

Motor-racing blood coursing through its veins

Stuttgart/Woking – The new Mercedes-Benz SLR McLaren 722 Edition displays thoroughbred motor-racing attributes, having been developed in close cooperation with the motorsport specialists at the headquarters of the McLaren Formula-1 team in England. Featuring more than 300 modified components, the super sports car serves up a boost in output, more dynamic chassis tuning, improved aerodynamics and distinctly sporty interior appointments to thrill even the most demanding of sports-car enthusiasts.

For Mercedes-Benz, "SLR 722 Edition" was an obvious name for the new model variant as it evokes memories of the unforgettable victory achieved in 1955 by the British motor-racing legend Stirling Moss and his co-pilot Dennis Jenkinson at Mille Miglia – the classic Italian endurance race – behind the wheel of a Mercedes-Benz 300 SLR with start number 722 (denoting the car's start time of 7.22 a.m.). Boasting an impressive output of 478 kW/650 hp, the new SLR McLaren 722 Edition super sports car not only out-performs its historic forefather, it even outstrips the scintillating peak performance of the current SLR model – a technical masterstroke on the part of the engineers at Mercedes-Benz and McLaren. The new limited-edition series – only 150 models are being produced, for the most part hand-crafted, at McLaren in Woking – is the brand's response to calls from highly discerning SLR customers for even more sportiness combined with the same high level of everyday practicality.

At the heart of the SLR 722 Edition is a 5.5-litre V8 supercharged powerplant assembled by hand at the Mercedes-AMG engine workshops in Affalterbach, Germany, based on the "One man, one engine" principle. Among the high-performance powerplant's major strengths are its extremely spontaneous response to accelerator pedal movements, dynamic torque build-up across the entire engine speed range and an unmistakable V8 sound.

Further modifications were made to influence the interplay of the engine with the

gearshift. For each of the individually selectable transmission modes – M (Manual) and S (Sport) on the one hand and C (Comfort) on the other – there is now a different accelerator pedal characteristic curve which has been optimised in line with the very different operating conditions that apply in each case. Page 2

The end result is an extremely impressive set of performance figures, even by high-end super sports car standards: the SLR 722 Edition completes the sprint from 0 to 100 km/h in a breathtaking 3.6 seconds (SLR 3.8 seconds), going on to achieve 200 km/h in just 10.2 seconds (SLR 10.6 seconds) and 300 km/h in a mere 28.0 seconds (SLR 28.8 seconds). Plus the top speed of 337 km/h is even higher than that of the current SLR (334 km/h).

New chassis set-up for further enhanced handling dynamics

One of the main driving forces behind the further improved performance of the SLR 722 Edition is the retuned chassis. Development work at McLaren's Formula-1 headquarters was based on the SLR's proven aluminium chassis set-up. In the first phase of development, various chassis parameters, such as springing and damping, underwent a series of tests on the Formula-1 dynamometer in Woking. Then the Mercedes-Benz and McLaren engineers made further refinements and finalised the new set-up by performing an extensive series of tests on the road and, above all, on the race track.

The stiffer spring rates and shock-absorber characteristics of the chassis (body lowered by 10 mm at both the front and rear) are what gives the SLR 722 Edition its increased directional stability and noticeably further enhanced handling dynamics. Body roll on bends has been reduced by over 20 percent, allowing the new SLR 722 Edition to corner at even greater speeds.

New 19-inch forged-aluminium wheels also improve the handling dynamics of the special-edition model, their unique, palladium grey design highlighting the car's motor-racing heritage. Their low weight, compared to ordinary tires, reduces the unsprung masses, making the SLR 722 Edition even more responsive. Plus the 19-inch wheels allow larger brake discs with a diameter of 390 mm to be fitted on the

front axle. Hailing from the Italian manufacturer “Brembo”, the new braking system Page 3 combines with the carbon fibre-reinforced ceramic discs to provide a highly impressive deceleration rate which is fully in keeping with the SLR 722 Edition's scintillating all-round performance. Extensive tests were carried out to develop a new ESP[®] control system for this new brake configuration.

An aerodynamic work of art: even more downforce and an improved c_d figure

Around 100 hours of meticulous work in the wind tunnel also helped boost the performance of the SLR 722 Edition. Here the developers performed yet another technical masterstroke by increasing downforce whilst at the same time reducing the C_d (drag coefficient) figure. At higher speeds, lower aerodynamic drag generally means lower downforce. Not so in the case of the SLR 722 Edition though, which has an "airsplitter" at its front end. Consisting of carbon with a clear-coat finish, the distinctively shaped spoiler lip not only enhances aerodynamics, it also increases the downforce on the front axle by 128 percent. Small wheel spoilers, also finished in carbon, reduce air swirl at the rear axle, making for smoother airflow and optimising road feel. If the 13-percent increase in rear-end downforce is also added into the equation, the new SLR 722 Edition provides 122 kg total downforce. In the 35° high-downforce position of the airbrake, the total downforce is increased by another 50 kg. The result: an even more reliable handling and more precise turn-in at high speeds.

In addition, the rear-mounted airbrake optimises directional stability and braking power. When the speed exceeds 120 km/h, it rises up at an angle that has been adjusted in line with the extremely dynamic performance of the new model. If the driver hits the brakes hard in an emergency, the airbrake is automatically raised. This dynamic modification increases rear-axle downforce within a fraction of a second, thus partially compensating for the dynamic axle load distribution during braking, which has a tendency to press towards the front axle.

A further factor which contributes to the distinctly sports-oriented configuration is the weight of the SLR 722 Edition, which the engineers have reduced by around 44 kg. A lighter oil tank and damper bodies made from aluminium, which have the

added benefit of improving the vibration response of the unsprung masses, make for less weight. Furthermore, various parts and components have been replaced by carbon, including in the footwell and at the rear wheel arches. Last but not least, optimised panelling and insulating materials also have a positive effect on the vehicle weight. Yet for all these measures, the high levels of comfort, safety and practicality that have become Mercedes hallmarks remain unaffected. Page 4

The complete performance package at the heart of the SLR 722 Edition really comes into its own when matched with a sporty driving style. This is when the true benefits of the improved cornering ability, the higher lateral acceleration and the even more agile handling really make themselves felt.

Sporty design through and through

In terms of exterior design, the SLR 722 Edition features discreet sporty touches, thereby satisfying the desires of keen gentleman drivers and affluent sports-car collectors – the core target group – to the letter. The new-look 19-inch light-alloy wheels afford an uninterrupted view of the red-painted brake callipers and the large brake discs, emphasising the sheer power and performance that underpins every aspect of the new SLR. In addition, individual components in carbon with a clear-coat finish highlight the close ties with Formula 1. Plus the grille-style design of the black-painted air outlets on the bonnet, not to mention the palladium grey-trimmed front- and tail-light clusters, blend in perfectly with the carbon-fibre look. The SLR 722 Edition is available with a crystal antimony grey paint finish which creates a vivid impression of depth and produces an extremely intensive-looking surface structure.

Moving inside, the sports bucket seats, upholstered in a combination of semi-aniline leather and Alcantara, offer excellent lateral support, while the colour contrast provided by the distinctive "300-SL-red" stitching throughout the interior, the 722 insignia on the head restraints and the red seat belts is designed to deliver maximum appeal. The attractive material mix comprising semi-aniline leather and Alcantara, which gives the interior its characteristic look and feel, also features prominently on the roof lining and door panels. Frequently used controls, such as the shift lever and

handbrake lever, are trimmed in easy-grip, moisture-absorbing suede. The sporty design philosophy that underpins the SLR 722 Edition is also reflected by the widespread use of carbon throughout the interior. This material, straight from the world of Formula 1, lends the centre console an extremely puristic look.

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The new-look instrument cluster focuses the driver's attention on the key vehicle data, featuring classic-style dials with a signal-red background. Plus the practicality of the multifunction display is augmented by an extremely sporty touch in the shape of the AMG RACETIMER. Finally the designers paid special attention to the steering wheel as the key link between driver and car: with its combined leather/suede trim, the rim is extremely easy to grip and helps to driver to remain master of the situation when driving at high speed.

The best of both worlds: SLR production in Woking

Stuttgart/Woking – Production of the Mercedes-Benz SLR McLaren and the limited SLR 722 Edition at the McLaren Technology Centre in Woking combines the best of both worlds: the advantages of the Mercedes-Benz production system coupled with McLaren's expertise in the construction of super sports cars. In addition, the SLR Experience Centre at the same location is the focal point for the SLR sales concept. Here customers can obtain the very best advice in highly exclusive surroundings and later take delivery of their SLR models in a spectacular hand-over ceremony.

Both variants – the Mercedes-Benz SLR McLaren and the SLR 722 Edition – embody the tradition and spellbinding allure of the Mercedes-Benz brand, while the Woking production site highlights the close links between the high-performance SLR sports cars and the world of Formula-1 racing. As well housing the SLR production facility, the McLaren Technology Centre is the hub of the McLaren Mercedes Formula-1 team's activities. Of the six "production fingers" that make up the complex, two are dedicated to SLR painting and final assembly, while the remaining four are principally used for development, testing and production of the McLaren Mercedes Formula-1 cars.

High-end components for unique high-performance sports cars

The SLR is constructed in Woking using high-end components manufactured by specialists from the partner companies DaimlerChrysler and McLaren. Mercedes-AMG GmbH in Affalterbach produces the 5.5-litre V8 powerplant, while the British experts at McLaren Composites in Portsmouth on the south coast of England deliver the carbon-fibre composite bodyshell. At the heart of this co-ordinated production network is the McLaren Technology Centre where the Mercedes-Benz SLR McLaren is assembled.

The bodyshells are shipped to Woking from Portsmouth. Once they arrive at the paintshop – which is located opposite the final assembly hall - the carbon-fibre surface is painted by hand using a special process. Final assembly of the super-sporty Gran Turismo is largely performed by hand and takes place at nine stations along a line that is around 80 metres long. Each step is carried out in line with the standards and processes of the Mercedes-Benz production system, which was adapted to take into account the specific requirements of SLR production. Before moving on from one station to the next, the car has to pass through a quality gate so as to ensure consistently high standards. At the end of the assembly line, each vehicle must then pass a final examination on the chassis dynamometer before undergoing road tests to fine-tune the chassis. Only once the quality inspector and test driver have given the car the go-ahead can it be handed over to the customer.

Automated production of CFRP components

At the McLaren Technology Centre, high-tech materials from the aviation sector and Formula 1 are being used for the first time in the series production of the body and chassis. The SLR's entire bodyshell, doors and bonnet are made from carbon-fibre composites (CFRP). Previously CFRP components were built by hand in a time-consuming process. In order to achieve a high degree of automation, the experts at the Mercedes-Benz Technology Centre in Sindelfingen, working together with DaimlerChrysler Research and McLaren, split the production process into two parts: preform production on the one hand and resin saturation with subsequent curing on the other. By drawing on the skills of the textiles industry, the materials specialists at DaimlerChrysler were able to introduce largely automated production of the preform, which also consists of carbon fibres. Furthermore, traditional production processes used in the textiles industry – such as stitching, knitting, weaving and braiding – were specifically adapted for the production of advanced CFRP materials.

By way of example, the longitudinal members of the front body structure consist of a central spine and the surrounding moulded part. The spine is made up of several layers of carbon fibre stitched together by machine. After the spine has been cut to shape, it is inserted into a braided polystyrene core. This core element is then clamped in a purpose-designed braiding machine that produces the longitudinal

member from 25,000 ultra-fine carbon fibres that are unwound simultaneously from 48 reels. This process allows the fibre material to be braided around the core at a precisely defined angle to create the desired contour. Several layers are even overlapped in certain areas, depending on the thickness required. Page 8

In a further stage of production, a computer-controlled tufting machine – such as those used in the textiles industry – joins the spine inside the core to the braid of the longitudinal member. The braid core is removed and the preform of the longitudinal member is cut to size. Then resin injection takes place. Mercedes-Benz requires a cycle time of just twelve minutes to manufacture the complex fibre structure of the longitudinal members using a braiding machine, thus illustrating the potential production capacity that this innovative manufacturing technology offers for the future.

New method for manufacturing the rear shelf structure

The rear shelf structure of the Mercedes-Benz SLR McLaren provides a further example of the new production techniques for carbon-fibre processing. Although it has a complex shape with several apertures, it is automatically manufactured as a single part. To achieve this, DaimlerChrysler, McLaren and their collaborative partners adapted the SMC (Sheet Moulding Compound) method to create "Advanced SMC". Its advantage is that the carbon-fibre mats are no longer manufactured by hand but by machine. Here, a handling system arranges individual CFRP layers at pre-calculated angles and in pre-set positions which correspond to the principal shape of the component, thereby creating the blank. Under heat, this blank is then pressed, and in the process takes on the precisely calculated form of the rear shelf. No subsequent rework is therefore required. With the SLR, Mercedes-Benz is the world's first car manufacturer to use components produced using the "Advanced SMC" method.

In addition, the British company McLaren Composites produces over 50 carbon- and glass-fibre components for the high-performance sports car. The degree of integration achieved in the manufacture of the bodyshell is remarkable. By way of example, the entire floor assembly, including all supporting members and securing elements, is made from one piece. The cavities in the CFRP roof frame structure – also manufactured as a single piece – are automatically packed with foam before the resin

is injected to create an extremely impact-resistant sandwich structure. High-strength bonding and riveting techniques ensure a reliable connection between the individual carbon components of the chassis and the bodyshell. The aluminium engine mounts are bolted to the CFRP bulkhead and also bonded in place, while the carbon structure includes integral metal mountings for the aluminium and steel rear axle.

SLR engine production: "One Man, One Engine"

The "One Man, One Engine" principle is applied to the production of the high-performance 5.5-litre powerplants, which is conducted in a purpose-designed hall at Mercedes-AMG's engine production facility in Affalterbach. The decision to bring AMG on board as the engine supplier for the SLR ultimately benefits the Mercedes-Benz SLR McLaren customers, thanks to the company's proven technology and its many years of experience in the construction of high-performance engines. The signature of the engineer responsible for building the engine, displayed on the AMG V8 model plate, documents the company's philosophy of exclusivity for the customer and guarantees the highest standards of quality and care.

SLR Experience Centre: the very best advice in the most exclusive of surroundings

Designed by the famous architect Sir Norman Foster, the McLaren Technology Centre not only offers the ideal conditions for producing the super sports car, it's also in keeping with the expectations of the SLR's exclusive clientele. Consequently, the focal point of the SLR sales concept is located here as well. As a core component of the complete "advice and experience" package, the SLR Experience Centre in Woking is designed to meet the specific needs of customers. In addition, these customers can choose to take delivery of their SLR here if they wish, in which case the car is handed over to its new owner in a spectacular show-style ceremony.

After arriving at the McLaren Technology Centre, guests are offered a wide-ranging programme of events, starting with a visit to the SLR production facility. Plus they get an exclusive insight into the Formula-1 development work that usually goes on behind closed doors. Comprehensive product advice and information presented in an

appealing form is available in the showroom of the SLR Experience Centre. In addition, guests also have the opportunity to see just what the car is capable of at the nearby proving ground in Dunsfold, which is ideally equipped to test the high-performance machine to its limits away from the confines of public roads. Experienced racing drivers are on hand to provide any assistance that may be needed here. If requested they will sit in either the driver or passenger seat and explain the features of the SLR in detail. The exclusive SLR advice and experience package is rounded off by a special programme of events in London.

The birth of the "300 SLR 722" legend: record-breaking victory at Mille Miglia in 1955

It came, it saw and it conquered: the powerful Mercedes-Benz 300 SLR race car took the chequered flag in its very first competitive outing, winning the legendary 1000-mile race in a record time of ten hours, seven minutes and 48 seconds back in 1955. At an average speed of 157.65 km/h, Stirling Moss and his co-pilot Denis Jenkinson recorded the fastest ever time for the Mille Miglia race – a record which remains unbroken to this day. Second place was taken by Juan Manuel Fangio in what was a glorious double for Mercedes-Benz and the new 300 SLR. Further successes would soon follow.

Brescia, May 1, 1955. As day breaks, the engines roar to life on the Piazza della Vittoria in the heart of the city in northern Italy. There are just a few minutes to go until the start of the 22nd Mille Miglia, the world's most popular road race. By today's standards, the race is absolute folly: the participants charge at break-neck speeds from Brescia to Rome and back – a distance of 1000 miles – on public roads! A gruelling test of endurance for man and machine in every respect.

The new Silver Arrows from Stuttgart-Untertürkheim line up at the start right on cue. Juan Manuel Fangio, Stirling Moss, Karl Kling and Hans Herrmann are at the wheel of the four Mercedes-Benz 300 SLR race cars which are celebrating their world premiere in Italy. "It will be a race of records", promises Mercedes-Benz team manager Alfred Neubauer. And Stirling Moss, the 25-year old making his debut for the Mercedes team, calls out "I'll win" in a display of youthful nonchalance.

Both prove to be right. On the very first section between Brescia and Verona, Hans Herrmann achieves a breathtaking average speed of 192.23 km/h. By the time the cars pit in Rome, Stirling Moss and his co-pilot Dennis Jenkinson have opened up a lead. They started at precisely 7.22 a.m. – hence the car's start number. Then Kling has to throw in the towel following an accident, while Herrmann bows out near Florence with a defective petrol tank. But "Moss is just incredible", comments Alfred Neubauer, "he's risking life and limb and has the heart of a lion." With the utmost concentration, the Brit negotiates the final few miles at the wheel of the 300 SLR with start number 722. Moss and Jenkinson go on to win the 1000-mile race in a record time of ten hours, seven minutes and 48 seconds, equivalent to an incredible average speed of 157.65 km/h – yet another record which still stands to this day. Juan Manuel Fangio finishes in second place.

Just four weeks later, at the end of May, the SLR repeats its triumph in the Eifel race at the Nürburgring, with Fangio finishing first this time and Moss in second. With a total of five victories, the 300 SLR is the most successful racing car of the 1955 season.

Eight cylinders courtesy of Formula 1

Racing car development was inspired by a Mercedes-Benz model that, like the SLR, lined up for the first time at Mille Miglia in 1952: the 300 SL with its distinctive "gullwing" doors. The road-going version celebrated its premiere in February 1954. Although the light yet high-strength tubular steel frame concept was lifted from the 300 SL, the 300 SLR differed in many respects and included, for example, an aluminium body, a five-speed transmission, 16-inch wheels and larger brakes.

Above all, however, the SLR race car had a much higher output than its younger brother, the 300 SL, thanks to an eight-cylinder in-line engine with direct petrol injection and dual ignition, lifted from the 1954 Formula-1 race car. For the

300 SLR, the displacement was increased from 2.5 litres to 3.0 litres, thus boosting the power output to as much as 310 hp at 7400 rpm, depending on the intake manifold system, while the peak torque of 317 Nm at 5950 rpm made for superlative pulling power. The powerful engine was installed horizontally at an angle of 33 degrees relative to the vehicle's longitudinal axis. At that time, most race cars started with 167 litres of fuel and 35 litres of oil on board. At Mille Miglia in 1955, Moss and Jenkinson had as much as 265 litres of fuel in the tank. Page 13

Sir Stirling Moss autographs the Mercedes-Benz 300 SLR 722

50 years after his legendary victory at Mille Miglia in the Mercedes-Benz 300 SLR with start number 722, Sir Stirling Moss and his car were reunited again at the scene of his triumph. At vehicle clearing for the 23rd Mille Miglia Storica on May 19, 2005 at 2.00 p.m., he signed the top left of the car's bonnet with the following message:

"We did it together, many thanks and affection. Ciao, Stirling Moss".

To rapturous applause, Sir Stirling drove the car across the start line at 9.40 p.m. on the same day and, after a lap of honour around Brescia, made way in the driver's seat for Jochen Mass. The brief appearance of the 300 SLR 722 here in 2005 was its last at Mille Miglia as it moved to its permanent home in the Mercedes-Benz Museum in Stuttgart-Untertürkheim in May 2006.

Build year	1955
No. of cylinders/arrangement	8/in-line
Bore x stroke	78 x 78 mm
Displacement	2982 cc
Max. output	310 hp at 7400 rpm
Max. torque	317 Nm at 5950 rpm
Kerb weight	901 kg
Max. speed	over 300 km/h

Engine

No. of cylinders/ arrangement		8/V, 3 valves per cylinder
Displacement	cc	5439
Bore x stroke	mm	97.0 x 92.0
Rated output	kW/hp	478/650 at 6500/rpm
Rated torque	Nm	820 bei 4000/rpm
Compression ratio		8.8 : 1
Mixture formation		Microprocessor-controlled injection system with hot-film air-mass-metering; supercharger

Power transfer

Transmission type		AMG SPEEDSHIFT 5-speed automatic
Ratios	Final drive	3.06
	1st gear	3.56
	2nd gear	2.19
	3rd gear	1.41
	4th gear	1.0
	5th gear	0.831
	Reverse	3.17/1.93

Chassis

Wheels	front: 9.0 J x 19 ET 45, rear: 11.5 J x 19 ET 44
Tyres	front: 255/35 19; rear: 295/30 ZR 19

Dimensions and weights

Wheelbase	mm	2700
Track width front/rear	mm	1638/1569
Overall – length	mm	4656
– width	mm	1908
– height	mm	1251
Turning circle	m	12.2
Load capacity max.*	l	272
Kerb weight acc. to EC	kg	1724
Payload	kg	284
Gross vehicle weight	kg	1940
Tank capacity/incl. reserve	l	97.6/12

Performance and fuel consumption

Acceleration 0-100 km/h	s	3.6
Maximum speed	km/h	337

*According to VDA measuring method