BUGATTI W16 MISTRAL: ELEGANCE AT EXTREMES

The mastery of incredible speeds and incomparable forces in a timelessly elegant design has forever been a core part of Bugatti DNA. The W16 Mistral, the most extreme roadster in Bugatti history — a final roadgoing appearance for the iconic W16 engine — is a masterpiece that celebrates the symbiotic pinnacle of design and engineering.

Emilio Scervo, Bugatti Rimac Chief Technology Officer, said: ''Managing both thermodynamics and aerodynamics effectively is key to achieving more than 420 km/h in an open top car, even with 1,600 PS from perhaps the most advanced automotive engine ever created. We have to think very carefully about how we shape the W16 Mistral[1] to guide air through the car and around the car to delicately balance both cooling and aerodynamics. But, of course, we must do all this with a sense of elegance befitting a Bugatti roadster. A car that is both designed for purpose, but simultaneously evokes a sense of timelessness.''

That combination of pure artistic vision and mastery of the laws of physics is seamlessly brought together by Bugatti design and engineering teams. At the front of W16 Mistral, a new wider, deeper and more three-dimensional iteration of the famous Bugatti horseshoe grille allows the high temperature engine radiator to be fully fed purely from one intake, leaving the two side intakes to focus only on providing air to the intercoolers.

The airflow around the front corners is managed by two intakes; one by the wheel and one seamlessly integrated within a new three-dimensional headlamp design. The air is guided from an area of high pressure to low pressure area in the wheel well, which would otherwise create turbulence and drag, affecting W16 Mistral's performance.

Achim Anscheidt, Bugatti Rimac Design Director, said: ''The frontal appearance of the car is dominated by these large intakes, and while recognizably Bugatti, we take a number of cues from the few-off models; Divo[2], Centodieci[3] and La Voiture Noire[4]. The windscreen wraps around in an elegant visor motif and the front becomes more vertical to create a design that is both shaped for speed and beauty at the same time.''

With the new roadster profile, the team incorporated a reinvented Bugatti C-line, which traditionally marks the profile of the Chiron[5]. The design line that wraps around the side air intake now connects into the top edge of the side windows and then three-dimensionally transforms across the top edge of the windscreen. Crucial to the visual identity of W16 Mistral — which appears to leap forwards — the creation of this new line was no simple task.

''To get it right we needed to separate the air intake for the engine from the air intake for the oil cooler,'' continued Achim. ''If we kept them together, the intake on each side of the car would have had to have been enlarged out of proportion. So, instead, we hark back to the Veyron 16.4 Vitesse and the Type 57 Roadster Grand Raid by incorporating engine air intakes behind the occupant headrests. This solution is both elegant, functional and safe; the svelte side intakes are proportionally perfect and feed air purely to the oil coolers, while the headrest engine intakes create a huge sense of aural drama, while also working to protect occupants in the event of a rollover.''

All air taken through the sides gets channeled across the two radiators — one on each side — over the rear wheels and then out through the W16 Mistral's X-shaped taillights — an elegant reinvention of the Bolide's[6] iconic design. The vents emerge in the triangular negative space in between the 'X' beams of the light, creating a pressure drop between the side intakes and the outlets at the back of the W16 Mistral which helps to manage the temperature of the engine, even under high loads.

Emilio Scervo continues: ''The W16 Mistral will be capable of 420 km/h in 'Top Speed' mode, while still inspiring ultimate confidence in the driver. Supreme control in all conditions and at all speeds is a core part of Bugatti DNA, and to deliver this characteristic, the aero map of W16 Mistral has been carefully defined. Through the synthesis of engineering prowess and design talent, W16 Mistral achieves a delicate balance of drag reduction and downforce through its carefully designed front splitter, aerodynamic underbody and the high energy air flow around the airfoil shaped rear wing when deployed.''

W16 Mistral will run in 'Top Speed' mode with the minimum amount of rake on rear wing to reduce drag, but the rear diffuser has been optimized because downforce created by a diffuser comes with very little penalty for drag. The diffuser edge has been elevated to increase its rake

angle and expansion ratio, helping to maintain both W16 Mistral's sure-footed handling and its record-breaking top speed. As well as its reputation as the ultimate roadster.

Achim concludes: ''The W16 Mistral is a special moment in the history of Bugatti; the kind of car that will be seen on the lawns of top Concours d'Elegance events for decades or even centuries. We created a timeless interior for this car, including the introduction of an intricate woven leather used on newly designed door panels, meticulously tested and produced to Bugatti quality standards. And in a nod to the W16 Mistral's illustrious forebears, like the Type 41 Royale, the gear shifter — machined from a solid block of aluminum — features a touch of wood and an amber insert with Rembrandt Bugatti's famous 'dancing elephant' sculpture locked within.''

Only 99 examples of the W16 Mistral will be built, priced at 5 million euros net, with deliveries due to begin in 2024. The entire production run of W16 Mistral is already sold out.

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[1] W16 Mistral: WLTP fuel consumption, l/100 km: low phase 40.7 / medium phase 21.9 / high phase 18.3 / extra high phase 17.6 / combined 21.8; CO2 emissions combined, g/km: 495; efficiency class: G