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Press Information

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The new Mercedes-AMG GLA 45: The performance SUV to suit any lifestyle

Affalterbach. A brisk lap of the race circuit or a weekend trip to the mountains with your sports gear stowed in the back: the new GLA 45 is the ideal match for a multitude of adventures. When required, these nimble all-rounders can unleash a level of dynamic performance to impress even sports car owners. The 2.0-liter engine is the most powerful series-produced four-cylinder turbo engine in the world. This innovative engine delivers 382 hp, is more powerful than its predecessor and offers performance above its class. The active, fully-variable AMG Performance 4MATIC+ all-wheel drive distributes power to the rear axle wheel-selectively by AMG TORQUE CONTROL, providing the basis for top traction in any driving condition. This is made possible by a new rear axle differential featuring two multi-disc clutches – one for each rear wheel. The AMG SPEEDSHIFT DCT 8-speed dual clutch transmission apportions the power within a split second to suit the specific driving situation.

"The second generation of our very successful compact sports model is now complete. The GLA portfolio, in the form of the Mercedes-AMG GLA 45, now also includes our innovative four-cylinder turbo engine, so setting the benchmark in this segment. In addition, the new GLA 45 is not only significantly more dynamic, but also more practical in everyday use than its predecessor, thereby ensuring its appeal to a dynamic, leisure-oriented target group," says Tobias Moers, Chairman of the Board of Management of Mercedes-AMG GmbH.

One new feature which makes a substantial contribution to the incomparable driving experience is the active, fully variable AMG Performance 4MATIC+ all-wheel drive: this system offers selective power distribution to the wheels on the rear axle via AMG TORQUE CONTROL. This means that the power is distributed to the left and right rear wheels flexibly and at different ratios, according to the current driving situation – resulting in optimized traction, whatever the road surface conditions and whatever the route. This is made possible by a redesigned rear axle differential featuring two multi-disc clutches, which selectively provide the flow of power to each individual rear wheel.

Mercedes-Benz AG, 70546 Stuttgart, Germany
Tel. no. +49 711 17 - 0, Fax +49 711 17 - 22244, dialog.mb@daimler.com, www.mercedes-benz.com
Registered Office and Court of Registry: Stuttgart; HRB No. HRB762873
Chairman of the Supervisory Board: Manfred Bischoff
Board of Management: Ola Källenius (Chairman), Jörg Burzer, Renata Jungo Brüngger, Sajjad Khan, Sabine Kohleisen, Frank Lindenberg, Markus Schäfer, Britta Seeger



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New four-cylinder turbo engine delivering superlative power

The GLA 45 is powered by the newly developed M139 2.0-liter engine, the world's most powerful turbocharged four-cylinder manufactured for series production. With 382 hp and 354 lb-ft of torque in the GLA 45, it boasts more power than its predecessor. The new, highly efficient engine is handcrafted on an innovative production line in Affalterbach, according to the "One Man, One Engine" principle.

The new compact performance SUV completes the sprint from zero to 60 mph in record time: the GLA 45 requires just 4.3 seconds est. to complete this task. The top speed is electronically limited to 155 mph. Apart from its impressive power measures, the new engine also impresses with its quick responses. To this end, the torque curve was carefully balanced ("torque shaping"): The peak torque of 354 lb-ft is available in a range of 4,750-5,000 rpm. With this setup the AMG engineers have achieved a power delivery similar to that of a naturally aspirated engine.

Intelligent engine design details

The new engine excels with numerous intelligent design features. In contrast to the transversely mounted four-cylinder in the 35-series AMG models, this new engine has been turned around its vertical axis by 180 degrees. This change in position means that the turbocharger and the exhaust manifold are now positioned at the rear, on the side of the firewall when viewed from behind. The intake system is positioned at the front. This configuration allows the flattest possible and most aerodynamically advantageous front section design. Furthermore, the new arrangement allows for much improved air ducts with shorter distances and fewer diversions - both on the intake and exhaust side.

The new twin-scroll turbocharger combines optimized responsiveness at low engine speeds with high power in the upper rpm range. The shaft of the compressor and turbine wheel is mounted for the first time on anti-friction bearings, minimizing mechanical friction in the turbocharger. The turbocharger therefore responds quickly and reaches its maximum speed of up to 169,000 rpm rapidly. With a maximum charge pressure of 2.1 bar, the 2.0-liter four-cylinder turbo engine is also the leader in its segment in this respect. The electronically controlled wastegate (exhaust relief valve) allows the charge pressure to be controlled even more precisely and flexibly while optimizing responsiveness, especially when accelerating from partial load.

Two-stage fuel injection for optimized performance

For the first time, the new high-performance four-cylinder features two-stage fuel injection. In the first stage the particularly fast and precisely operating piezo injectors supply fuel to the combustion chambers at a pressure of up to 200 bar. This is controlled by the engine management system as required. In the second stage there is additional intake manifold injection using solenoid valves. This is needed to achieve the engine's high specific output. The electronically controlled fuel supply has an operating pressure of 6.7 bar.

Sophisticated cooling system for engine, turbocharger and charge air

The high output requires an intelligently conceived cooling system. This system is designed to enable the cylinder head and crankcase to be cooled to different temperature levels. This innovative measure allows for a cool cylinder head for maximum output with efficient ignition timing, and a warm crankcase to reduce in-engine friction. Cooling of the cylinder head is ensured by a mechanical water pump, while cooling of the crankcase is via a second, electrically driven high-performance water pump. After a cold start, this pump remains passive until the engine has warmed up. In operation it is regulated by the engine control unit so that the crankcase is always cooled according to the situation.

Smart assembly by hand: "One Man, One Engine"

The new engine is entirely assembled by hand. To this end a completely newly designed production line was constructed in the AMG engine production facility in Affalterbach, where Mercedes-AMG has raised the "One Man, One Engine" principle and Industry 4.0 processes to an innovative level reflecting the latest findings in ergonomics, material flows, quality assurance, sustainability and efficiency. On the road to implementing Industry 4.0, AMG's hand assembly operation likewise follows the vision of "smart production". This enables maximum flexibility and is

both transparent and highly efficient. It safeguards and improves the quality of the engines and production processes using innovative and digital technologies.

Agile AMG SPEEDSHIFT DCT 8-speed dual-clutch transmission

The 8-speed AMG SPEEDSHIFT DCT 8-speed dual-clutch transmission also contributes to the GLA 45's agile and dynamic character. The gear ratios have been configured so that the driver experiences very responsive acceleration in all speed ranges, combined with fast shifting and optimized connections when shifting up. Depending on the selected AMG DYNAMIC SELECT driving mode, the driver receives a specific drive configuration with different accelerator and gearshift characteristics.

The standard RACE-START function allows for maximum acceleration from a standstill, resulting in an exciting display of performance. This also applies to the drive sound with partial ignition interruption when changing up a gear, as well as the automatic double-declutching function when changing down. Despite these performance features, efficiency-enhancing features are also present in the GLA 45: in "Comfort" mode the ECO start/stop function is active; while the "gliding" function can be selected in the "Individual" driving mode.

AMG Performance 4MATIC+ all-wheel drive with AMG TORQUE CONTROL

The highly dynamic driving experience is greatly assisted by the standard fully variable all-wheel drive. The secret is AMG TORQUE CONTROL in the new rear axle differential: this includes two electronically controlled multi-disc clutches, each of which is connected to a rear axle drive shaft. In this way, the power can not only be variably distributed between the front and rear wheels, but also selectively between the left and right rear wheel. The result is consistently optimized traction, even in adverse road conditions or during extreme cornering, for example, on a closed race circuit.

Highly responsive electromechanical control

Control of the drive torque to the front and rear axle, and between the two rear wheels, is electromechanical. The influencing factors for torque distribution include not only the driving speed, the lateral and longitudinal acceleration and the steering angle, but also the difference in rotational speed between the individual wheels, the gear selection and accelerator position. The main advantages of electromechanical control over an electrohydraulic system relates to more refined driving dynamics – primarily due to the significantly faster response and speed-independent actuation of the discs over the entire adjustment range.

The characteristics of the all-wheel drive control are dependent upon the drive mode and the AMG DYNAMICS setting. In "Basic" and "Advanced", the 4MATIC system is in "Comfort" mode. In "Pro" and "Master" (included in the optional AMG DYNAMIC PLUS package) the 4MATIC system switches to "Sport" mode, for even more agile handling and an even higher threshold for the critical limits.

Optimized suspension components for highly dynamic handling

The new AMG suspension provides the basis for high directional stability and highly dynamic cornering characteristics with low body roll. At the same time, comfort has been improved compared with the previous GLA 45. The longitudinal and transverse dynamics are ideally coordinated. All suspension components have been thoroughly revised in order to achieve a higher maximum lateral acceleration together with easy vehicle control at the limits.

A McPherson strut design is used at the front axle. The suspension includes one transverse control arm below the wheel center, one suspension strut and one tie rod respectively. The special axle geometry reduces torque steer for exceptional comfort and agile handling. The new aluminum wishbone reduces the unsprung mass and enables a more sensitive response from the springs. The brake calipers at the front axle are radially bolted – a technology from motorsport that brings added stability. The front axle carrier is rigidly attached and thus additionally stiffens the front section.

The 4-link rear suspension is also rigidly connected to the body via a rear axle carrier, and therefore very torsionally rigid. There are three transverse control arms and one trailing arm plus specific bearings per rear wheel. This design ensures maximum driving stability and agility.

Adaptive damping system AMG RIDE CONTROL with three modes

The adaptive damping system AMG RIDE CONTROL enables the driver to choose between three different suspension control modes. The spectrum ranges from comfort-focused to very sporty. The system operates automatically, adapting the damping forces for each wheel according to the driving situation and road conditions. This happens within milliseconds and is infinitely variable, with a wide spread of damping characteristics. The result is that ride comfort and agility are enhanced in equal measure.

Robust high-performance brake system

The high-performance braking system ensures fade-resistant deceleration and short braking distances. On the GLA 45, the 4-piston fixed front calipers act on 13.8 x 1.3 in brake discs, while at the rear axle, 1-piston floating calipers act on 13.0 x 0.9 in brake discs. The discs are internally ventilated and perforated to better dissipate heat and prevent brake fading, even with extreme use. The grey-painted brake calipers feature white AMG lettering.

When equipped with the optional AMG DYNAMIC PLUS package, the GLA 45 utilizes an even larger brake system equipped with 6-piston fixed calipers and 14.2 x 1.4 in brake discs at the front. In this application, the brake calipers are painted red and display a black AMG logo.

Steering with special rack and variable ratio

The electromechanical AMG speed-sensitive power steering supports a sporty driving style with direct cornering properties. It has a special rack with a variable transmission ratio and two characteristic curves: depending on which drive program the driver has selected, it provides taut and sporty or more comfort-biased steering feedback. The rigid mounting in the integral carrier connects the steering even better with the body and thus increases steering precision.

Wide spread of drive programs

The six AMG DYNAMIC SELECT drive programs "Slippery", "Comfort", "Sport", "Sport+", "Individual" and "RACE" (included in the optional AMG DYNAMIC PLUS package) allow a wide spread of vehicle characteristics, from comfortable to highly dynamic. Numerous relevant parameters are modified:

- Powertrain: Accelerator pedal characteristics, shift times and shift timing in the variants Reduced, Moderate, Sport or Dynamic
- AMG DYNAMICS: Agility functions such as all-wheel control, steering characteristics and ESP® functions in Basic, Advanced, Pro or Master variants (included in the optional AMG DYNAMIC PLUS)
- Suspension: in Comfort, Sport, Sport+
- Exhaust system: sound and nature of the sound functions, Balanced or Powerful

AMG DYNAMICS for enhanced agility and high stability

As a new feature in the AMG DYNAMIC SELECT drive programs, the new GLA 45 comes with AMG DYNAMICS. This integrated agility control facility extends the stabilizing functions of ESP® with agility-enhancing intervention in the all-wheel-drive control, steering characteristics and additional ESP® functions. When cornering at speed, for example, brief braking intervention at the inner rear wheel generates a defined yawing motion around the vertical axis for responsive and precise control into the bend.

The spectrum ranges from extremely stable to highly dynamic. On the multimedia display, when a drive program is selected, the new AMG DYNAMICS symbol is displayed together with the corresponding additional information.

- "Basic" is assigned to the "Slippery" and "Comfort" drive programs. In this case, the characteristics include very stable handling with a high level of yaw damping.
- "Advanced" is activated in "Sport" mode. The GLA 45 remains neutrally balanced. The lower yaw damping, lower steering angle requirement and enhanced agility support dynamic maneuvers such as driving on winding country roads.
- "Pro" (short for "Professional") belongs to the "Sport+" program. In "Pro" the driver receives even more assistance for dynamic driving while agility and feedback from the road when cornering are further enhanced.
- "Master" is linked to the "RACE" driving mode (included in the optional AMG DYNAMIC PLUS package). "Master" mode is aimed at drivers who want to experience dynamism and the driving enjoyment on closed-off circuits. "Master" offers a vehicle balance with slight oversteer, a low steering angle requirement and more agile steering. In this way, "Master" ensures maximum agility and fully exploits the dynamic potential. To activate "Master" mode, the driver must use the separate button in the center console to switch the ESP® to ESP® SPORT Handling Mode or ESP® OFF.

In the "Individual" drive program, the driver can set the AMG DYNAMICS levels "Basic", "Advanced", "Pro" and "Master" themselves. The setting can also be directly selected using the AMG steering-wheel buttons.

Reinforced body shell

The AMG developers extensively reinforced the body shell, as this provides the basis for the precise self-steering characteristics, as well as track and camber stability, even when driving at high speed. A lightweight aluminum plate bolted underneath the engine, known as the "shearing plate", increases the torsional rigidity at the vehicle's front end. In addition, diagonal struts at the front and rear of the underbody further improve rigidity. The result: significantly reduced longitudinal and lateral torsional movement of the body shell and less rolling and pitching motion during cornering, braking and load changes.

Athletic and muscular exterior

The exterior of the new GLA 45 also packs plenty of dynamic appeal: the long hood with its powerdomes, the compact greenhouse and the muscular shoulders over the wheel arches clearly reveal the vehicle's sports car genes. The AMG-specific radiator grille with the vertical slats identifies the newcomer as a member of the AMG Performance family. Standard LED High Performance headlamps illuminate the road ahead. The car's strong presence is also enhanced by the flared wheel arches of its front fenders and by the large air intakes with silver chrome inserts. The front splitter in silver chrome serves to optimize the airflow and aerodynamic performance.

In side view, the aerodynamically optimized 19-inch light-alloy wheels in a 10-spoke design and the door panels with inserts in silver chrome or optional high-gloss black are particularly striking. As an option, this compact Performance SUV can also be fitted with 21-inch light-alloy wheels.

The rear view is highlighted by two round twin tailpipes (3.2 in diameter) and a wide rear bumper. The impression of width at the rear is emphasized further by the slim two-piece rear light clusters. The diffuser with four vertical fins contributes to the enhanced aerodynamic performance. The airflow break-away edge in body color on the roof spoiler rounds off the distinctive rear profile.

Close connection between driver and machine: the interior

With its sporty appointments and MBUX infotainment system, the high-quality interior creates a close, personal alliance between driver and machine. The driver and front passenger are seated in a commanding position on contoured sport seats with firm lateral support. AMG Performance seats are optionally available. The standard upholstery features a

combination of black MB-Tex with DINAMICA, with distinctive AMG highlights such as the double topstitching in red. The red seat belts are coordinated to match, as is the AMG carbon fiber-look trim in the dashboard. As an option, a striking upholstery in MB-Tex in Neva Grey/Black with mid-grey double topstitching and light-longitudinal-grain aluminum trim is also available. There is also an optional choice of four different leather upholsteries.

The center console in piano black lacquer-look includes a touchpad control as standard. The console also features a further control array with additional switches for controlling the 3-stage ESP®, the manual transmission mode and the optional adaptive damping system AMG RIDE CONTROL.

MBUX infotainment system with AMG-specific displays

The combination of sporty design with sophisticated details is also featured in the MBUX infotainment system with its innovative operating and display concept. MBUX creates an even closer connection between the vehicle, driver and passengers. Appealing presentations enhance the clear control structure and feature brilliant maximum-resolution 3D graphics. Visually, the two displays under one shared glass cover blend into a Widescreen Cockpit and emphasize the horizontal orientation of the interior design.

The customer can choose between the three AMG display styles "Classic", "Sport" and "Supersport" for the instrument cluster. The "Supersport" mode is particularly striking with a central, round rev counter and additional information presented in the form of bars to the left and right of the rev counter: with a three-dimensional perspective, they reach far into the background to an artificial horizon. Via the AMG menu, the driver can call up various special displays such as gear speed indicator, Warm-up, Set-up, G-Meter, RACETIMER and Engine Data. With individual AMG displays such as visualization of the driving modes or telemetry data, the touchscreen multimedia display also reinforces the dynamic configuration.

And needless to say, the trailblazing voice control activated with the words "Hey Mercedes" is also on board. Thanks to artificial intelligence, MBUX recognizes and understands nearly all sentences from the fields of infotainment and vehicle operation, even if they are expressed indirectly.

The available AMG Performance steering wheel with steering-wheel buttons

A perfect symbiosis between the driver and vehicle is ensured by the multifunction sport steering wheel in Nappa leather with a flattened steering wheel rim and perforated grip area, and depending on the upholstery, red or black topstitching and a facing in silver chrome. The galvanized steering wheel shift paddles allow for an even sportier driving style with manual shift operations.

The AMG Performance steering wheel is available in Nappa leather, DINAMICA as well as Nappa leather/DINAMICA. The available AMG steering-wheel buttons allow the AMG drive programs to be accessed directly, and other AMG functions to be conveniently operated directly from the steering wheel.

Data logger for use on the race track: AMG TRACK PACE

AMG TRACK PACE, the virtual race engineer, is optionally available on the new GLA 45. This software is part of the MBUX infotainment system, and when negotiating a race circuit it continuously monitors more than 80 vehicle-specific data (e.g. speed, acceleration). On top of this, lap and sector times are displayed, as well as the respective difference from a reference time. Because specific display elements are shown in green or red, the driver is able to see at a glance without reading numbers whether they are currently faster or slower than their best time.

After putting in some fast laps, the driver can use the data to analyze and, as necessary, improve their driving skills. In addition, acceleration and deceleration values (e.g. 0-60 mph, ¼ mile, 60-0 mph) can be measured and saved. Thanks to a newly developed algorithm which determines the vehicle position as precisely as possible, AMG TRACK PACE even detects when the circuit has been left or it has been shortened. This is done using GPS data as well as the sensors available in the vehicle (acceleration, gyroscope, steering angle, wheel speeds).

The data are displayed on the multimedia display, in the instrument cluster and on the optional head-up display. Well-known race tracks like, for example, the Nürburgring or Spa Francorchamps, are already stored. Furthermore, it is also possible to record your own circuits. The map display can be switched from 2D to 3D and updated online.

The MBUX Augmented Reality function also allows the ideal line of a stored race track to be displayed on the multimedia display or optional head-up display, allowing the driver to improve lap times with a virtual instructor on board.

Sound and audio experience

The AMG exhaust system asserts the sporty yet versatile character of the new GLA 45. Depending on the chosen drive program, the sound signature ranges from harmonious and discreet (in the programs Slippery, Comfort and Sport) to dynamic and sporty (in Sport+ and RACE). The sound characteristics are controlled by an exhaust gas flap, depending on engine speed and load.

Technical data at a glance

	2021 Mercedes-AMG GLA 45
Engine	Handcrafted AMG 2.0-liter Inline 4 Turbo
Displacement	1991 cc
Max. output	382 hp at 6,500 rpm
Peak torque	354 lb-ft at 4,750-5,000 rpm
Drive	AMG Performance 4MATIC+ fully variable all-wheel drive with AMG TORQUE CONTROL
Transmission	AMG SPEEDSHIFT DCT 8-speed dual-clutch transmission
Acceleration 0-100 km/h	4.3 s
Top speed	155 mph*

* Electronically limited

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About Mercedes-Benz USA

Mercedes-Benz USA (MBUSA), headquartered in Atlanta, is responsible for the distribution, marketing and customer service for all Mercedes-Benz products in the United States. MBUSA offers drivers the most diverse lineup in the luxury segment with 15 model lines ranging from the sporty A-Class Sedan to the flagship S-Class and the Mercedes-AMG GT R.

MBUSA is also responsible for Mercedes-Benz Vans in the U.S. More information on MBUSA and its products can be found at www.mbusa.com and www.mbsprinterusa.com.

Media Contacts:

Michael Minielly 770-705-3807 michael.minielly@mbusa.com
Baron Smith 770-705-3537 baron.smith@mbusa.com

Accredited journalists can visit our media site at www.media.mbusa.com.