-ACTIVE BODY CONTROL suspension, which is based on a 48V on-board power supply and represents an innovation in suspension engineering with the highest standard (see subsequent separate chapter). The braking systems for the new GLS have also undergone an evolutionary improvement and are far more powerful. Wheels with diameters of up to 23 inches for the AMG Line are yet another new suspension feature in the Mercedes-Benz range.

Front and rear axle are designed for tough off-road stresses with both being attached to a subframe and therefore doubly isolated from the vehicle body. The mounts of the steering arms and axle beams are larger than in the previous generation. In concert with the more rigid force transmission points for the wheel reacting forces, this enhances smoothness and ride comfort.

The front wheel suspension is a double wishbone suspension with the upper wishbone in a high position, which benefits spring travel when driving off-road. All transverse control arms and the steering knuckles are weight-optimised forged aluminium components whose light weight and rigidity provide ideal conditions for low rolling noises. The new design of the front axle ensures separate introduction of longitudinal and lateral forces, which benefits both the vehicle dynamics and suspension comfort.

The four-link rear suspension adopts the concept of the preceding version, but has been further advanced with respect to weight, handling dynamics and vibration comfort. Its control arms are also mostly of aluminium: wheel control is by a cast aluminium lower wishbone and a forged aluminium upper strut rod, as well as an upper camber strut of sheet steel.

The standard-fit AIRMATIC air suspension responds particularly sensitively. It combines air suspension bellows with adaptive ADS+ dampers whose characteristics can be fully automatically varied at each individual wheel, in both the compression and rebound stages. While driving, a sophisticated sensor system and algorithms set the dampers according to the quality of the road to ensure that, for example, driving over a bump with just one wheel is not transmitted to the entire axle and the interior. At the front axle the springs and dampers are housed in one suspension strut, but they are separate at the rear axle.

The driver personally and the selected drive modes can change the ground clearance and set-up of the suspension. However, the AIRMATIC control unit also uses sophisticated sensors and algorithms to analyse the driving situation and make automatic adjustments.

The adjustable ground clearance is used for the following functions:

- On the motorway, the vehicle is lowered by 15 mm to reduce the frontal area and body roll;
- When the driver selects the SPORT drive mode, the ground clearance is also reduced by 15 mm;
- Automatic lowering by 25 mm when one of the doors is opened facilitates getting in and out;
- A switch in the right side wall of the boot allows lowering the loading sill by about 50 mm to make loading easier (deactivated when a trailer is hooked up)
- In terrain, the standard specification of AIRMATIC allows raising the vehicle by 60 mm. When the ON&OFFROAD PACKAGE is ordered, the vehicle can be raised by 30, 60 and even 90 mm. Automatic ground clearance control in terrain accounts for additional parameters such as the slope of the terrain and the vehicle articulation.

To be able to make the adjustments in the ground clearance quickly, the air suspension system of the AIRMATIC was fitted for the first time at Mercedes-Benz with a closed air circuit, which also runs more quiet. The pump is driven by a 400 W electric motor.

When the driver selects the ground clearance when stationary or on the move, a control lamp flashes until the chosen level has been reached. If a raised

ground clearance is not cancelled by the driver when the vehicle is on the road, the suspension control system lowers the suspension depending on speed to ensure safe driving characteristics at all times.

The functions of AIRMATIC can be expanded even further with the innovative E-ACTIVE BODY CONTROL suspension (see next chapter).

Braking system: even larger sized

In line with the further advancement of the suspension, the vented disc brakes all around are now larger and measure up to 400 mm in diameter. Larger brake pads all-round ensure better deceleration with reduced wear. The two-piston floating callipers of the front brakes are of larger and more rigid design. This results in short stopping distances, high directional stability during braking and a longer service life of the wear parts.

With the Engineering Package in conjunction with E-ACTIVE BODY CONTROL, an even more powerful braking system with disc brakes and six-piston fixed callipers is available in combination with specific 21-inch and larger wheel/tyre combinations.

The parking brake of the new GLS is electrically operated and uses a combination brake calliper. Pressing and holding its switch to the left under the rotary light switch on the dashboard at speeds above 4 km/h initiates an emergency stop. It is not performed by the parking brake, but by the service brake and is accompanied by the activation of the brake lights.

The car that eliminates poor roads

Even better ride comfort and agility, plus completely new functions such as free-driving mode, are provided by the optional E-ACTIVE BODY CONTROL suspension, which is now combined with the newly developed AIRMATIC air suspension. This is the only system in the market that can individually control spring and damping forces at each wheel, suppressing rolling, pitching and lifting movements. Together with ROAD SURFACE SCAN and the curve inclination function CURVE, E-ACTIVE BODY CONTROL makes a quite exceptional level of comfort possible, underscoring Mercedes-Benz's aspiration to build the world's most intelligent SUV suspension.

Active suspension systems have a long tradition at Mercedes-Benz. More than 40 years ago, research was already being conducted on spring and damper systems that would allow the power at each wheel to be individually controlled. The objective: to improve both ride comfort and vehicle dynamics. ABC (Active Body Control) first entered series production in 1999. In subsequent years ABC was continuously developed further, with the ROAD SURFACE SCAN function added in 2013 to produce the first predictive suspension that already responds to surface undulations before they are reached.

E-ACTIVE BODY CONTROL continues this tradition in a unique way. Developed by Mercedes-Benz in-house, it runs on 48 volts and is available in the GLS as an optional extra. The system is based on the full AIRMATIC air suspension system, and therefore offers all-round level control which keeps the vehicle level constant irrespective of the load. The level can also be raised or lowered as required, to increase ground clearance. Different levels can also be selected in special off-road driving modes.

Furthermore, the hydropneumatics generate dynamic forces that overlay the air suspension forces and actively support and dampen the vehicle body, e.g. during linear and lateral acceleration or when driving on uneven roads. The body no longer squats or pitches during braking and acceleration, and on poor road surfaces the system is even able to recuperate energy, roughly halving the energy requirement compared to the preceding system in the S-Class.

The active suspension also allows a very wide spread of handling characteristics that can be set with the driving mode – from the comfort of a luxury saloon to the agility of a sporty SUV. In addition, the engineers have realised a number of entirely new functions for the GLS:

- **Rocking mode:** If the GLS has become bogged down in a sand dune, for example, this mode - which is only available in the Off-Road drive mode - can help to free the vehicle more easily in many such situations. If possible, the suspension level is automatically raised and lowered several times, thus alternately increasing and reducing the ground pressure of the tyres and improving traction – the GLS rocks itself free.
- **Individual wheel actuation:** Individual wheel actuation is another new function for off-road driving. After selecting the Off-Road drive mode, the ride height at each wheel can be individually adjusted via the touchscreen of the media display, thus improving the vehicle's off-road focus in rough terrain when e.g. one wheel is stuck in a ditch or a wheel spring is fully compressed.
- **Rear-end lowering when loading/unloading:** When the button for rear-end lowering in the luggage compartment is pressed, the vehicle is lowered to a defined level at the rear axle. This allows the luggage compartment to be more conveniently loaded and unloaded. The level at the front axle remains unchanged. The rear axle is lowered by about 50 mm from its currently set ride height, but not lower than -70 mm. This function is not activated when a trailer is hooked up.

In addition, E-ACTIVE BODY CONTROL in the GLS has functions already familiar from the S-Class, which have been further advanced:

- **Curve tilting function**: In CURVE drive mode, the GLS actively leans into bends by up to 3° in three stages, like a motorcycle. This reduces the lateral forces acting on the occupants. Cornering is therefore made much more pleasant, especially for the front and rear passengers.
- **ROAD SURFACE SCAN**: If the GLS is equipped with a stereo multi-purpose camera, it continuously monitors the road surface ahead of the vehicle. The suspension struts are then activated so as to substantially reduce the body movements when driving over surface undulations, as the suspension responds even before the uneven stretch is reached. This enhances the comfort in particular away from paved roads.

Operating principle: How E-ACTIVE BODY CONTROL WORKS

E-ACTIVE BODY CONTROL in the GLS supplements the air suspension with semi-supporting hydropneumatics. The air springs bear the base load of the vehicle body and gradually regulate the level. The hydropneumatics generate dynamic forces that overlay the air suspension forces, and actively support and dampen the vehicle body.

At each wheel, a damper is installed within the axle whose two working chambers have an adjustable damping valve and a hydraulic pressure reservoir. The damper is connected to an intelligent motor/pump unit in the 48 V network by hydraulic lines. Actuation of the motor/pump unit enables the hydraulic fluid to be displaced to create a difference in pressure within the damper, allowing an active force to be generated.

The motor/pump units at all four wheels are coordinated by a central control unit which also actuates the valves and the compressor for the air spring, and therefore always controls the entire suspension system.

The transition from a belt-driven hydraulic pump to an electric 48-volt pump also takes into account the increasing electrification of the powertrain: the combustion engine is idle increasingly often – or not used at all.

Agile on the road, superior when off-road

All versions of the new GLS are for the first time equipped with fully variable all-wheel drive (torque on demand, TonD), which regulates the torque split between the front and rear axle from 0-100 % depending on the selected drive mode. With the optional Off-Road Engineering Package, a likewise fully variable all-wheel-drive system with low and high range is available. This makes the GLS more off-road capable than ever.

The torque split is controlled by the standard-fit transfer case with electronically controlled multi-disc clutch. This allows a variable transfer of drive torque from 0-100 percent (torque on demand) between the axles. The transfer case of the Off-Road Package has an additional reduction gear for off-road driving.

The two fully networked transfer cases with torque on demand allow further improvement in driving safety and agility, especially when cornering. This is achieved by specifically influencing the yaw moment to induce vehicle oversteer or understeer.

Torque on demand: shows just how efficient an SUV can be

Depending on the driving situation, the new transfer case can feed the front axle with suitable, variable drive torque as required. This takes into account the driver's wishes and the selected driving mode, and physical factors such as the current yaw rate or actual traction are also considered.

These are used to continuously calculate the best torque distribution, so as to transfer correspondingly more drive torque to the front axle via the multi-disc clutch in the transfer case. This makes safe and sporty handling characteristics possible even on surfaces with varying friction coefficients.

When moving off either forwards or in reverse, Torque on Demand ensures the best possible traction even on ice and snow. The physical operating principle of the clutch corresponds to that of a centre differential lock familiar from purely off-road vehicles.

During dynamic driving manoeuvres such as driving slaloms, evasive action or cornering, on the other hand, maximum lateral stability at the front axle can be assured by reducing the drive torque at these wheels.

The new transfer case also has a positive effect on longitudinal dynamics and ride comfort, as the engine torque no longer requires to be reduced for the purposes of load reversal damping.

Torque on demand with off-road reduction: more power off-road

With the optional Off-Road Engineering Package, a likewise fully variable all-wheel-drive system (TonD) with low and high range is available. This variant of the transfer case has a reduction gear (known as low range, with a ratio of 1:2.93), which allows to nearly triple the torque acting on the wheel. When operating with engaged inter-axle lock, this ensures optimum traction at both drive axles when driving off-road, especially on sand and above all in rocky terrain. In addition, the power output can be controlled more finely when off-road, especially at slow and crawling speeds.

New brake control system: for even more safety on the road

The modular driving dynamics control system includes the basic functions of anti-lock braking system (ABS) and acceleration skid control (ASR), as well as yaw control, configured for the special features of 4MATIC. When the Off-Road key is pressed, the characteristic curves are adjusted accordingly. When critical driving situations are detected, traction and handling stability are preserved or restored within the physical limits much more rapidly and efficiently by interventions from the brakes and the engine control system.

This gives rise to benefits in particular during

- evasive manoeuvres,
- braking on surfaces with different left and right friction values,
- ABS intervention on changing friction surfaces,
- when braking on bends with large changes in wheel load.

Off-road ABS: blocking for a digging-in effect

Off-road ABS was developed specifically for off-road operations at below 40 km/h, and allows cyclical locking of the front wheels on poor surfaces. The resulting digging-in effect allows the braking distance to be reduced, depending on the surface. On extreme downhill gradients, this makes stopping possible in the first place. The transition from the normal ABS function to off-road ABS is gradual when below the threshold speed.

Off-road score: fun in terrain

Despite its superior technology, the GLS with its luxurious elegance and stately dimensions is not designed to be an extreme climber, of course. However, some drivers will get a taste for using the traction properties of the GLS for more than just occasionally pulling a trailer out of a wet pasture.

For those who dare to venture off-road for the first time or are going on such an excursion with friends, the new GLS offers an innovative app in its MBUX infotainment system, the off-road score. The app uses the information of the different sensors and control units to evaluate how skilfully the driver masters the difficulties of the terrain. The programme offers two options. Either the driver uses it alone: in this case, he can get tips from a tutorial about what he can do better. Or several drivers create their own user profiles and successively drive the same route competing against each other. The incorruptible off-road score decides who did it best.

A real workhorse

One of the strongest reasons for purchasing an SUV is its great suitability for towing a trailer. All-wheel drive and a transmission ratio configured for pulling power allow high towing capacities, while the height, width and relatively high vehicle weight improve the driving stability of the combination. The new GLS is designed to do all this even better. And it is aided in this by Trailer Manoeuvring Assist.

Doing things better already begins with the trailer coupling. A fully electric version of this is available for the European market. Using buttons in the liftgate or the driver's door – protected against operating errors – the ball neck including the socket for the trailer electrics swings up from under the vehicle and automatically engages in its operating position. After its use, it retracts back into its rest position behind the bumper equally effortlessly.

Apart from positioning the button outside the reach of children, the trailer hitch also has an automatic reversing function similar to the power windows. To prevent operating errors due to snagged items of luggage, a pull switch is used instead of a push-button.

Fix4Bike: new accommodation for bike racks

A special feature is also provided for those who do not use the coupling to tow a trailer, but e.g. to carry bicycles: the trailer coupling has two extra bolts on the ball neck to carry a suitable cycle rack in safety, This design allows the load-carrying capacity to be increased to 100 kg and four cycles - particularly useful in the case of e-bikes, which could previously only be carried to a limited extent. The carrier is particularly easy to install, and also protects the rear bumper against damage. Previous racks can still be used, although these are limited to carrying three bikes and 75 kg.

Trailer Manoeuvring Assist

In conjunction with the Parking package, attaching a trailer is convenient even without outside help: aiming for the tow bar is done via the reversing camera.

To this end, it has a zoom mode to precisely show the position of the tow bar and ball neck in relation to each other at close range. Once the combination Is hitched, briefly driving straight ahead calibrates Trailer Manoeuvring Assist with its articulation angle protection. This makes manoeuvring with a trailer easy even for the inexperienced.

Trailer Manoeuvring Assist controls the steering angle of the towing vehicle automatically up to a limited speed. An articulation angle sensor in the ball neck of the trailer coupling supplies the necessary information.

Four cameras (at the front in the radiator grille, at the rear in the tailgate handle and in both exterior mirror housings) monitor the vehicle's surroundings. It is not only their respective images that can be displayed, as a combination of them also generates a virtual bird's-eye view of the vehicle. When reversing with a trailer, a wide-angle view of the trailer and a symbolic representation of the combination are displayed. The driver can then select the articulation angle at which the combination is to reverse. The steering is automatically influenced to maintain this angle. When the trailer has moved in the right direction and is to continue reversing in a straight line, the driver presses the "Straighten up" icon in the touchscreen and the steering automatically performs the manoeuvre. Skilfully towed by the GLS, the trailer moves in a dead straight line.

When a trailer has been hitched up and connected, Trailer Manoeuvring Assist is activated when at standstill by engaging reverse gear and pressing the Parking button to the left of the touchpad in the centre console, and works at speeds up to 8 km/h and even on uphill gradients up to 15 %. Trailer Manoeuvring Assist can be intuitively operated via the MBUX (Mercedes-Benz User Experience) infotainment system: using the media display or the touchpad in the centre console, the driver only needs to select the required manoeuvre (indicating the direction by entering the desired articulation angle or selecting the "Straighten up" function). The manoeuvre can then be monitored from different camera angles. Dynamic guide lines show the trajectory, vehicle width and distance from recognised objects.

If the articulation angle exceeds 5 degrees, the speed of reverse travel is reduced to 5 km/h. And if the driver turns the steering wheel or the articulation angle threatens to become too large, the vehicle automatically stops. Trailer Manoeuvring Assist particularly ensures additional safety for drivers who only occasionally manoeuvre with a trailer in situations that could quickly lead to stress.

A real workhorse: up to 3500 kg towing capacity

The new GLS is however also an excellent towing vehicle for driving a solid straight line. It will effortlessly manage braked trailers with a total weight of up to 3500 kg and tongue weights of up to 140 kg. ESP® features a trailer stabilisation function that recognises any oscillating tendency by the combination and counters this with specific braking intervention, right up to full braking of the combination. When the trailer has ceased to oscillate, the system ends its intervention.

The control systems of AIRMATIC and E-ACTIVE BODY CONTROL also adapt automatically to an attached trailer and control the suspension level and damping accordingly. Assistance systems that are not compatible with trailer operation, e.g. Active Parking Assist, are likewise automatically deactivated, though naturally with a corresponding warning for the driver in the cockpit display.

Superior support in tailbacks

The Mercedes-Benz GLS uses the latest generation of Mercedes-Benz driving assistance systems to provide cooperative driver support. The level of active safety has not only been improved further compared to the preceding model.

Everyone is familiar with this tricky situation on motorways: on rounding a bend, the end of a traffic tailback suddenly appears. This is where the new GLS supports its driver with the Driving Assistance Package, as tailback management on motorways now already begins in advance of a tailback, including assistance in stop-and-go traffic and after the tailback has dissolved.

When **Active Distance Assist DISTRONIC with route-based speed adaptation** is active, the new GLS is able to respond to Live Traffic info - ideally before the driver or the radar and camera sensors can detect the hold-up or hazard. When a traffic tailback is detected, the speed is reduced to approx. 100 km/h as a precaution unless the driver specifically decides otherwise.

New feature of Driving Assistance package Plus: When actually driving in a tailback, **Active Stop-and-Go Assist** can markedly reduce the driver's workload: where there are lane markings, the system is substantially able to perform the tasks of keeping in lane and maintaining the safety distance with a high level of availability at speeds up to around 60 km/h. The vehicle can move off again automatically up to one minute after coming to a stop.

Once the tailback clears, the GLS accelerates back up to the speed specified in Active Distance Assist DISTRONIC with route-based speed adaptation. If the driver has not set a specific speed, in Germany that speed is the recommended motorway speed of 130 km/h. Where traffic signs specify a different speed, **Active Speed Limit Assist** automatically selects the signposted speed limit.

To recognise tailbacks, Active Stop-and-Go Assist evaluates the road category, speed and distances from vehicles travelling ahead and in adjacent lanes. In addition to the stereo multi-purpose camera (SMPC) and long-range radar, it uses the front multi-mode corner radar sensors to recognise vehicles that are cutting in. If Active Steering Assist and Active Distance Assist are activated,

Active Stop-and-Go Assist is switched on automatically when a motorway tailback is recognised. This is indicated by "Stop-and-Go Assist active" in the instrument cluster. As soon as Stop-and-Go Assist is active and the vehicle is moving in a tailback, a tailback symbol is added to the "green steering wheel" symbol of Active Steering Assist in the instrument cluster.

Active Steering Assist assists in forming an emergency lane

A new feature of **Active Steering Assist** is that it can support the driver with the **emergency lane function** on multi-lane roads. On motorways, at speeds under 60 km/h the vehicle refers to detected lane markings and applies swarm intelligence to take its bearings from vehicles in the surrounding area. If none are detected, the GLS takes its bearings from the vehicle ahead, as previously.

Always ready to help: numerous other assistants are available

It is not only by giving driver support in tailbacks that the new GLS further expands Mercedes-Benz Intelligent Drive and takes another major step towards autonomous driving. **Active Distance Assist DISTRONIC** and **Active Steering Assist** now provide even more comfortable support for the driver in keeping a safe distance and steering. With Active Speed Limit Assist, identified speed restrictions are adopted automatically in anticipatory mode. Active Lane Change Assist, Active Emergency Stop Assist and Evasive Steering Assist are also available.

A totally new feature of **Active Brake Assist in the Driving Assistance Package** is the **turning-off function**, which comes into play when the driver intends to turn off across the oncoming lane**:** if there is a risk of collision with oncoming traffic when starting off, the GLS can brake autonomously. Braking intervention takes place when the driver activates the turn signal indicator signalling an intention to turn off, and the vehicle can be braked to a standstill before passing over the lane marking. If not, no braking takes place, so as to enable the GLS to leave the opposite lane swiftly. Oncoming vehicles are detected via an intelligent fusion of radar and camera signals.

Other functions of Active Brake Assist include driver support to avoid impending collisions with stationary vehicles, vehicles ahead and crossing vehicles or pedestrians.

This takes the form of

- a distance warning from a warning lamp in the instrument cluster if the distance from a vehicle in front is insufficient,
- an additional acoustic warning if the danger of a collision is identified,
- braking assistance as appropriate to the given situation, should the driver fail to apply the brakes sufficiently firmly,
- autonomous emergency braking to avoid a collision with moving, stationary or crossing vehicles ahead if the driver fails to respond,
- autonomous emergency braking also for stationary or crossing pedestrians/cyclists.

The new GLS is additionally equipped with **Active Blind Spot Assist including exit warning**. This can provide the driver with intuitive warnings of vehicles, including bicycles, in the danger zone alongside their own vehicle. It can also apply one-sided braking to prevent impending side-on collisions or reduce the severity of such a collision. When the vehicle is at a standstill it can also signal to the driver with a visual warning in the exterior mirror before they climb out that a vehicle is driving past in the critical area. If the door handle is pressed at this moment, an audible warning will additionally sound, the ambient door lighting will flash in red and a message will appear in the instrument cluster. The function is also available when the vehicle is stationary and up to three minutes after the ignition has been switched off. **Active Lane Change Assist**: When the driver wishes to change lanes on multi-lane roads (recognised by the navigation system) at speeds from 80 to 180 km/h, it is sufficient to nudge the indicator stalk in order to activate support. Within the next ten seconds, the sensor system checks together with the driver whether the next lane is clear in front of, alongside and behind the vehicle, also taking into account the speed of any other vehicles. If there is no other vehicle within the relevant safety zone, the driver is supported in changing lane. The initiated lane change is indicated in the instrument cluster and in the head-up display. The system is available in certain countries, depending on the eligibility for certification.

Active Emergency Stop Assist: Active Emergency Stop Assist brakes the vehicle to a standstill in its lane if it detects that the driver is no longer actively driving the vehicle while it is on the move with Active Steering Assist switched on. If there is no steering wheel movement over a longer period when Active Steering Assist is active, the system gives the driver a visual and audible prompt to place his/her hands on the wheel. If the driver fails to respond after repeated visual and acoustic warnings by moving the steering wheel, accelerating, braking or operating the touch controls or other buttons on the steering wheel, the car is

slowed down in the identified lane until it comes to a standstill. At speeds below approx. 60 km/h the traffic behind is warned by means of hazard warning lights. When the vehicle comes to a standstill, the parking brake is engaged automatically and the Mercedes-Benz emergency call system is activated. The vehicle is also unlocked, to allow first responders access to the interior. The functions are aborted as soon as the driver takes control of the vehicle again.

Evasive Steering Assist: Within a speed range from 20 to 70 km/h, Evasive Steering Assist can help the driver to avoid a pedestrian detected by the assistance system using the radar sensors and stereo multi-purpose camera. If the driver initiates an evasive manoeuvre by turning the steering wheel, the system provides assistance by adding precisely calculated steering torque to support the movement of the steering wheel. This torque helps the driver to avoid the pedestrian in a controlled manner and then makes it easier to straighten the vehicle up again so that it can drive past safely. While the philosophy behind Evasive Steering Assist is to provide the driver with significant assistance, the initiative to take evasive action must come from the driver. This is because if evasive action were automatic, a previously inattentive driver might be so surprised by the spontaneous movement of the steering wheel that they might react incorrectly and, for example, attempt intuitively to steer in the opposite direction.

Traffic Sign Assist: Image recognition and information from the digital road map in the navigation system allow determining the speed limit, no-overtaking zones and pedestrian crossings for the current route section and displaying them in the instrument cluster. Additional restrictions such as speed limits in wet conditions (warning when the windscreen wipers are switched on) or speed limits for trucks only are also taken into account or ignored as appropriate in the individual case concerned. The vehicle speed is compared with the speed limit. If set to do so by the driver, a visual/visual-audible warning is given if the speed limit is exceeded. No-entry signs are also recognised and the driver is prompted to check the vehicle's direction of travel. A warning additionally appears in the instrument cluster and on the head-up display if pedestrians are detected in the area of a zebra crossing. Traffic Sign Assist is also separately available outside the assistance package.

Active Speed Limit Assist: In conjunction with MBUX and the Driving Assistance Package, Active Speed Limit Assist, a selectable sub-function of Traffic Sign Assist, is also able to recognise sign gantries and road works signs captured by camera. Known limits, such as 50 km/h in built-up areas or 100 km/h on country

roads, are also adopted from the navigation system. Active Distance Assist DISTRONIC adapts the vehicle's speed to the recognised speed limits automatically (in combination with navigation and traffic sign recognition). In this case, the speed can be adapted in anticipatory fashion based on map data when entering towns. On roads without speed limits, such as stretches on German motorways, the recommended speed – in this case 130 km/h - is adopted as the set speed. This speed can be adjusted by the driver. The desired maximum speed is always adopted in the course of the journey when the speed limit is cancelled. It remains preset until the vehicle leaves the motorway or until the engine is switched off.

PRE-SAFE® PLUS: When there is a sustained risk of collision, this system can warn any following vehicles approaching too fast by quickly flashing the rear hazard warning lamps, trigger the belt tensioners and lock the stationary vehicle's brakes in anticipation of a rear-end collision in order to minimise the risk of injury by reducing the forward jolt resulting from the impact.

Easier parking and manoeuvring: further assistance systems on request

Active Parking Assist with PARKTRONIC assists the driver when searching for a parking space and when entering or leaving parallel or end-on parking spaces. In the case of end-on parking spaces it is active in both forward and reverse direction. It manoeuvres the vehicle into the selected parking space and back out again. In the process acceleration, braking and gear-changing is automatic. In combination with Blind Spot Assist, the system can warn the driver of cross-traffic when reversing out of end-on parking spaces, and also initiate automatic braking if necessary. Parking Assist PARKTRONIC gives a visual and acoustic warning of recognised obstacles with the help of six ultrasonic sensors in each bumper. These can be in front of, to the side or behind the vehicle, and are detected at speeds up to approx. 10 km/h.

The **Parking package with reversing camera** combines Active Parking Assist with a reversing camera in the boot lid. Its image is shown with superimposed guide lines in the media display. The GLS is equipped with a **reversing camera** as standard.

If the **Parking package with 360° camera** is specified, an all-round view is provided by the 360° camera with four networked close-range cameras in the radiator grille, boot lid handle and exterior mirror housings. The information is clearly presented in selectable views in the media display.

ATTENTION ASSIST, Active Lane Keeping Assist, Speed Limit Assist and Active Brake Assist are on board as standard, offering a comprehensive range of safety functions, such as:

- a distance warning from a warning lamp in the instrument cluster, if the distance from a vehicle in front is inadequate,
- an additional acoustic warning if the danger of collision is identified,
- braking assistance appropriate to the given situation as soon as the driver applies the brakes,
- autonomous emergency braking for moving, stationary or crossing vehicles ahead if the driver fails to respond,
- autonomous emergency braking also for stationary or crossing pedestrians/cyclists.

Best lights as standard

As the GLE, the new GLS sets lighting standards in the SUV segment. The GLS has MULTIBEAM LED headlamps as standard (depending on the market), with a total of 112 LEDs per headlamp. During the day, the three-part integrated daytime running lights provide a subtle hint to the S-Class status of the GLS. At night, the efficient, bright and durable technology provides excellent illumination in front of the vehicle on and off the road.

The central comfort feature of the optional MULTIBEAM LED is Highbeam Assist Plus. It is able to control 84 LEDs of each headlamp individually and thus adapt the headlamp range and shape of the light cone continuously to the current traffic conditions. This enables other road users to be specifically excluded from the light beam, and the high-beam headlamps can make full use of their range. Another advantage is that when approaching strongly reflecting traffic signs, the MULTIBEAM LED headlights dim their light intensity accordingly.

All-new: the off-road light

If the GLS is equipped with the Off-Road Engineering Package and the drive mode Off-Road+ has been selected, the lighting system provides support with a particularly wide and bright light distribution. The cornering lights are permanently switched on. This helps when negotiating difficult stretches of terrain at night, as obstacles can be recognised more easily.

Whether in poor weather or on the motorway: the lights adapt accordingly

On country roads the nearside road verge is illuminated more brightly and widely than with conventional low beams. When the system recognises a built-up area, it automatically activates the city light function for urban traffic. Thanks to symmetrical distribution of the low beams and dimmed cornering lights, paths or not easily seen entrances and exits are illuminated to best effect. If the low beam headlamps are able to use data from the HDD navigation system, they already activate a wide cone of light ahead of junctions and roundabouts. Low beam is also activated on the relevant side when steering into tight bends at slow speeds.

At higher speeds and long bends, the active cornering lights even provide anticipatory support. It already illuminates the bend before the driver turns the steering wheel.

The headlamps also have the right answers to inclement weather conditions that often lead to irritating reflections: in unfavourable light conditions, the extended fog light function illuminates the outer half of the road lane more brightly. Adverse weather light is activated when the windscreen wipers are operating constantly, specifically dimming individual LEDs in rainy and wet conditions. The two together ensure that oncoming traffic and the driver suffer less dazzle.

The integrated ULTRA RANGE high beam gives an even longer range. This auxiliary high beam is switched on when Highbeam Assist Plus has been activated, no other road user is detected, the road ahead is straight and the speed is above 40 km/h.

And finally, MULTIBEAM LED in conjunction with HDD navigation adapts to right or left-hand traffic when crossing a border.

Intelligent light: the rear lights also adapt

The light intensity of the brake lights and indicators in the adaptive all-LED rear lights is automatically adjusted to suit the ambient light conditions. This makes the GLS easily recognisable for other road users in any situation – and at the same time avoids dazzling them.

Whenever it is unlocked or locked, the vehicle welcomes its driver with a brief light show – the headlamps are discreetly activated and transition into a shining white beam.

Robust shell with lightweight design

The body shell of the GLS has a particularly rigid design – because this addresses many requirements. Especially a long vehicle body with large liftgate is subject to strong torsion moments during fast driving manoeuvres in terrain and must be able to withstand these. The right rigidity is also an important characteristic of a high level of vibration and noise comfort, which suppresses resonances and reduces the transmission of bothersome noises and vibrations. And finally, the stability of the passenger cell is the foundation for effective protection in the event of an accident. Given all these requirements, it is obvious that an SUV body shell cannot be a flyweight. And yet it is to be just as heavy as needed – that is to say as light as possible. This requires a great deal of effort, a number of compromises – and a lot of good ideas.

The high stability of the body shell of the new GLS is the result of a combination of high-strength sheet steel and lightweight materials for assemblies where this achieves the desired attributes, and of the optimal sizing and geometry of all components.

The bonnet and front wings of the new GLS are of sheet aluminium, the strut towers at the front and rear axles are of die-cast aluminium and the side members at the rear are die-cast aluminium partially reinforced with sheet steel. The front-end member is of innovative Organo panelling, fibre-reinforced plastic panels, which after being heated up are formed into three-dimensional components in a press.

Precision-fitted panels with variable material thickness

For the first time, the floor pan of the passenger cell uses so-called tailored rolled blanks. These panels are rolled to different thicknesses, so that the finished, pressed component has the ideal wall thickness in every area. This means that high wall thicknesses only occur where they are really needed - on the new GLS, this is in the area of the centre tunnel that forms the backbone of the floor panel and greatly influences the rigidity of the body shell in a crash.

For the greatest possible rigidity, the body shell components are for the most part bonded and spot-welded, and the flanges connecting the parts are designed to allow joining with minimal tension so that tolerances between the panels are compensated during assembly. The resulting body shell is so torsionally rigid that despite the large roof aperture to allow for the optional panoramic sliding sunroof, it offers more resistance to torsional forces than that of the preceding model.

At the same time, with the same equipment level, the body shell of the new GLS is no heavier than that of the previous generation although it has a longer wheelbase and a substantially greater overall length, and although it is designed to meet the substantially more stringent requirements of the US/NCAP and Euro NCAP safety tests.

Crash requirements take real-life accident data into account

The foundation of the occupant protection is the body shell structure with a particularly rigid passenger cell. For crash safety, it is important that its strength is tailored to the deformation resistances of the front-end and rear-end structures, which on the new GLS were likewise modified compared with the predecessor. All Mercedes-Benz models must comply with in-house safety standards, which in many cases go far beyond the legal requirements. Especially the crash-related requirements are aligned to the so-called Real Life Safety philosophy. These take findings from in-house accident research into account in the development specifications, e.g. the roof drop test.

In addition to the passenger cell, the area of the body structure that accommodates the fuel tank is of particularly rigid design to limit the consequences of a serious collision. To this end, the new GLS uses aluminium castings with steel inserts, which limit the deformation of this area ahead of the rear axle even in very severe accidents. In addition, the strength of this area is also important to protect the rearmost seats in a rear-end impact.

PRE-SAFE® with new functions

For many years PRE-SAFE®, the preventive occupant protection system, has supplemented the classic design measures. The result is comprehensive protection that starts well before an accident and is still effective after the accident, as in the new GLS. The extensive driving assistance systems of the new GLS, as well as the sophisticated crash sensor system, enable PRE-SAFE® to

recognise a likely impact in even more situations than before. The protective effect of the systems is improved with a precisely coordinated response of the restraint systems and a number of other measures. As a result, PRE-SAFE® is now able to

- incorporate an impending side-on collision, for example, in the event of accidents at junctions by means of the close-range radar sensors (PRE-SAFE® Impulse Side, part of the Driving Assistance Package Plus),
- recognise an impending impact of a vehicle following behind by means of the radar sensors in the rear bumper and warn its driver with rapidly flashing hazard lights. At the same time, the PRE-SAFE® measures of the occupant protection systems are initiated. If the vehicle is stopped, the brakes are locked to keep it in place and reduce the forward jolt and thus the risk of whiplash and a secondary collision (PRE-SAFE® PLUS).

In the new GLS, PRE-SAFE® also protects the passengers in an area whose endangerment has been discussed rather infrequently: the hearing. If a probable impact is detected, the standard-fit PRE-SAFE® Sound system transmits a noise signal through the sound system of the vehicle, which can trigger a reflex. It causes the stapedius muscle in the inner ear to contract and muffles the noise level of a major collision.

Restraint systems: state-of-the-art belts and airbags

The GLS has 3-point inertia-reel seat belts with belt tensioners and belt force limiters on all outer seats, including those in the optional third seat row. The centre belt in the second row is a standard three-point seat belt. The belts of the front seats are equipped with reversible PRE-SAFE® reel tensioners. For child seats, all three seats of the second row and the two outer rear seats of the third row are fitted with i-Size or ISOFIX child seat attachment points, depending on the country.

For severe frontal collisions, the airbags in the new GLS include a driver knee airbag, a driver airbag and a front passenger airbag. The latter is automatically deactivated by sensors when a rear-facing child seat or an unoccupied seat is detected. The window airbags can also be activated in a frontal collision involving a lateral component.

A severe side-on collision usually triggers the airbags only on the side facing the impact: Window airbags cover the side windows all the way to the D-pillar from

the roof and thereby protect all the passengers on outer seats. Thorax-pelvis side airbags for driver and front passenger are standard, side airbags for the outer seats of the second seat row are optionally available. The airbag control unit also recognises a roll-over and triggers, e.g. belt tensioners and window airbags, if needed.

High level of vibration and noise comfort

The rigidity of the body shell structure of the new GLS is key for the noise and vibration comfort. Excitations by the suspension, the vehicle's mechanical components themselves and the airstream can be dampened and muffled by many measures, but the decisive factor for the perception is how the body shell structure responds to the excitation. That of the GLS has natural frequencies that are far from the resonances caused by the typical excitation frequencies of wheels and powertrain. The areas carrying the elastomer bearings of the powertrain and the subframes of both axles are particularly rigid. This means that these assemblies and their vibrations are very effectively isolated from the body shell.

The geometry of the engine and suspension mounts was redesigned to transmit less vibrational energy to the body shell structure. The housing of the electro-mechanical steering was also made more rigid, so that steering and road noises transmitted into the interior are reduced.

The insulation of transmitted sound from the powertrain to the passenger cell has also been optimised. The firewall insulation is injection-moulded rather than deep-drawn, and therefore does not have the uneven wall thicknesses resulting from the stretching of deep-drawn sheet metal. So despite its complex shape extending to the side area of the A-pillars and the windscreen cross-member, there are no acoustic weak spots. The weight per unit area of this noise insulation is locally configured for the actual noise input – heavy where needed for effective insulation, but with a weight-saving overall design. Insulation is augmented by the powertrain partition of sound-absorbing plastic and the engine compartment insulation. In terms of thermal and acoustic insulation, these are configured to suit the engine variant.

The insulation measures for the vehicle floor and wheel arches are also specific to each engine variant. Computer simulations were used to configure the torsional dampers and isolation elements, and incorporate reinforcements into the floor assembly. All these measures were rounded off with insulating

membranes, foam-lined cavities and floor carpeting that performs far more functions than just a floor covering: it consists of a four-layered acoustic structure with foam, a heavy layer, matting and finally carpet.

Not a lot of turbulence

The currently lowest aerodynamic drag of any SUV in its segment, and even less wind noise than in the preceding model – that was the development goal for the new GLS. This was achieved with C_d figures from 0.32 – a significant improvement over the preceding model (C_d = 0.35) and a benchmark among comparable full-size SUVs. The good aerodynamic properties make a key contribution to low fuel consumption under everyday conditions. A host of details was optimised with numerous computation loops, CAE simulations (computer-aided engineering) and measurements in the wind tunnel in Sindelfingen.

Major measures include, depending on the market, an active cooling-air control system behind the radiator grille for needs-based metering of the airflow (AIRPANEL) so that only as much air as absolutely necessary flows through and as much as possible flows around the vehicle. To ensure that it meets little resistance, wheel spoilers with aerodynamically shaped deflectors ahead of the front wheels were developed, with additional wheel spoilers ahead of the rear wheels. The side mirrors were optimised, as the turbulence they create not only generates drag, but also noises that are very close to the driver's ear. Acting together with the airflow around the A-pillars, this airflow substantially ensures that the side windows remain clean even when driving in the rain. The roof spoiler and the side spoilers, which are sealed against the D-pillar on the tailgate, as well as rear lights with special spoiler lips, ensure reduced turbulence at the rear end.

The large ground clearance of SUVs makes detailed improvements to the underbody particularly beneficial to the aerodynamics. The new GLS uses extensive panelling on the underbody and prop shaft tunnel for this purpose. Flush fuel tank panelling, an aerodynamic fairing at the rear axle and an aerodynamically optimised diffuser shroud reduce drag and noisy turbulence at the underbody. This is where particularly low-frequency wind noise otherwise arise. The wheels, a constant thorn in the side of the aerodynamics engineers, have also been optimised.

With regard to the large panoramic sliding sunroof, the aerodynamics specialists succeeded in achieving a level of noise comfort corresponding to that of a much smaller sliding sunroof by using numerous air deflection measures, specially shaped seals and covers. Indeed, a special programme was developed for the panoramic sliding sunroof to adapt the tilted position of the roof to the vehicle speed. As a result, the wind noise always remains pleasant without becoming intrusive..

Made in Tuscaloosa

The history of premium SUVs from Mercedes-Benz is also the history of the plant in Tuscaloosa, Alabama. Since 1995 Daimler has invested more than six billion dollars in this location in the southern USA, and since 1997 it has produced more than two million SUVs of which two thirds went for export. Tuscaloosa is the only production location for the new GLS. The GLE and the GLE Coupé are also produced here, as is the C-Class for the North American market. One billion euros is currently being invested in the Tuscaloosa location to prepare the plant for the production of future electric SUVs, including the construction of a battery factory close to the plant.

At present, Mercedes-Benz offers seven models in the SUV segment (GLA, GLC, GLC Coupé, GLE, GLE Coupé, GLS, G-Class). The SUVs are a major structural pillar in the Mercedes-Benz product portfolio, and greatly contribute to the growth of the brand. To date, more than six million customers around the world have opted for a Mercedes-Benz SUV.

In the last five years alone, global sales of the SUVs from Mercedes-Benz more than doubled. Nowadays, the SUV segment accounts for more than one third of all Mercedes-Benz sales. In 2018, the SUVs were the strongest segment for Mercedes-Benz with more than 820,000 units sold.

Daimler's history in the USA goes back to the year 1888, when the first distributorship in the United States was founded, and since 1981 it has also included the heavy trucks of the American icon Freightliner. However, the major strategic decision to produce passenger cars in the USA was closely allied to the introduction of the large SUVs, for which the American market is by far the most important worldwide. The Tuscaloosa plant and the M-Class were therefore two parts of one and the same decision announced in April 1993: the history of Mercedes-Benz U.S. International, Inc. – MBUSI for short – had begun.

The plant was completed in July 1996, and production of the first M-Class commenced in the following year. Daimler brought its corporate culture to the USA with thorough training and education of the employees. The originally planned production output of 65,000 units quickly became more. In recent years

over 300,000 vehicles have rolled off the production lines in Tuscaloosa. More than three million vehicles have left the plant since 1997. Around two thirds of the installed parts and components come from North American suppliers. Some two thirds of the SUVs produced in Alabama are exported from the USA. This makes MBUSI the second-largest automobile exporter in the USA.

One billion dollars for electromobility

One billion US dollars is the investment with which Tuscaloosa is being prepared for a new chapter in the history of Daimler: the expansion of electromobility at Mercedes-Benz. Most of this sum is going into the construction of an American location within the Mercedes-Benz Cars battery production network. In Bibb County, eleven kilometres from the Mercedes-Benz car plant, the new plant is being built that will produce the batteries for future electric SUVs of the EQ product and technology brand. Directly adjacent to this is a logistics centre to supply the car production plant with the necessary parts. Both will be opened next year.

This means that a further 600 or so new jobs are expected to be created in Alabama, in addition to the current 3700 employees of the passenger car plant. All in all, the corporate group employs around 26,000 people at 23 US locations, providing around 150,000 jobs counting indirect employment.

A full-size success story

In 1997 Mercedes-Benz founded the premium SUV segment with the launch of the M-Class. At the same time this was the brand's first model to be produced in the USA, at the new plant in Tuscaloosa/Alabama. The first generation of the GL-Class (X 164) with optional third seat row appeared in 2006. It was closely related to the second generation of the M-Class (W 164, 2005-2011) in terms of technology. The second generation of the GL-Class followed in 2012. The name of the full-size SUV was changed to GLS in 2015, while the M-Class was renamed GLE. As a result, this defines the positioning of the two SUV models within the model range analogous to
S-Class and E-Class. Since then, the GLS is the S-Class of SUVs also in the model designation. More than 550,000 units in all have been sold since its market launch in 2006.

First generation (X 164): 2006 – 2012

The GL-Class is presented at the Detroit Auto Show in January 2006 with deliveries beginning in October 2006. Compared with the technically related M-Class, the GL has a wheelbase extended by 16 cm to 3075 mm and with a length of 5088 mm is almost 31 cm longer than the smaller model. The interior enlarged in this way can accommodate an optional additional two-seat bench. The power is provided by turbocharged V6 or V8 diesel engines or by V8 petrol engines.

Like the second M-Class, the first GL has a unibody design, while many competitors are still equipped with a ladder-type frame. It is fitted with leather seats, air suspension with adjustable ground clearance and 7G-TRONIC automatic transmission as standard and in its segment sets standards in terms of comfort and technology. With the model update in 2009, it also is equipped with the PRE-SAFE® preventive occupant protection system as standard, in addition to getting upgrades to the equipment level and design.

Second generation (X 166): 2012 – 2019

The second generation also is a close relative of the M-Class in terms of technology. While the wheelbase remains unchanged, the vehicle has grown a few centimetres (5120 - 5162 mm). The petrol engines are now twin-turbo V6 and V8 engines. A V6 turbodiesel is alternatively available. The suspension of the smaller engines has steel springs as standard. However, these models can optionally be equipped with the two-chamber air suspension AIRMATIC with adaptive damping system and automatic level control, which are standard on the more powerful petrol models.

Also available on request are the ACTIVE CURVE SYSTEM, stabilisers whose spring stiffness are automatically adjustable for reduced body roll, Night View Assist and Active Parking Assist.

With the model update in 2015, the GL is renamed GLS. The engine output of some models is increased and the 9G-TRONIC replaces the previous 7G-TRONIC automatic transmission in most variants. The assistance systems and the telematics equipment also are brought up-to-date.

Mercedes-Benz GLS 350 d 4MATIC

Engine		
Number of cylinders/arrangement		6/in-line, 4 valves per cylinder
Displacement	cc	2925
Bore x stroke	mm	82.0 x 92.3
Rated output	kW/hp	210/286 at 3400-4600 rpm
Rated torque	Nm	600 at 1200-3200 rpm
Compression ratio		15.5: 1
Mixture formation		Common-rail high-pressure injection
Power transfer		
Drive system		Permanent all-wheel drive
Transmission		9G-TRONIC 9-speed automatic
Gear ratios	Final drive ratio	3.46
	1st gear	5.35
	2nd gear	3.24
	3rd gear	2.25
	4th gear	1.64
	5th gear	1.21
	6th gear	1.00
	7th gear	0.86
	8th gear	0.72
	9th gear	0.60
	Reverse gear	4.80
Suspension		
Front axle		Double wishbone, air springs, single-tube gas-filled shock absorber, stabiliser bar
Rear axle		Multi-link suspension, air springs, twin-tube gas-filled shock absorbers, stabiliser bar
Braking system		Vented disc brakes all-round, electric parking brake, ABS, Brake Assist, ESP®
Steering		Electrically assisted rack-and-pinion power steering system
Wheels		8.5 J x 19 H2
Tyres		275/55 R 19 W
Dimensions and weights		
Wheelbase	mm	3135
Track, front/rear*	mm	1669/1692
Length	mm	5207
Width	mm	1956
Height	mm	1823
Turning circle	m	12.52
Boot capacity, German Association of the Automotive Industry	l	355-2400
Kerb weight acc. to EC	kg	2485
Payload	kg	765 (up to 900)[1]
GVWR	kg	3250 (up to 3385)[1]
Tank capacity/of which reserve	l	90/9.0
Performance and fuel consumption		
Acceleration 0-100 km/h	s	7.0
Top speed	km/h	227

***** With tyre size 255/50 R19

[1] depending on the optional equipment

Combined fuel consumption[1]	l/100 km	7.9-7.6
Combined CO_2 emissions[2]	g/km	208-200

[1] The stated figures are the measured "NEDC CO_2 figures in conformance with Article 2 No. 1 Implementing Regulation (EU) 2017/1153. The fuel consumption figures were calculated based on these figures. A higher figure may be relevant as the basis for calculating the motor vehicle tax

Mercedes-Benz GLS 400 d 4MATIC

Engine

Number of cylinders/arrangement		6/in-line, 4 valves per cylinder
Displacement	cc	2925
Bore x stroke	mm	82.0 x 92.3
Rated output	kW/hp	243/330 at 3600-4000 rpm
Rated torque	Nm	700 at 1200-3000 rpm
Compression ratio		15.5: 1
Mixture formation		Common-rail high-pressure injection

Power transfer

Drive system		Permanent all-wheel drive
Transmission		9G-TRONIC 9-speed automatic
Gear ratios	Final drive ratio	3.46
	1st gear	5.35
	2nd gear	3.24
	3rd gear	2.25
	4th gear	1.64
	5th gear	1.21
	6th gear	1.00
	7th gear	0.86
	8th gear	0.72
	9th gear	0.60
	Reverse gear	4.80

Suspension

Front axle	Double wishbone, air springs, single-tube gas-filled shock absorber, stabiliser bar
Rear axle	Multi-link suspension, air springs, twin-tube gas-filled shock absorbers, stabiliser bar
Braking system	Vented disc brakes all-round, electric parking brake, ABS, Brake Assist, ESP®
Steering	Electrically assisted rack-and-pinion power steering system
Wheels	8.5 J x 19 H2
Tyres	275/55 R 19 W

Dimensions and weights

Wheelbase	mm	3135
Track, front/rear*	mm	1669/1692
Length	mm	5207
Width	mm	1956
Height	mm	1823
Turning circle	m	12.52
Boot capacity, German Association of the Automotive Industry	l	355-2400
Kerb weight acc. to EC	kg	2490
Payload	kg	760 (up to 895)[1]
GVWR	kg	3250 (up to 3385)[1]
Tank capacity/of which reserve	l	90/9.0

***** With tyre size 255/50 R19

Performance and fuel consumption

Acceleration 0-100 km/h	s	6.3
Top speed	km/h	238

[1] depending on the optional equipment

Combined fuel consumption[1]	l/100 km	7.9-7.6
Combined CO_2 emissions[2]	g/km	208-201

[1] The stated figures are the measured "NEDC CO_2 figures in conformance with Article 2 No. 1 Implementing Regulation (EU) 2017/1153. The fuel consumption figures were calculated based on these figures. A higher figure may be relevant as the basis for calculating the motor vehicle tax

Mercedes-Benz GLS 450 4MATIC (not in Western Europe)

Engine

Number of cylinders/arrangement		6/in-line, 4 valves per cylinder
Displacement	cc	2999
Bore x stroke	mm	83.0 x 92.4
Rated output	kW/hp	270/367 at 5500-6100 rpm
Rated torque	Nm	500 at 1600-4500 rpm
EQ Boost	kW/hp (Nm)	16/22 (250)
Compression ratio		10.5: 1
Mixture formation		High-pressure injection

Power transfer

Drive system		Permanent all-wheel drive
Transmission		9G-TRONIC 9-speed automatic
Gear ratios	Final drive ratio	3.27
	1st gear	5.35
	2nd gear	3.24
	3rd gear	2.25
	4th gear	1.64
	5th gear	1.21
	6th gear	1.00
	7th gear	0.86
	8th gear	0.72
	9th gear	0.60
	Reverse gear	4.80

Suspension

Front axle	Double wishbone, air springs, single-tube gas-filled shock absorber, stabiliser bar
Rear axle	Multi-link suspension, air springs, twin-tube gas-filled shock absorbers, stabiliser bar
Braking system	Vented disc brakes all-round, electric parking brake, ABS, Brake Assist, ESP®
Steering	Electrically assisted rack-and-pinion power steering system
Wheels	8.5 J x 19 H2
Tyres	275/55 R 19 W

Dimensions and weights

Wheelbase	mm	3135
Track, front/rear	mm	1669/1692
Length	mm	5207
Width	mm	1956
Height	mm	1823
Turning circle	m	12.52
Boot capacity, German Association of the Automotive Industry	l	355-2400
Kerb weight acc. to EC	kg	2445
Payload	kg	785 (up to 895)[1]
GVWR	kg	3230 (up to 3340)[1]
Tank capacity/of which reserve	l	90/9.0

Performance and fuel consumption

Acceleration 0-100 km/h	s	6.2
Top speed	km/h	246
Combined fuel consumption[2]	l/100 km	n/a

[1] depending on the optional equipment

[2] This version is exclusively available outside the EU economic zone. Due to the differing requirements for certification, no measurement data of a technical service are available, which

Combined CO_2 emissions[2]	g/km	n/a

would be directly comparable to the information for the other versions. That is why no information is provided here.

Mercedes-Benz GLS 580 4MATIC

Engine			
Number of cylinders/arrangement			V8, 90° V angle, 4 valves per cylinder
Displacement		cc	3982
Bore x stroke		mm	83.0 x 92.0
Rated output		kW/hp	360/489 at 5500 rpm
Rated torque		Nm	700 at 2000-4000 rpm
EQ Boost		kW/hp (Nm)	16/22 (250)
Compression ratio			10.5: 1
Mixture formation			High-pressure injection
Power transfer			
Drive system			Permanent all-wheel drive
Transmission			9G-TRONIC 9-speed automatic
Gear ratios	Final drive ratio		3.27
	1st gear		5.35
	2nd gear		3.24
	3rd gear		2.25
	4th gear		1.64
	5th gear		1.21
	6th gear		1.00
	7th gear		0.86
	8th gear		0.72
	9th gear		0.60
	Reverse gear		4.80
Suspension			
Front axle			Double wishbone, air springs, single-tube gas-filled shock absorber, stabiliser bar
Rear axle			Multi-link suspension, air springs, twin-tube gas-filled shock absorbers, stabiliser bar
Braking system			Vented disc brakes all-round, electric parking brake, ABS, Brake Assist, ESP®
Steering			Electrically assisted rack-and-pinion power steering system
Wheels			8.5 J x 20 H2
Tyres			275/50 R 20 W
Dimensions and weights			
Wheelbase		mm	3135
Track, front/rear		mm	1669/1692
Length		mm	5207
Width		mm	1956
Height		mm	1823
Turning circle		m	12.52
Boot capacity, German Association of the Automotive Industry		l	355-2400
Kerb weight acc. to EC		kg	2545
Payload		kg	705 (up to 850)[1]
GVWR		kg	3250 (3395)[1]
Tank capacity/of which reserve		l	90/9.0
Performance and fuel consumption			
Acceleration 0-100 km/h		s	5.3
Top speed		km/h	250

[1] depending on the optional equipment

Combined fuel consumption[1]	l/100 km	10.1-9.8
Combined CO_2 emissions[2]	g/km	230-223

[1] Figures for fuel consumption and CO_2 emissions are provisional and were determined by the Technical Service for the certification process in accordance with the WLTP test method and correlated into NEDC figures. EC type approval and a certificate of conformity with official figures are not yet available. Differences between the stated figures and the official figures are possible.