



Mercedes-Benz



The new Mercedes-AMG GT R

Press Information

Developed in the "Green Hell"

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Affalterbach. From the world's most demanding racetrack directly onto the road: Never before has Mercedes-AMG packed so much motorsport technology into a production vehicle than into the new AMG GT R. The front-mid-engine concept with transaxle, the twin-turbo V-8 engine rated at 430 kW/585 hp, the extensively modified suspension, the new aerodynamics and the intelligent lightweight construction lay the foundations for an especially dynamic driving experience. Even from afar, the exclusive "AMG green hell magno" special paintwork leaves no doubt as to the sports car's origin, having spent most of its development time in the "Green Hell" of the Nurburgring racetrack. Wider front and rear wings allow an increased track width for optimum grip and even higher cornering speeds. The new front fascia with active elements, the large rear aerofoil and the new rear fascia with double diffuser enhance aerodynamic efficiency and help ensure optimum grip. The lightweight forged wheels shod with cup tyres as standard are likewise designed for maximum driving dynamics. The same applies to other new features such as the active rear-wheel steering, the nine-way adjustable traction control system and the adjustable coil-over suspension with additional electronic control. What is more, the new AMG Panamericana grille emphasises the unique standing of the AMG GT R. Its characteristic form with vertical fins celebrated its world première on the Mercedes-AMG GT3 customer-sport racing car and now for the first time features on an AMG production vehicle.

Mercedes-AMG continues to grow and is expanding the top end of its product range with the introduction of the new AMG GT R. "Our sports-car and performance brand AMG has its roots in motorsport and, ever since its formation, has repeatedly faced up to the competition on the racetrack. These genes are particularly prevalent in the new AMG GT R. Boasting a wealth of technological innovations, the new top-of-the-range model is proof of the close collaboration between our constructors of racing cars and road-going vehicles," states Professor Thomas Weber, Member of the Board of Management of Daimler AG, responsible for Group Research and Mercedes-Benz Cars Development.

"With the new AMG GT R, we have reached the next level of driving performance. This road-going sports car with motor-racing genes and innovative technical solutions offers an ultimate driving experience that allows people to feel our motorsport origins in every fibre. It combines the driving dynamics of our AMG GT3 racing car with the everyday practicality of the AMG GT. Those with petrol in their veins will be thrilled by the radical longitudinal and lateral acceleration, the precise turn-in, and the sensational grip. We have modified all performance-relevant components and linked them together intelligently for maximum driving dynamics," says Tobias Moers, CEO of Mercedes-AMG GmbH.

The data at a glance:

	Mercedes-AMG GT R
Engine	4.0-litre V-8 with twin turbochargers and direct injection
Displacement	3982 cc
Output	430 kW (585 hp) at 6250 rpm
Peak torque	700 Nm at 1900-5500 rpm
Driven wheels	Rear-wheel drive
Transmission	AMG SPEEDSHIFT DCT 7-speed dual-clutch transmission
Fuel consumption - urban/extra-urban/combined	15.0/9.2/11.4 l/100 km
Combined CO ₂ emissions	259 g/km
Efficiency class	G
Weight (DIN/EC)	1555*/1630** kg
Power-to-weight ratio	2.66*/2.79** kg/hp
Acceleration 0-100 km/h	3.6 s
Top speed	318 km/h

*Kerb weight according to DIN, not including driver and luggage; **Kerb weight according to EC, including driver (75 kg)

The third member of the AMG GT family is the new spearhead of the AMG model range. Featuring pioneering technologies, the AMG GT R was designed with racetrack use firmly in mind. Its development was largely based on vast motor-racing experience in AMG GT3 customer sport and the German Touring Car Masters. Figures such as 3.6 seconds from zero to 100 km/h and a top speed of 318 km/h, combined with the outstanding driving dynamics, will undoubtedly translate into extremely fast laps on the racetrack. The new exclusive colour "AMG green hell magno" alone establishes a visual link to the "Green Hell", the nickname for the legendary "North Loop" of the Nurburgring, emphasising that the car's roots are firmly embedded in the racetrack. Sharpened racetrack

performance comes courtesy of the intelligent lightweight construction incorporating aluminium and carbon, specific reinforcements in the body shell, the uprated twin-turbo V-8 engine with the specifically adapted seven-speed dual-clutch transmission, the innovative aerodynamics with active components, and the new suspension with active rear-wheel steering and uniball joints.

The concept with front mid-engine and transmission in transaxle configuration on the rear axle, a tried-and-tested feature of the AMG GT and AMG GT S, makes for a beneficial rear-biased weight distribution of 47.3 to 52.7. In conjunction with the vehicle's low centre of gravity, this translates into extremely agile handling and permits high cornering speeds. With a power-to-weight ratio of 2.66 kilograms per hp, the Mercedes-AMG GT R takes up pole position in its segment.

Close collaboration between design and aerodynamics experts

Aerodynamics engineers and designers worked together more intensively than ever during development of the new AMG GT R. The AMG design idiom of "Dynamic Presence" forms the basis for the far more expressive overall appearance and the very distinct look. Form follows function, and function supports form: All elements have an inherent technical benefit and contribute to the enhanced driving dynamics, while the aerodynamics experts have made the designers' wishes a reality. This networking even resulted in an innovation that now has a patent pending.

The design of the AMG GT R embodies sensuous clarity – hot & cool. Apart from the powerfully sculpted body and the motorsport components, the new AMG Panamericana grille is a real eye-catcher. This unique feature also comes from the world of motorsport and is celebrating its standard-production première in the AMG GT R: Its 15 chrome-plated vertical fins cite the look of the new AMG GT3 racing car. The basic form of the new radiator grille goes back to the Mercedes-Benz 300 SL racing car that won the legendary Panamericana road race in Mexico in 1952.

Unbridled forwards thrust even when stationary: the front end

The low-slung front section and the forwards-inclined radiator grille create a distinctive "shark nose" impression and make the car appear to sit lower on the road. At the same time, this shape lowers the vehicle's back-pressure point, enhancing the flow of cooling air and the car's aerodynamic performance.

The more V-shaped arrow-like appearance of the front end also enhances the dynamic looks, thus embodying the uninhibited forward thrust of the AMG GT R even before it moves. A front fascia featuring a completely new-look jet-wing design (based on the A-wing) emphasises the feeling of width and lends the car a more road-hugging appearance. In terms of their shape, the large outer air intakes in the front fascia are reminiscent of jet engines. They ensure that the increased cooling-air requirements of the AMG GT R drive system are met. For this reason, they sport two aerodynamically shaped horizontal fins in place of meshes and as a result route the airflow to the radiators without loss.

The wide front splitter reduces lift at the front axle. Additional Air Curtains on the outside of the front fascia calm the airflow, improving the C_d value of the AMG GT R. Thanks to their narrow, vertical openings, the Air Curtains also guide the air specifically towards the wheel arches, optimising the flow properties in this area. To ensure ideal airflow through the double wheel arch radiators, the AMG GT R additionally features new and unique wheel arch liners with special cooling-air slits.

All-new active aerodynamics profile in the underbody

A special engineering feat is the completely new active aerodynamics profile, which is concealed almost invisibly in the underbody in front of the engine. At a speed of 80 km/h in RACE mode, this carbon component, weighing only about two kilograms, automatically moves downward by about 40 millimetres and changes the airflow considerably. This process results in what is known as the Venturi effect, which additionally "sucks" the car onto the road and reduces the front-axle lift by around 40 kilograms at 250 km/h.

The driver can feel this in the steering: the AMG GT R is even more precise to steer when cornering at high speed and exhibits even better directional stability. Especially during fast cornering and under high lateral acceleration, the

AMG GT R delivers far more agile response with clear steering-wheel feedback while remaining easily controllable at all times.

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In addition, the drag coefficient is improved. As a result, the downforce on the rear axle remains at an unchanged high level.

This innovation was developed using computer simulation at first and then optimised during many hours in the wind tunnel. The results were confirmed in extensive test drives, including on the North Circuit of the Nurburgring. The new-look aerodynamics profile is barely visible on the underbody and thus blends in harmoniously with the overall silhouette.

When the electrically operated profile is extended, the radiator air outlet opens at the front end and precisely guides the air flow towards the double rear diffuser, which therefore also benefits from an optimal flow of air. This improves the handling stability of the rear axle while reducing the temperature level of the hotspots at the rear. At the same time, the aerodynamics package ensures optimised stopping power by routing more cold air to the wheel discs specifically. To protect against damage, the component is spring-mounted and can therefore flex upwards easily.

Louvres control the airflow: the active air management system

Another technical highlight improving the aerodynamics of the AMG GT R is the active air management system. This system has vertical louvres positioned in the lower area directly behind the front fascia. These louvres are electronically controlled and can be opened and closed in around a second by an electric motor to improve the airflow and consequently the aerodynamic performance.

The louvres are normally closed - including at top speed, during braking and when cornering at high speed. This position lowers drag and makes it possible to route the air to the underbody to reduce front lift even further. Only once predefined components have reached certain temperatures and the demand for cooling air is particularly high do the louvres open and allow the maximum amount of cooling air to flow to the heat exchangers. This calls for highly intelligent and fast control.

The overall aerodynamics concept of the AMG GT R ensures an optimal balance of lift and downforce in all operating states and furthermore reduces drag compared with the AMG GT.

Powerful and long: the side view

The front wings of super-light carbon add a total of 46 millimetres to the width of the AMG GT R at the front and make room for the wider track and large wheel/tyre combinations. The powerfully sculpted wings emphasise the longitudinal dynamics in addition. A further distinguishing feature is the special wing signet featuring a fin and a large air outlet through which the waste heat from the engine bay flows. This fin is perforated and incorporates the AMG diamond logo with five slats.

The side view additionally benefits from the new, optional AMG Performance forged wheels in matt black. The especially lightweight 10-spoke wheel is exclusive to the AMG GT R and its highly elaborate design includes a drop-centre rim, a milled groove and two high-sheen rim rings of different width. There are size

10.0 J x 19 ET56 wheels at the front and 12.0 J x 20 ET52 at the rear. The lightweight design of the wheels has three advantages: it reduces the overall weight, the rotatory mass and the unsprung masses. Efficiency and performance are enhanced, while the wheel suspension and steering deliver even more precise response, all of which also has a positive effect on the chassis and suspension control systems.

The wheels afford a clear view of the brake callipers, which are painted in yellow exclusively for the AMG GT R. New side sill panels make the vehicle look even lower stance on the road, while inserts in high-gloss black set an individual tone. The same applies to the high-gloss black caps on the housings of the door mirrors.

The AMG GT R comes as standard with a roof made of high-grade carbon to underscore the high-contrast look of the vehicle.

Emphasis on width and aerodynamic optimisation: the rear end

The rear end also features numerous, conspicuous innovations: The new aluminium side walls widen the rear of the AMG GT R by a total of 57 millimetres, creating space for the larger 20-inch wheels and the wider track. Both measures make for improved traction while allowing higher cornering speeds.

The wider design of the rear fascia with large outer vent openings and vertical swaging improves the airflow at the rear end, as does the double diffuser. The

overall heat dissipation of the silencers is optimised as the warm air is exhausted by the double diffuser while driving.

A small air outlet is incorporated between the tail lamps for additional dissipation of the heat generated by the rear silencer. A further distinguishing feature of the AMG GT R is the large exhaust tip with centre spar, which is centrally positioned in the rear fascia. It is flanked by two more black exhaust tips on left and right in the diffuser.

The large rear wing is rigidly mounted on the hatch and increases the downforce on the rear axle. The aerofoil mounts are painted in vehicle colour whereas the blade is finished in high-gloss black. Depending on the type of use or racetrack conditions, the precise angle of the blade can be adjusted manually - yet another technique also used in motorsport.

The result: all of the aerodynamic measures combined increase the surface contact at top speed by 155 kilograms compared with the AMG GT. The new AMG GT R therefore offers maximum grip, perfect drivability and a powerfully proportioned design that integrates the aerodynamic functions harmoniously. And there's more: despite its higher engine output, extra width, chunkier tyres, larger rear aerofoil, raised cooling-air demand and increased downforce, the AMG GT R has a lower drag coefficient (C_d) than the AMG GT.

Individual set-up: AMG coil-over suspension

The suspension of the new AMG high-performance sports model is also systematically designed for racetrack use. Wishbones, steering knuckles and hub carriers on the front and rear axle are manufactured entirely out of forged aluminium in order to reduce the unsprung masses. The double-wishbone concept locates the wheel firmly, with minimal elastic movements. The high camber and toe-in stability results in high cornering speeds and also provides the driver with an optimum feel for the road when cornering at the extreme limits.

The uniball spherical bearings on the lower wishbones of the rear axle are also inspired by motorsport. They are significantly more wear-resistant than wishbone bushings and due to their design have no play, which means toe-in and camber do not change even under high loads. As a result, the AMG GT R can be driven with even more precision.

In addition, the rear axle is fitted with a thicker tubular anti-roll bar. It has been adapted to the heightened driving dynamics requirements of the AMG GT R and saves weight due to its hollow design.

The new AMG coil-over suspension was designed specifically for the AMG GT R. Like in professional motorsport, drivers can select their personal set-up and infinitely adjust the spring pre-load manually. This makes it possible to influence the dive and roll behaviour as well as the grip of the AMG GT R precisely as needed to tailor them to personal preferences or to the particular racetrack.

The coil-over suspension is combined with the AMG RIDE CONTROL continuously variable, adaptive damping system. The system is electronically controlled and automatically adapts the damping on each wheel to the current handling situation, the speed and the road conditions. The damping characteristics are modulated rapidly and precisely by two separate valves for the rebound and compression forces in the dampers. A harder damping rate, for example when cornering and braking, effectively reduces rolling movements. The continuous adjustment of the damping to the current speed also ensures the best possible road contact even at high speeds, thus enhancing safety.

Furthermore, the driver can adjust the adaptive damping characteristics at the touch of a button in the AMG DRIVE UNIT or by using the AMG DYNAMIC SELECT drive modes. Three modes are available: "Comfort", "Sport" and "Sport Plus". The purpose of each of the three damping characteristics is clear: "Comfort" is the right choice for public roads; "Sport" is perfect for racetracks like the Nordschleife (North Circuit) of the Nurburgring, in other words for highly dynamic driving on partially undulating racetracks with maximum ground contact. "Sport Plus" is ideal for more flat, modern Grand Prix circuits such as Hockenheim and conveys a high degree of structural rigidity.

Conventional suspension measures include the wider front and rear track as well as the standard-fit Michelin Pilot Sport Cup 2 tyres, of size 275/35 ZR 19 at the front and 325/30 ZR 20 at the rear. The street-legal racing tyres allow faster laps and up to 50 percent more mileage on the racetrack.

Agility and stability: the active rear-wheel steering

The new AMG GT R is even more sensitive to steering inputs thanks to standard-fit active rear-wheel steering, which is being used for the first time on a

Mercedes-AMG model. The system offers an ideal combination of agility and stability - handling characteristics that are normally in direct conflict.

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Two steering actuators replace the conventional control arms on the rear axle of the AMG GT R. At the heart of the system are two electro-mechanical actuators (electric motors with jackscrew) that are not mechanically connected to the steering wheel. This "by-wire" system adjusts the rear wheels within a predefined operating map by means of electronic control. The maximum toe angle change on the rear wheels of the AMG GT R is 1.5 degrees.

Up to a speed of 100 km/h, the rear wheels are turned in the opposite direction to the front wheels, corresponding to a virtual shortening of the wheelbase. The advantage of the AMG GT R is far more agile when steering into bends, resulting in even greater driving enjoyment and less steering effort - especially on small and winding roads, narrow racetracks on which there are multiple changes in direction, or slalom courses. Further benefits include increased manoeuvrability and a smaller turning circle in everyday driving situations - such as when turning or parking.

Once the speed of the AMG GT R exceeds 100 km/h, the system turns the rear wheels in the same direction as the front wheels, corresponding to a virtual lengthening of the wheelbase and improving handling stability. At the same time, the lateral force on the rear wheels builds up considerably faster when changing direction, which makes the response to steering inputs quicker. Drivers also notice that the AMG GT R delivers massive grip on the rear axle and strong stability during fast changes in direction without the otherwise perceivable twitching effect at the rear end.

The active rear-wheel steering not only improves cornering, it also assists the driver in the event of sudden evasive manoeuvres and thus enhances active safety. This makes the AMG GT R easier to control at the limit.

The standard 3-stage ESP[®] with the settings "ESP ON", "ESP SPORT Handling Mode" and "ESP OFF" works in perfect unison with the limited-slip differential and is optimally tuned to the outstanding driving dynamics of the AMG GT R. The programming for the ESP OFF mode is taken from the AMG GT3.

Grip to the power of nine: AMG TRACTION CONTROL

In ESP OFF mode, another innovation allows the driver to exert even more influence on the handling characteristics of the AMG GT R. The new AMG

TRACTION CONTROL system also comes directly from motorsport. It allows drivers to pre-select the slip on the driven rear axle in nine levels. Just like in the current AMG GT3, it isolates the grip on the driven wheels and does not affect the stabilisation provided by the ESP®. Corresponding characteristic maps are programmed into the vehicle electronics to this end.

Control is via a special rotary switch located in the centre console below the ventilation outlets. Depending on the setting, the system permits more or less slip on the rear wheels - very helpful in varying road conditions. Level 1 is programmed for driving in the wet with high safety reserves. Level 9 allows maximum slip on the rear axle. A luminescent band of LEDs around the rotary switch indicates the current setting - this display logic likewise has its origins in motorsport. In addition, the setting is indicated on the instrument cluster's central display.

The AMG development has a major advantage over conventional systems in that it anticipates situations with the help of a virtual μ (mu) simulator and other data processed by a control unit within fractions of a second. The maximum permissible slip on the driven rear wheels is calculated depending on the selected AMG TRACTION CONTROL level. When the wheels reach this level of slip during acceleration, the traction control modulates the engine output so that this level is not exceeded and the vehicle continues accelerating with this specified slip. The effect of the electronic limited-slip differential is also included in the adjustment scope. This control therefore takes place without lag, further enhancing both driving enjoyment and performance.

The driver receives assistance for one of the most challenging aspects of driving, namely selecting the optimum engine torque and the optimum torque increase when accelerating out of a turn. Drivers can get as much grip as they want and have dialled in. The precisely measured power delivery of the engine when accelerating out of a turn is one of the most important criteria for achieving a top lap time.

Electronically controlled: the rear-axle limited-slip differential

As standard, the AMG GT R is equipped with an electronically controlled limited-slip differential on the rear axle, which is integrated into the compact transmission housing. Its sensitive and rapid control elevates the physical handling limits to a new level. It not only further improves the grip of the driven wheels, but also increases the cornering speeds at the limit. The system operates

with a variable locking effect in acceleration and overrun mode, and is perfectly tuned to various handling conditions and road friction coefficients.

Variable ratio: speed-sensitive sports steering

The speed-sensitive sports steering features a variable steering ratio, which enhances vehicle handling and agility at low speeds while maintaining driving safety at high speeds. The power assistance is a particular highlight: It responds not only depending on the given road speed, but also according to the current lateral acceleration and the selected AMG DYNAMIC SELECT drive mode. The result: The driver has a perfect feel for the vehicle thanks to the direct feedback from the road.

Ready to race: the interior design

To give the driver of the new AMG GT R ideal conditions in which to drive, the interior is also strongly inspired by motorsport. Extremely light, manually adjustable AMG sports bucket seats upholstered in nappa leather and DINAMICA microfibre come as standard. They offer the necessary lateral support even in extreme driving manoeuvres. Alternatively, tried-and-tested AMG performance seats can be ordered as an option at no extra cost. The optional yellow seat belts, dials with yellow highlights, the AMG Interior Piano Lacquer package and special controls, including those for the new AMG TRACTION CONTROL, underline the unique standing of the new AMG GT R.

The wide-looking dashboard is reminiscent of a powerful wing and continues the aviation design theme. Four central spotlight-style vents and the individual vents at the right and left ends of the dashboard reinforce this impression. In conjunction with the high beltlines, the concave-shaped door panelling and the dynamic centre console, the AMG GT R comes across as the ultimate driving machine and consummately integrates the driver into the cockpit thanks to the low seat position.

The shape of the dominant centre console reminiscent of a NACA air intake and the authentic materials suggest that it has been adopted directly from motor racing. Positioned centrally, the free-standing central display is another eye-catching feature. Attention to detail is also echoed in the AMG DRIVE UNIT controls: They are arranged like eight cylinders in a V layout, emphasising the powerful and hi-tech impression made by the centre console.

The new AMG Interior Night package likewise comes as standard. In this package, the shift paddles, steering wheel bezel, door sills and boot cross member are finished in high-gloss black, which combines with the standard-specification AMG Interior Piano Lacquer package to further emphasise sportiness. As an option, customers can order the trim in matt black carbon fibre.

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More equipment, less weight: AMG Lightweight Performance

One key factor that influences the performance of a sports car is weight.

Mercedes-AMG uses an intelligent material mix for the structure of the AMG GT R: various aluminium alloys for the chassis and body, steel for the boot lid and magnesium for the front deck. This extremely light element at the front reduces the inertia ahead of the front axle, thus improving the vehicle's agility.

The weight-optimised spaceframe is made of die-cast and extruded aluminium sections. The high bending and torsional strength of the entire design enables extreme linear and transverse forces from the drivetrain and suspension to be absorbed and transferred. Unwanted flexibility is thus reduced, with the vehicle responding precisely and directly. The result: The driver experiences a sports car with maximum dynamics that responds with outstanding precision.

Materials from motor racing

A host of further measures contributes to weight reduction as part of the AMG lightweight-performance strategy. A variety of components all play a role in this respect. The use of carbon fibre, the lightweight and high-strength material from motorsport, helps to achieve the ambitious goals. Carbon fibre is the material of choice for, among other things, the front wings, the roof and the torque tube between engine and transmission.

Now weighing in at just 13.9 kilograms, the carbon-fibre torque tube is about 40 percent lighter than its already weight-optimised aluminium counterpart in the AMG GT. As a structural component of the transaxle drivetrain, it creates a connection between the engine and the transmission with extreme flexural and torsional stiffness. It permits a very direct connection of the drivetrain that is favourable to driving dynamics and also plays a role in the vehicle's balanced weight distribution.

Further weight advantages come from the standard-fit forged wheels, the titanium rear silencer and fewer soundproofing materials. Overall the new AMG GT R is 15 kilograms lighter than the AMG GT S, despite incorporating far more technical features such as the large rear aerofoil, the rear-wheel steering, the active aerodynamics, and the body and chassis reinforcements.

New: carbon-fibre tunnel cross for maximum torsional rigidity

The AMG experts designed the new lightweight-construction component to reduce the weight while also increasing the torsional rigidity. The new carbon-fibre tunnel cross of the AMG GT R replaces three different aluminium components of the GT. The cross is mounted under the exhaust system and the torque tube.

It further stiffens the body considerably for withstanding the high torsional loads that occur during racing. To this end, it braces the two vehicle sides against each other even more effectively in the tunnel area for the torque tube, increasing the torsional rigidity by some 7.5 percent. This increase is especially remarkable because even the standard AMG GT already boasts a high level of torsional rigidity. After the first few metres already, the driver gets an extremely precise driving impression, which is maintained even in the event of extreme vehicle loads when driving at the dynamic limits. The fact that the body of the car is more composed allows even better control of the AMG GT R under difficult racetrack conditions such as fast, bumpy corners and means that less steering effort is required.

Over and above this, two diagonal braces in the engine bay stiffen the front end. In the AMG GT R, they are likewise made of carbon fibre and represent weight savings of about 50 percent over steel components.

Intelligent mix of materials: composite wheel-catch struts

The AMG lightweight construction experts use an intelligent material mix for the so-called wheel-catch struts made of a composite material. In an accident, these components help to guide the front wheels onto the side members as part of the intended crash kinematics, and to catch them there. The composite struts are about 50 percent lighter than equivalent steel components. Compared with carbon fibre, a composite material has the advantage of being significantly more deformable while offering good material strength.

Fade-resistance and consistent performance: the brakes

The high-performance composite brake system ensures excellent deceleration and high fade-resistance with internally ventilated and perforated brake discs of

diameter 390 millimetres on the front axle and 360 millimetres on the rear axle. The brake callipers are painted yellow.

A ceramic high-performance composite brake system is available as an option. The advantages of this system are a weight saving of 17 kilograms, a longer service life and even better fade resistance thanks to the ceramic brake discs with a diameter of 402 millimetres at the front and 360 millimetres at the rear.

More power, more torque, faster response: the engine

The heart of the new high-performance athlete is pumping stronger than ever: the AMG 4.0-litre twin-turbo engine in the AMG GT R has an output of **430 kW** (585 hp), which is **55 kW** (75 hp) more than the previous top-of-the-range engine in the GT S. The peak torque of 700 Nm is available between 1900 and 5500 rpm.

The increase in performance was achieved with the help of new turbochargers with modified compressor machining, smaller wastegate aneroid capsule and sharpened engine mapping. The boost pressure supplied by the turbochargers has been increased from 1.2 bar in the AMG GT to 1.35 bar. In addition, the exhaust ports have been optimised and the compression ratio modified. The entire combustion process has been retuned.

A correspondingly modified application of the accelerator characteristics, charge-pressure build-up and transmission parameters ensures that the engine responds to load changes even more spontaneously and that gear changes are effected with even greater speed. The fact that the two-mass flywheel is 0.7 kilograms lighter than its counterpart in the AMG GT S likewise contributes to the highly agile impression.

The eight-cylinder unit thrills with its spontaneous response, precisely measured power output and linear power delivery with powerful thrust in all engine speed ranges, all of which makes the car far easier to control when driving at the limit. To make this possible, the sophisticated engine control electronics also take into account the current driving status and control the accelerator characteristics as a function of the occurring lateral forces also.

The AMG 4.0-litre V-8 engine features the tried-and-tested twin turbochargers, which are not mounted on the outside of the cylinder banks but rather inside the V configuration – experts call it a 'hot inside V'. The benefits are: a compact engine design, spontaneous response from the turbochargers and low exhaust gas

emissions thanks to optimum air flow for the close-coupled catalytic converters. This basic principle of the new AMG V-8 family has been further optimised for the AMG GT R and enables further improved performance. The maximum charge pressure is 1.35 bar; the turbochargers have a maximum speed of 186,000 revolutions per minute.

For optimum power output even when outside temperatures are high, Mercedes-AMG uses indirect air-to-water intercooling. With optimum flow of air and water, the intercoolers have a separate, two-stage low-temperature water circuit. The first cooler stage involves two parallel coolers in the left and right wheel arch. Together with the large radiator at the front of the vehicle as a second radiator stage, the system is even more effective than in the AMG GT S. The downstream water-cooled intercoolers ensure that the charge air compressed and heated by the turbochargers is cooled effectively prior to entering the combustion chambers. It therefore remains at a constantly low level even under full load. A large radiator at the car's front end ensures controlled cooling of the water circulating in the low-temperature circuit. Extremely short charge-air ducting makes for optimum responsiveness.

The combination of twin turbochargers and direct petrol injection with spray-guided combustion increases thermodynamic efficiency and output. Particularly fast and precise piezo injectors spray the fuel at high pressure into eight combustion chambers. Multiple injection occurs on-demand, ensuring a homogeneous fuel/air mixture. The delivery of fuel is electronically controlled and fully variable for a fuel pressure between 100 and 200 bar.

The aluminium crankcase is produced using sand casting technology and features a closed-deck design. This ensures extreme strength while keeping the weight as low as possible, and allows high injection pressures of up to 140 bar.

The NANOSLIDE® coating of the cylinder liners is also used in the Formula One engines of MERCEDES AMG PETRONAS. It is far harder than conventional grey cast-iron liners and therefore less susceptible to wear. In addition to this, its reduced friction in combination with the aluminium forged pistons helps to increase efficiency.

Four overhead camshafts control a total of 32 valves. Camshaft adjustment on the intake and exhaust side enables an excellent throttle response and optimises the gas cycle for each operating point.

The dry sump lubrication also ensures the oil supply even with high lateral forces and allows the engine to be installed lower, thus moving the centre of gravity closer to the road and forming the basis for high lateral acceleration.

The engine for the AMG GT R is also fitted by hand in the hand-finishing section of AMG's production plant in Affalterbach based on the "One Man - One Engine" philosophy. This means that each engine is assembled by a highly qualified engine builder who applies the strictest quality standards. This engineer is responsible for everything from installing the crankshaft in the engine block and assembling the camshafts to wiring the engine and filling it with engine oil - as clearly evidenced by the signature on the AMG engine badge.

Even more suitable for the racetrack: the dual-clutch transmission

The seven-speed dual-clutch transmission configured in transaxle layout at the rear axle has likewise been extensively revised by the AMG developers, who modified the hardware and the software to make the transmission even more suitable for the racetrack. First gear in the AMG SPEEDSHIFT DCT 7-speed sports transmission has a longer ratio, while seventh gear and the final drive have shorter ratios to allow a more agile acceleration experience overall and very spontaneous response to fast accelerator pedal movements.

The previous limits governing shift performance and response time have been extended substantially. The RACE START function is now even more impressive thanks to the increased starting revs, the more sensitive wheel slip control and the sports tyres fit for the racetrack. Furthermore, the transmission cooling has been adapted to the tougher requirements of racing.

Drivers can tailor the AMG GT R to their personal preferences using the AMG DYNAMIC SELECT controller. Various modes are available: "C" (Comfort), "S" (Sport), "S+" (Sport Plus) and "I" (Individual). The "RACE" mode optimally adjusts the shift strategy of the dual clutch transmission to the needs of racetrack usage – shortest shift speeds and highly emotional engine sound are included. By pressing the separate "M" button in the centre console, the driver can activate the manual transmission mode in any drive mode.

Comfort and agility: the dynamic engine and transmission mounts

Dynamic engine and transmission mounts are likewise installed as standard in the AMG GT R. The engine and transmission mounts assume an important function

in the case of a transaxle design: soft mounts improve comfort since they provide more effective decoupling of noise and vibration. However, handling and agility benefit from a generally stiffer mount set-up.

Mercedes-AMG resolves these conflicting objectives using dynamic mounts, which adjust their stiffness continuously and almost instantaneously to the respective driving conditions and handling. This function is performed by a special control unit, which identifies handling situations on the basis of CAN data, is connected to the electronic limited-slip rear differential and thus ensures optimum balanced driving dynamics. AMG has gone a step further in the implementation of this technology: the engine and transmission mounts are even actuated independently of each other. The advantage of this innovative solution is that it provides an additional substantial improvement in driving precision and lateral dynamics.

Pure sound: the AMG performance sports exhaust system

The specially developed exhaust system not only delivers genuine racing car sound, it also saves around six kilograms of weight compared with the AMG GT S thanks to the use of titanium for the rear silencer and thin-walled stainless steel for the front section of the exhaust system.

With its special, hexagonal form, the large tailpipe tip centred in the rear fascia emphasises the car's motor-racing character. Two more tailpipes are located on the left and right in the diffuser. Their tips are sheathed in carbon fibre like in motorsport to protect the diffuser against high exhaust temperatures. The exhaust system features two infinitely variable exhaust flaps as standard, which have a direct influence on the sound of the AMG GT R.

The exhaust flaps open and close depending on the selected AMG DRIVE SELECT mode, although they can also be controlled individually using a separate button in the AMG DRIVE UNIT. In the "Comfort" and "Sport" settings, the low-frequency sound typical of a V-8 is designed for comfort. In "Sport Plus" and "RACE" modes, meanwhile, the sound composition is far more emotive.

The market data

The Mercedes-AMG GT R celebrates its world première on 24 June 2016 at the site of the Mercedes-Benz World located at one of England's most tradition-steeped racing circuits: Brooklands. The car will go on sale on 21 November 2016, and the market launch in Europe begins in March 2017.

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