

Worth the Weight

Fasten your seatbelts: Richard Mille's Formula 1 ethic takes the RM009-1 'Felipe Massa' to lightweight extremes

Theodore Diehl



Luxury is a term that all too easily brings associations of heaviness and richness out of step with contemporary tastes. Think gold brocade, Turkey carpets and outsize limousines. In watch terms, luxury once meant a massive gold case and a bracelet weighty enough to make the brand identification meaningless. The modern understanding of this idea is much less to do with excess, whether of material or finish. Instead, the values appreciated include rarity and performance. Current luxury cars boast more about their race-proven materials than the lushness of the leather seats - Formula 1 being the conduit through which the latest refinements arrive. Such materials combine exclusivity with performance in an alluring mix. Richard Mille's idea has been to bring this modern understanding of luxury to the business of making watches.



The new RM009, developed in tandem with Audemars Piguet's Renaud et Papi. Not only the lightest tourbillon ever made; the lightest mechanical wristwatch too, so claims Richard Mille.

Wearable lightness of being

Richard Mille is the kind of watch creator who takes intense pleasure in turning things upside down and showing us another way of doing things. Since he also owns a collection of racing cars and is intensely involved with Formula 1 racing on a personal as well as a business level, he is keenly aware of the intertwined relationship between exclusivity, weight, strength and cost. And he has been playing around with the concept of weight in *haute horlogerie* from the very inception of the Richard Mille brand.

"When I first produced tourbillons with titanium cases and parts, people were initially shocked," says Mille. "People thought that a tourbillon should only be available in precious metals. They also complained that a tourbillon in a titanium case felt too light in comparison to the price. But once they began to understand that lightness combined with strength was a kind of ultimate expression of engineering quality, they slowly began to change their views. A wristwatch is, after all, a machine - just like a racing car. Many of the same principles apply."

The RM006, featured in Issue 9, was the first in a series of studies using new materials addressing this lightness/strength relationship. It was the first use of carbon nanofibre for the baseplate of a tourbillon. Compared to the more standard varieties of carbon fibre, nanofibres are much finer, compressed together at a higher temperature and pressure. It shows no distortion after being subjected to long-term temperature changes or severe shock - some of the reasons why it is used in the space shuttle and the brake linings of aeroplanes. F1 driver Felipe Massa's RM006 even survived a high-speed crash without losing a second. Now, there are even carbon nanofibre baseplate versions of the RM002, 003, 004 and 008 launching this year.

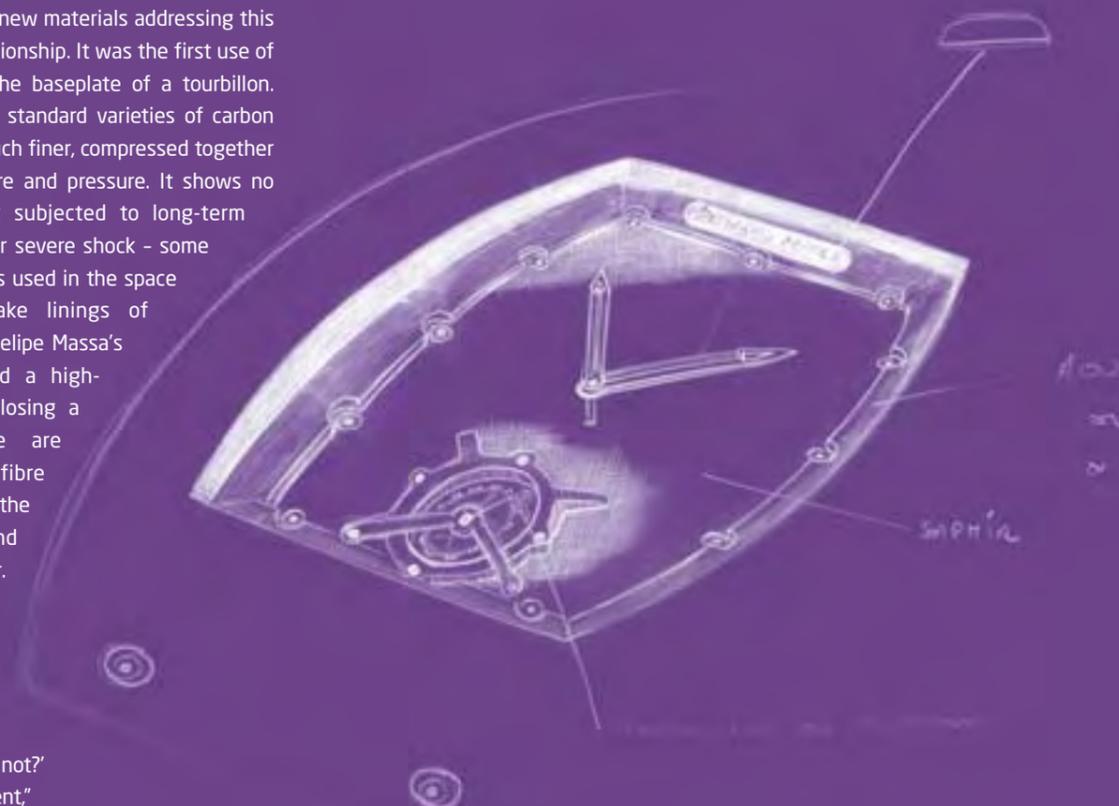
"I would enjoy it if other watch companies looked more closely at new materials and said 'why not?' if the results are excellent," confides Mille. "As an industry, we have to grow and open our horizons."

The challenge

This all sounds very noble, but where do you go after you have created a watch that weighs-in at 42 grams without the strap? That answer is easy: the RM009-1 'Felipe Massa'.

"Where the RM006 was a study in the application and implementation of a new material in watchmaking, the RM009-1 was a direct challenge in which the planned result was set as a goal up-front," Mille recalls. "Even before the process began, it was a real question of 'can we do this and can we make it happen?' The goal was set to create a tourbillon wristwatch that would weigh 30 grams.

"My connection with Formula 1 racing is not a PR operation; it is a real source of ideas, passion and inspiration for me. When I talked with Felipe Massa [Richard Mille is one of the official sponsors of the young driver], one of the things he mentioned was that he didn't like anything heavy on his wrist while driving, as it affected his reactions; his sense of momentum and contact with the turning of the steering wheel.



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RM009's caseback. Material database research led to aluminium lithium alloy being used for the movement, while the largest component, the case, was made from ALUSIC - an silicon-aluminium alloy in matrix with silicon carbide particles.

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"I can tell you that we only found out the final weight of the RM009 in February 2005, after months of experimentation. We were relieved when we even came under the 30 grams challenge! This is not just the lightest tourbillon in the world, it is the lightest mechanical wristwatch ever made."

Making it happen

The approach encompassed three major areas of research: finding the actual limits of the movement's skeletonisation process, minimising the movement's parts and dovetailing from that to find new materials for the baseplate and for the case. Skeletonised wristwatches are nothing new and the first step was to see how far the process of cutting-away could go before problems might occur. A minimisation process (changing the layout in order to eliminate a screw or share a structural connection) was undertaken in order to save weight. But this must take into account issues of strength, and research soon led to the examination of new alloys strong enough for this complete process. The route the RM009-1

followed was the same as used for the production of F1 racing cars: the cars are first brought down to a weight that is clearly far under the minimum prescribed by FIA regulations and then the car is weighed and balanced-out back to the minimum, area by area, part by part.

Materials database research very quickly led Mille and long-term collaborators Renaud et Papi from Audemars Piguet to aluminium lithium alloy - a combination of metals providing optimal strength with lightness, which takes a fine finish. Once the movement was pared down to the absolute essentials, it was checked even further, and even the areas around the jewels were drilled out; primarily for lightness but for the visual effect as well. Mille: "I know people think I am crazy with



details, but I want anyone who picks up a magnifying glass or watchmaker's loupe to be impressed with the tiniest parts, so I continuously scrutinise everything." The case, the largest component of the watch and therefore the most sensitive to weight issues, was the last exercise. A friend of Mille's from the Centre National de la Recherche Scientifique (CNRS) in France pointed out that 'ALUSIC' was being used in special satellites where every fraction of a gram in the payload counted. Though potentially useable for watchmaking purposes, he warned it is notoriously hard to work, because it is just so unforgivingly tough and resists drilling and shaping.

Here too, aluminium plays an essential role, and is combined with particles of silicon carbide - a form of carbon that gets dispersed through the molten metal through a special process. "I can't divulge the exact price I pay for the alloy and machining of each case," says Mille cagily, "but it is so costly that for the price of the case alone, you would easily be able to purchase a high-end Swiss watch!"

The ALUSIC alloy has a very 'techy' appearance, with the entire surface dotted by microscopic specks of carbon. This high-tech exterior forms a perfect counterfoil to the glass of the dial and caseback as well as against the polished surfaces of the movement contained

within. "Felipe was thrilled with the results, and since he was the source of inspiration for this route of development, I have named the RM009-1 after him!"

What women want

At completely the opposite end of the spectrum, this year also sees Mille making his first steps into the ladies' market, in reaction to the general trend throughout the mechanical watch industry and specific requests from female fans. The new RM007 has a sleeker version of Mille's trademark tonneau case, predictably set with diamonds. But what really sets it apart from other ladies' watches - retaining Mille's progressive technical philosophy at the same time - is the rotor. Loose, yellow-gold micro balls are contained within, providing an effective winding weight, as well as a fascinating spectacle.

But these two new releases are just the beginning of a phase that Richard Mille is currently entering. Not only are next year's models already well underway, the Richard Mille website (www.richardmille.com) is soon to be online, a catalogue is in the making, as well as some new projects dealing with the development of Formula 1 racing cars. What remains to be seen is which F1 criterion Mille will fulfill next in his watches. Speed? Aerodynamism? Flame retardance...? ○



Further information: Richard Mille Watches, Domaine de Monbouan, 35680 Moulins, France



(Above) Caseback of Mille's first ladies' watch, the RM007. Note the yellow-gold micro balls, loose within the open-worked rotor.

(Left) CAD diagrams of the RM009, front and back, showing the principal bridge in dark grey, to which all components are attached.