UNDER EMBARGO UNTIL 11:00 AM CET JULY 10, 2023

FACTOR BIKES ANNOUNCES THE NEW O2 VAM: THE WORLD'S FASTEST CLIMBING BIKE

FACTOR BIKES is excited to announce the launch of the new O2 VAM, the world's fastest climbing bike with an unprecedented mix of lightness and aerodynamics. The new O2 VAM will be raced at the Tour de France by the Israel-Premier Tech team, who played a significant role in its development.

Sections:

Overview

The new O2 VAM is an aero climbing bike – nothing else this light is as fast, nothing this fast is as light. It's the ultimate choice for riders seeking performance on big days in the mountains, whether you're riding the Étape du Tour or the Tour de France.

The new frame is complemented by the all-new, 1,146g Black Inc 28//33 wheelset with carbon fibre spokes. Complete builds weigh from 6.2kg (size 54, Dura-Ace Di2).

Factor Bikes Director of Engineering, Graham Shrive, says: "We began by asking the riders of the Israel-Premier Tech team 'On what terrain do you get your results and how can we help that?' They wanted a bike that would be under 7kg in race trim, with pedals, transponder and number."

"Then we asked, 'What's stopping you from riding the previous O2 VAM?' They said aero and stiffness. So, we made the new O2 VAM as stiff as the OSTRO VAM, a 35% increase, and 12W faster than the old O2 VAM in the wind tunnel, which is around half the difference to the OSTRO VAM and at low yaw angles of 0-5° it's only 5W behind."

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"The new 02 VAM is right on the UCI weight limit when race-ready and faster than any other bike this light."

Ride comfort has been increased by the external seatpost and ultra-thin toptube, which reduces to 10mm to promote controlled deflection at the saddle over bumps. The riding position has also evolved, with a 10mm increase in stack height across the size range in response to customer fit data.

The handling geometry is identical to the well proven OSTRO VAM, which pros and customers alike have raved about. A consistent 57mm trail figure is achieved across all seven sizes thanks to four different fork offsets.

Key Features

- Complete bikes from 6.2kg
- Frame weight 730g, size 54
- 12W faster than previous model, average +15/-15° sweep, 48kph
- 35% stiffer on average across all sizes
- External seatpost
- D-shape truncated aero profiles
- Optimized for 28mm tires
- 32mm max tire clearance
- 10mm higher stack, in response to customer fit data
- 7 sizes, 3 paint schemes
- Prisma Studio custom paint available immediately
- New Black Inc 28//33 wheelset with carbon fibre spokes, 1,146g

Who Is It For?

The new 02 VAM is for everyone looking for an enhanced, faster ride experience on mountainous and hilly terrain, with quicker climbing, more confident descending, higher speed on the flats and greater comfort. It's for gran fondo riders, racers, and those for whom a week in the mountains is the highlight of the year. If speed isn't your priority, the increased efficiency will save you energy to ride further.

The new 02 VAM is especially for the professionals to use on the toughest Grand Tour stages and Classics. Israel-Premier Tech rider Daryl Impey sums it up: "We all want a fast, light bike. Every pro wants their bike to be on the weight limit without compromising on the drag. This new bike is really exciting for that."

Chris Froome's Close Involvement

Chris said: "With the new 02 VAM, it started from a conversation with Rob [Gitelis, Factor Bikes CEO] over a year ago, talking about what the next bike is going to be. I put forward a lot of ideas at that concept stage and we've been in touch a lot since."

"It's one thing to make a bike that's under 7kg, but we also need it to be competitive on aerodynamics and rigidity, and that's what Factor has now done with the new 02 VAM. It's going to be a very special bike."

"Being on Factors, it's the first time in my career that I've had such direct input and communication with the people making the equipment that I'm going to race on. It's something I really enjoy, because you give feedback, you know it's being listened to, and some weeks or months down the line you see the final product and it will be just what you talked about."

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The Crucial Testing by The Israel-Premier Tech Team

In May, Factor's Director of Engineering, Graham Shrive, hand-delivered the very first rideable prototype to an Israel-Premier Tech high-altitude training camp in Andorra and was met by excited riders wanting to try it, among them Chris Froome. Handing the new bike to the greatest Grand Tour rider of his generation was a big moment; months of work have gone into the bike, including extensive discussion with Chris. He powered off into the cold air and came back grinning.

"You can feel it immediately," said Chris. "The wheels especially are much more responsive. You push on the pedals and it just goes, no delay. You can't really explain it to someone who hasn't felt it. It's going to be really good for big climbing days."

Over the following days, Dylan Teuns took the prototype O2 VAM on some hard training rides in the high mountains of Andorra. There was no more structured a testing process than simply riding it hard on the terrain for which it was designed.

"For us, this test was a validation," said Graham at the end of the week. "The feedback has been great. We're early enough that we could make changes to the lay-up if they were needed, but at the same time we were confident in the bike. We know what it takes, and we know the aero, weight and stiffness that we've achieved."

Paint Options and Design Concepts

From launch, the new O2 VAM will be available in:

- Storm Grey
- Red Velvet
- Chrome/Raw Carbon
- Prisma Studio custom paint

The new O2 VAM is a landmark engineering achievement and that deserves aesthetic design to match. Jay Gundzik, Creative Director for Factor Bikes, explains the process by which he crafted the stunning 'Storm Grey' lead graphic.

"I started thinking about air, to reflect aerodynamics. Ideas about purity and life force seemed clichéd. Air can be powerful; it makes storms and hurricanes. That became the concept."

"Using a Leica camera, I shot sunrise golden hour storms on Vancouver Island, Canada. I worked on the images in Photoshop, then manipulated them in Discord AI, first with cinematography prompts and then with emotional terms, such as anger or hope. The storm happens on the flat surfaces inside the fork and chainstays, with these beautiful greens and greys with some punches of orange. It's applied as decals to save 25-50g versus paint."

The Red Velvet and Chrome/Raw Carbon complete a diverse offering, or customers can create their own designs – as wild or as stealthy as can be imagined – in the Prisma Studio custom programme.

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New Black Inc 28//33 Wheelset

The new 28//33 wheelset was designed to complement the new 02 VAM and represents an equally remarkable breakthrough in lightness and aerodynamics. The 28//33 weighs a feathery 1,146g as tubeless clinchers optimized for 28mm tires. They feature differentiated front and rear depths of 28 and 33mm, measure 23mm internally and 28mm externally, and use exceptionally light and strong carbon fiber spokes. As well as a substantial weight saving, they also reduce drag by 10g from the previous THIRTY wheelset and greatly boost stiffness, and therefore responsiveness and acceleration.

The 28//33 wheelset is available separately from all Factor and Black Inc authorized dealers, as well as www.factorbikes.com and www.blackinc.cc, priced at USD2,899, EUR2,799, AUD4,690, GBP2,900.

The Development Story

The project began with setting ambitious goals for weight, stiffness and aero, then developing a range of tube shape options using Finite Element Analysis (FEA) and Computational Fluid Dynamics (CFD) tools to study the structural and aerodynamic performance respectively. Computational studies were carried out on aero profiles at a range of speeds and wind angles, on tube cross-sections as a predictor of mass, and on wall thickness versus section area. An intricate optimization process identified the shapes with the best balance of aero, stiffness and lightness.

New capabilities were introduced for the development of the new 02 VAM. Factor added a PhD aerodynamicist to the engineering team and leveraged cutting edge, cloud-based CFD with the ability to accurately model spinning wheels and spokes and a pedalling rider, and to discreetly measure the drag from individual components.

Once the initial shape selections had been made, the preliminary design was assembled virtually, complete with all components and a pedalling rider, for a final validation CFD test and comparison to known benchmarks. The next step was extensive wind tunnel testing.

Rapid prototyping techniques enabled efficient use of wind tunnel time and were complemented by a new system of rapid iteration for the carbon fibre layup. This meant more versions could be tested both in the wind tunnel and on the road in the pursuit of perfection.

Initial ride testing was carried out by a core staff team with top-level race backgrounds and decades of combined product development experience. Final prototype testing was performed by selected riders on the Israel-Premier Tech team.

Aero Explained

Why make an aero climbing bike? Firstly, because the climbs are only part of anyone's ride, and on the rest of any route, aero is as important as ever. Secondly, because the pros climb so fast that aero remains a significant consideration even at typical gradients of 8%. With aero shapes being heavier, the challenge is to achieve the best of both lightness and aerodynamics. Factor isn't the first brand to add aero to a climbing bike, but it is the first to make a bike this fast and this light.

Drawing and expanding on learning from the Factor OSTRO Gravel - the world's fastest gravel bike - the team created entirely novel airfoil shapes for the downtube, seat-tube and headtube. These aero profiles use aggressively truncated airfoils which deliver a very high stiffness-to-weight ratio with minimised drag achieved by manipulating the separation and reattachment of the airflow. The tight radius at the truncation point is challenging to manufacture and a good example of the additional lengths to which Factor can go in pursuit of performance because it owns its factory.

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A focus on optimising the frontal area for low yaw conditions means that at 0-5° effective wind angle the new 02 VAM is only 5W behind the OSTRO VAM, which itself is the fastest aero bike on the market. It follows, then, that the new 02 VAM is not only the fastest bike in its category, but also faster than many brands' much heavier dedicated aero offerings.

New Factory and Construction

From the outset, the project goals included radically higher stiffness to match that of the OSTRO VAM, a very low weight and enhanced comfort, with aero-optimized tube shapes. The demands of this combination of attributes led Factor to build an all-new facility in Taichung, Taiwan for in-house R&D. The rate of prototype iteration has moved from three weeks to one day and a new compaction method has been developed, the details of which are secret and proprietary.

"We're not reinventing the process," says Shrive. "Rather, we're perfecting every step. While you could do 90% of what we do anywhere, it's the last 10% that makes the difference. There's no magic, but it is state-of-the-art."

The new 02 VAM uses a similar mix of fibres to the OSTRO VAM, including T1000 and top-of-the-scale M60J Pitch Fibre. Boron is used in the external seatpost to achieve an extreme strength-to-weight ratio. Over 40 iterations of the layup schedule were prototyped and tested and all seven frame sizes have a unique kit of carbon fibre laminate and a unique layup schedule, ensuring optimal ride quality for all riders.

The recently revised UCI rules allow a minimum tube thickness of 10mm and that is exploited in the toptube ahead of the seat cluster. In combination with the external seatpost, this enables more deflection at the saddle over bumps for increased comfort.

Factor Founder and CEO, Rob Gitelis, Comments:

"The development of the new 02 VAM has been many years in the making, and required complete buy-in from all Factor stakeholders: athletes, employees, and shareholders alike. Only then were we able to take a holistic approach, with every decision taken solely to produce the best bike possible. I'm incredibly proud of what our team has achieved with the new 02 VAM, and can't wait to see it out on open roads."

Pricing

	US $ (+ tax)	EUR € (+ VAT)	GBP £ (incl. VAT)	CAD $ (+ VAT)	AUS $ (incl. GST)
Premium Package Frameset	$6,299	€6,049	£6,300	$8,499	$9,990
Premium Package + Black Inc 28//33 wheels	$8,899	€8,599	£8,900	$11,999	$14,390
Premium Complete, Shimano Dura-Ace 9200 Di2	$11,799	€11,299	£11,800	$15,999	$18,990
Premium Complete, Shimano Ultegra 8100 Di2	$9,899	€9,499	£9,900	$13,299	$15,990
Premium Complete, SRAM Red eTap AXS + Quarq PM	$12,199	€11,699	£12,200	$16,399	$19,690
Premium Complete, SRAM Red eTap AXS	$11,799	€11,349	£11,800	$15,999	$18,990
Premium Complete, SRAM Force eTap AXS + Quarq PM	$10,099	€9,699	£10,100	$13,599	$16,290
Premium Complete, SRAM Force eTap AXS	$9,899	€9,499	£9,900	$13,299	$15,990

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About Factor Bikes / Black Inc

Factor Bikes began in 2007 as a leading design and engineering firm, an offshoot of bf1systems which was working for leading brands such as Ferrari, Aston Martin, Lamborghini, Maserati and many F1, MotoGP and WRC teams. Factor's first carbon bike emerged in 2009. The groundbreaking FACTOR001 was years ahead of its time in terms of performance, technological advancement, and aesthetics and set the precedent and DNA for all future Factor Bikes: challenge the status quo and push the limits of what's possible. Today Factor Bikes owns and operates its own carbon production facility and is the only premium bike brand in the world overseeing and controlling every step of carbon bike production, from concept to final assembly.

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