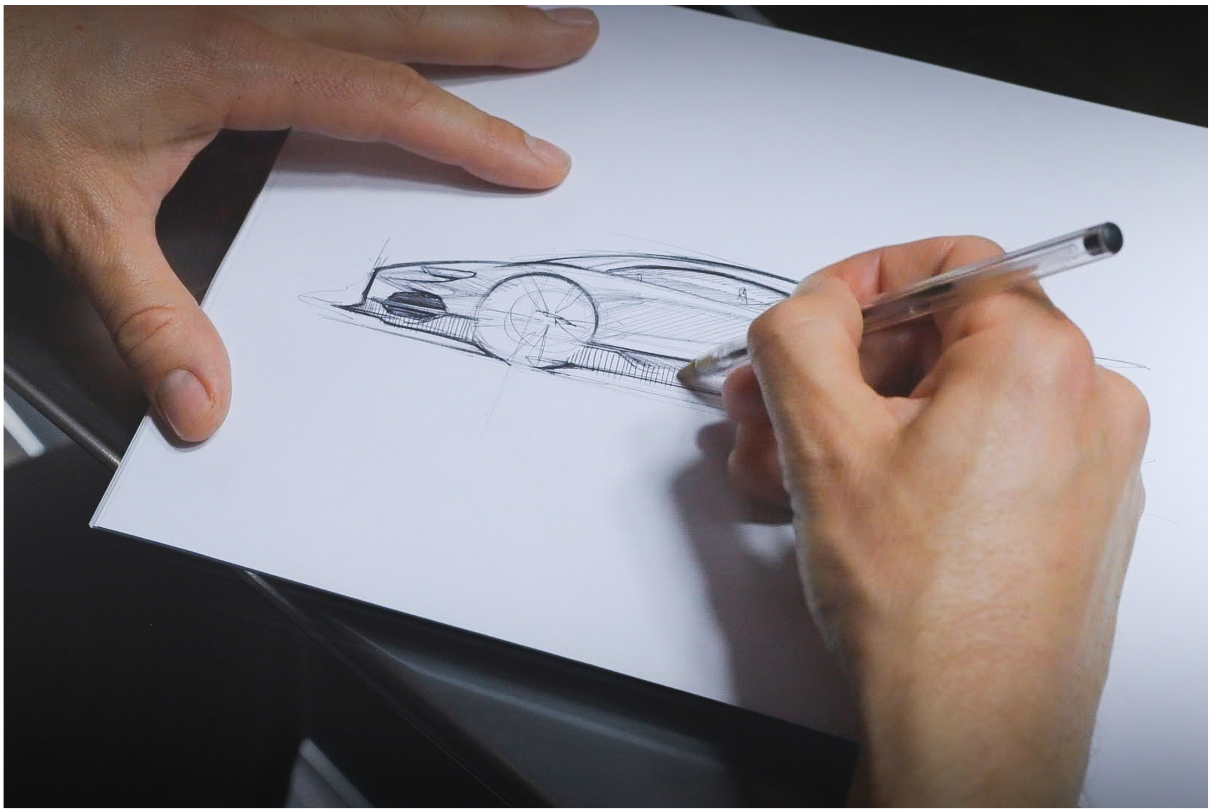
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PUSHING THE LIMITS OF DESIGN: FUSING SPEED AND ELEGANCE WITH THE BUGATTI TOURBILLON



From its earliest days, Bugatti has pushed the boundaries of possibility in automotive engineering — infusing its cars with an inimitable balance between speed and elegance. With the Tourbillon[1], Bugatti's designers have charted new territory in this timeless philosophy; infused with 20 years of expertise in high-speed development programs for the Veyron and Chiron[2], the Tourbillon has been developed from the ground up, step by crucial step, to be shaped by speed

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— all while effusing Bugatti's quintessential elegance. In the tenth episode of the 'A New Era' docuseries, the French marque uncovers the beautiful efficacy of the Tourbillon's design.

Over 116 years of commitment to creating innovative yet graceful designs drew an exquisite thread through every Bugatti. Throughout the marque's century-long story, Bugatti vehicles have been designed to withstand the test of time — incomparably precious creations that endure the decades and are passed down from generation to generation.
For a vehicle to resonate through the ages and evoke a sense of true timelessness, it needs to transcend contemporary trends; to conjure emotions and stir the soul, irrespective of year and era. Central to this mission is creating an inimitable aura of authenticity for every car that leaves the Molsheim Atelier; through each concept and material that goes into creating a Bugatti, advancing the journey of enduring values that will remain dear to drivers through centuries.

Towards the beginning of this journey in the early 1930s, by creating a concept called surbaissé, Jean Bugatti struck upon a moment of genius with the Type 57 SC Atlantic.

> "By submerging the engine below and behind the front axle, the hood, driver, and roof could be lowered, maximizing aerodynamic efficiency. It was unlike any other car of the time. And that same philosophy has been applied to the Tourbillon. With the Tourbillon, its purpose is to combine elegance with speed."
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> FRANK HEYL
> BUGATTI DESIGN DIRECTOR

The symbiotic relationship between these characteristics is an achievement years, skill, and dedication in the making. And one that drew inspiration from another, more unexpected source.

> "A peregrine falcon is a marvel of biology — a bird that has mastered the art of aerodynamic efficiency in the pursuit of speed, tucking its wings in when nose-diving towards its prey. And why does it do that? It's to reduce its frontal area."
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> FRANK HEYL
> BUGATTI DESIGN DIRECTOR

And so, honoring the same pursuit, that principle guided the design of the Tourbillon from the very beginning. For this, the high-speed programs of the hypercar's predecessors — the Veyron and the Chiron — would prove invaluable; taking the learnings across each model's development

journey and feeding them all into achieving the mission of shaping the Tourbillon in the most uncompromising way — tailor-made to its purpose.

Aerodynamic balance is a critical requirement for unlocking speed — one that needs to temper the amount of lift generated by a car travelling at 445 km/h, with an extraordinary amount of downforce. In order to achieve that, without generating excessive drag, the base shape of the car needs to be perfected from the outset.

Much like the peregrine falcon, the Tourbillon's core form is shaped as an elegantly smooth and streamlined tear drop. From that baseline, the Bugatti design team could create their magic; the Tourbillon yields a much-reduced frontal area, lower height, and narrower cabin width than its famous predecessor — all while maintaining the same space and ergonomic proportions in the cockpit. An exquisite blend of aesthetic appeal and the pursuit of performance.

The impact of this philosophy Bugatti is known for starts at the very front of the vehicle's unique architecture. The iconic Bugatti horseshoe grille — widened for the Tourbillon — feeds precious air into the two radiators to its left and right, entering a high-pressure inlet before expulsion from a low-pressure exit at the top of the hood. The intelligently curated pathway, creating a pressure drop, maximizes the efficiency of the air flowing through the radiators — marking the start of air's streamlined journey through the Tourbillon's architecture.

That voyage is made effortless thanks to the exceptional graft and commitment of Bugatti's design team. The entire volume of the Tourbillon's ingenious cabin shell — lowered 33 mm further into the carbon fiber monocoque than the Chiron — bestows the new hypercar with extreme proportions, with the cockpit crouching low in between the two front wings. Reducing the vehicle's overall height yet further, the two seats in the cabin are mounted directly to the monocoque, with the steering wheel and pedals adjusted longitudinally — in a spellbinding fusion of superior driver comfort, and the pursuit of a design shaped by speed.

As the air flows through and around the Tourbillon's carefully curated, functionally optimized form, it meets the secret of the hypercar's remarkable ability to fuse opposites: the diffuser.

The Tourbillon's design team have taken exceptional pride in the vehicle's ability to travel at very high speed, without the need to deploy the rear wing; sitting entirely flush against the bodywork, in a marvel of sleek design and evading the disadvantages of drag. Its striking diffuser represents the sole means of achieving that feat, making the concept of aerodynamic balance — tempering lift with wing-less downforce — a reality.

Composed of multiple diffuser channels almost two meters long, beginning underneath the passenger seats, the diffuser runs to a very tall exit at the rear of the car where, at its trailing edge, it meets the mighty V16 engine's exhaust outlets. In another moment of engineering and design excellence, the exhaust gases energize the already accelerated airflow emerging from the diffuser, enabling it to further reduce air pressure and maximize the downforce produced.

In a tale of opposing forces and incredible contrasts, the rear of the Tourbillon epitomizes the magnitude of the Bugatti design team's achievement. Reveling in the juxtaposition of its beautifully slim light arrangement and the fragmented, technically driven surfaces of the diffuser, the rear of the car is given an aerodynamically efficient proportion, all while emphasizing the perception of width and presence. A seemingly impossible goal, realized by the ingenuity of a design, defined throughout, by the fusion of elegance and speed.

"None of what we have achieved with the Tourbillon, are easy things to do. They're only possible if you implement this kind of strategy from the very first pencil stroke."

FRANK HEYL
BUGATTI DESIGN DIRECTOR

A strategy championed by Jean Bugatti in the 1930s — defined by technical genius that withstands the test of time, and carried into Bugatti's future with the incomparable Tourbillon.

Watch the latest episode of 'A New Era' — part of a miniseries about the Tourbillon's design — on the official Bugatti YouTube channel.

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[3] Chiron: WLTP fuel consumption, l/100 km: low phase 44.6 / medium phase 24.8 / high phase 21.3 / extra high phase 21.6 / combined 25.2; CO2 emissions combined, g/km: 572; efficiency class: G

[3] Tourbillon: This model is currently not subject to directive 1999/94/EC, as type approval has not yet been granted.

[3] Veyron: