



2008

WHEELS

The Orbea Racing Team will not just live the racing season in the light reflected by the feats of their captain, Julien Absalon: the team manager Ixio Barandiarán also expects flattering results from other outstanding team athletes such as Rubén Ruzafa, Jean-Christophe Peraud and Iñaki Lejarreta.

FULCRUM® TAKES TO THE NEW OFF-ROAD TRACKS

Three intense and demanding years have seen Fulcrum® achieving positive results in market terms and flattering sporting successes in the world's most important road races. But our great passion for cycling means that we never stop testing ourselves and continually tackle new situations. The 2008 season will be remembered as the one in which Fulcrum® took up the off-road challenge without making a secret out of the competitive ambitions we nourish and confident that we will rise to the level already achieved in the road framework. That is why we have signed a partnership with athletes of supreme competitive calibre such as those of the Orbea Racing Team and its captain, Julien Absalon, an athlete the specialist press defines as "the best MTB rider in history".

Julien Absalon_2006 World Champion

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REDMETALTECH

2:1 Two-to-One™ Spoke Ratio

The 2:1 Two-to-One™ system has been used for all the rear wheels and for the first time Fulcrum® has also extended their advantages to all the front wheels fitted with disc brakes. The doubling of the spokes on the critical side makes it possible to reduce the unit load borne by each spoke as the spokes themselves are no longer subject to the mechanical stress resulting from the different disc.

Overcoming this drawback the spokes will be able to transfer the forces exerted at the rear by the pedalling traction and at the front by the torsion torque of braking, and give the front wheel previously unknown stability.

FEATURING
**2:1 SPOKE
RATIO**

If traction and torque transfer are entrusted to a single spoke in a traditional wheel, they are distributed to two spokes in a Fulcrum® 2:1 wheel for greater reliability, performance and longer life.



With the patented Fulcrum® 2:1 system also extended to front wheels with disc brakes, the torque of the forces exerted by the calliper on the rotor is supported and balanced by a double number of spokes. As a result this configuration makes it possible to obtain great riding stability and precision even when braking.

AFS™ AXIAL
FIXING SYSTEM

AFS™ The Axial Fixing System™ is the solution developed by Fulcrum® to fix the disc brake to the hub. The constraint granted by the butt area of the release mechanism, greater than in familiar standard ones, makes it possible to obtain greater structural rigidity and therefore more precise and powerful braking. The availability of the International Standard option ensures full compatibility of Fulcrum® wheels even with the most widespread braking systems that use this assembly plan.

Simple and effective: Fulcrum®'s Axial Fixing System™ makes it possible to fix the rotor disc to the hub with a simple ring. The AFS™ is perfectly compatible with the Shimano Inc. Center-Lock system.



MO MAG

SUPER STRONG NO HOLE RIM BED

TOP BRIDGE WITHOUT HOLES FOR GREATER TORSIONAL RIGIDITY

The use of MoMag™ technology makes it possible to make a rim with a top bridge without any holes, and therefore guarantee appropriate air tightness for the tubeless tyre.

The only hole in the rim is the one for the special valve that makes it possible to obtain the tyre's working pressure. The special gaskets fitted guarantee its hermetic tightness.

MoMag™ technology is integrated in wheels which do not have drilling of the top bridge of the rim. The nipples in these wheels are guided to their seat by employing a little magnet. Their accessibility from the outside makes it possible to carry out all the spoke tensioning and replacement operations conveniently. The absence of holes on the rim bed permits all the original strength to be maintained as well as the use of tubeless tyres. The hermetically sealed valve ensures that the tubeless tyre is kept under pressure.



Unlike normal releases, the eccentric axle in Fulcrum® quick-releases is actuated by the torsion of both ends, and locking becomes easier and more secure.

QUICK RELEASE

Quick-releases for Off-Road wheels The quick-releases make use of the new patented Fulcrum® mechanism: a locking lever centred on the axis of the axle. This lever engages both ends of the axle fitted with a cam that exerts the closing traction on the axis, by means of a fork coupling. The synchrony with which the lever fork exerts the torsion on the ends of the eccentric axle makes the operation for locking and releasing the component more fluid, smooth and secure.



The assembly of the locking lever, practically aligned with the axis of the locking pin, makes it possible to actuate the release more easily even when there are forks with liners with a particularly large diameter.

OVERSIZE AXLE

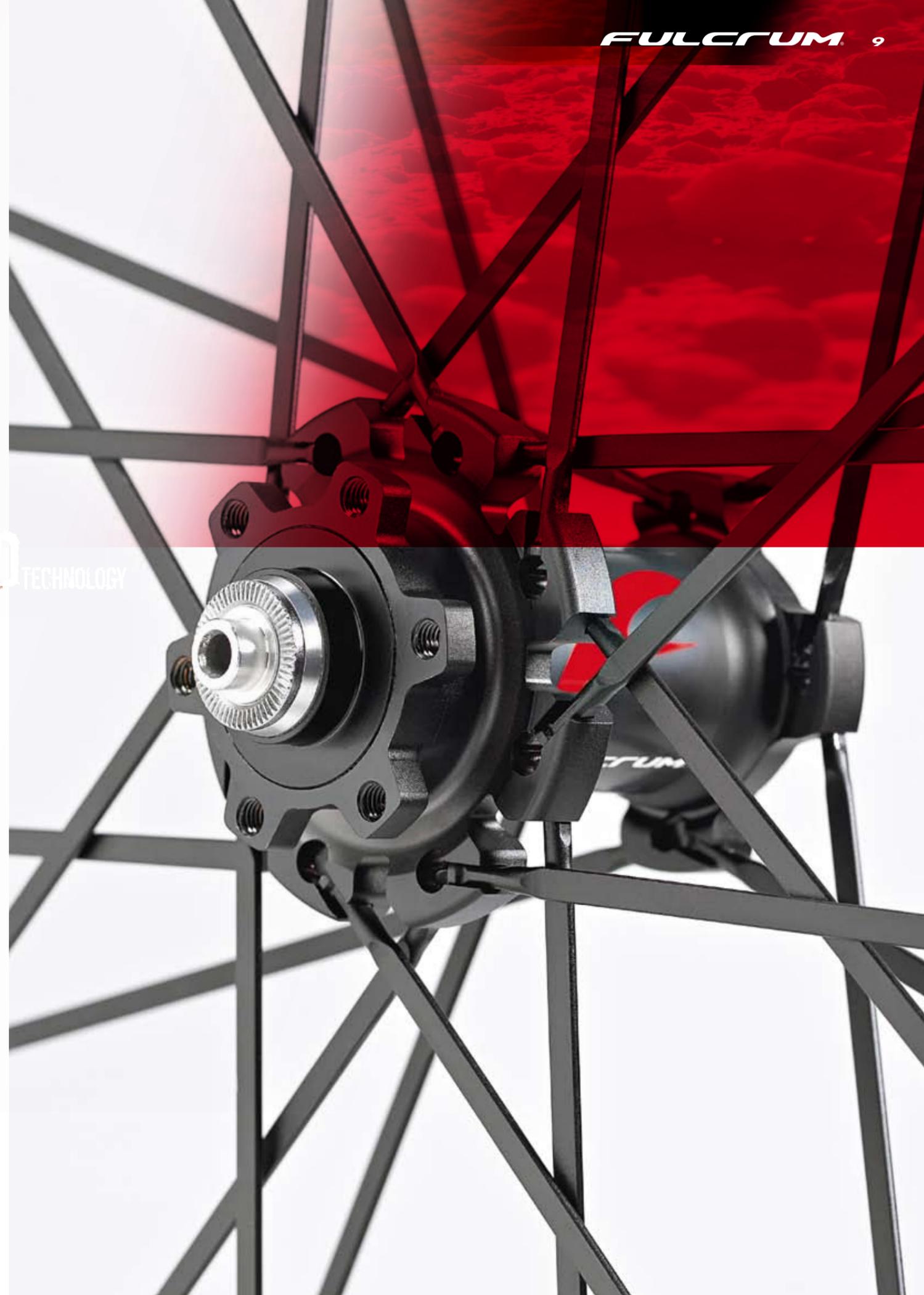
Commercial New Generation

20 MM
OVERSIZE AXLE

The hubs designed for Fulcrum® wheels employ a generously dimensioned design for both the central body and for the rotation axis. The diameter of the latter, 20 mm for all the models with disc brakes, guarantees high resistance to transverse and torsional stresses. A contribution is also made to this result by the mechanical architecture of the hub which, in the AFS™ version, is provided with bearings with a double ball-bearing race positioned outside the flange, so that it is aligned with the disc on the respective side. The Red Metal™ Zero and Red Metal™ 1 models are fitted with precision bearings with cones and cups which make fine adjustment possible and with a double gasket to provide a barrier against the infiltration of dust and mud.



A wheel's resistance to transverse loads largely depends on the dimension of the axle. For this reason our hubs feature 20 mm oversize axles combined with greater distancing of the bearings.



TECHNOLOGY



Red Metal™ Zero The top of the off-road Fulcrum® range is dominated by the preferred wheel of champions Red Metal™ Zero, used in competitions by Julien Absalon and his companions in the Orbea Cross Country Team. It has a welded rim with a 23.5 mm side, worked with a triple milling operation, a Fulcrum® patent, and with a specific profile for disc brakes. The assembly configuration uses aluminium spokes with an aerodynamic profile and stainless steel nipples arranged in a 2:1 Two-to-One™ configuration; 16+8 for both wheels, with the 16 spokes located on the disc side of the front wheel and on the sprocket set side of the rear one for greater performance.

6 Bolts & AFS™

The hubs have been designed with oversize bodies and flanges to increase the resistance to torsion.



The quick-release employs the special patented double pivot lever, with reduced lateral bulk.



The hubs have an oversize aluminium body that rotates by means of adjustable bearings on a 20 mm axle. This wheel is compatible with UST Tubeless tyres and with the AFS™ Fulcrum® systems or the International Standard as far as the disc brakes are concerned.

The triple milling operation to lighten the rim is carried out to remove the excess material in the sections between one spoke and the next.

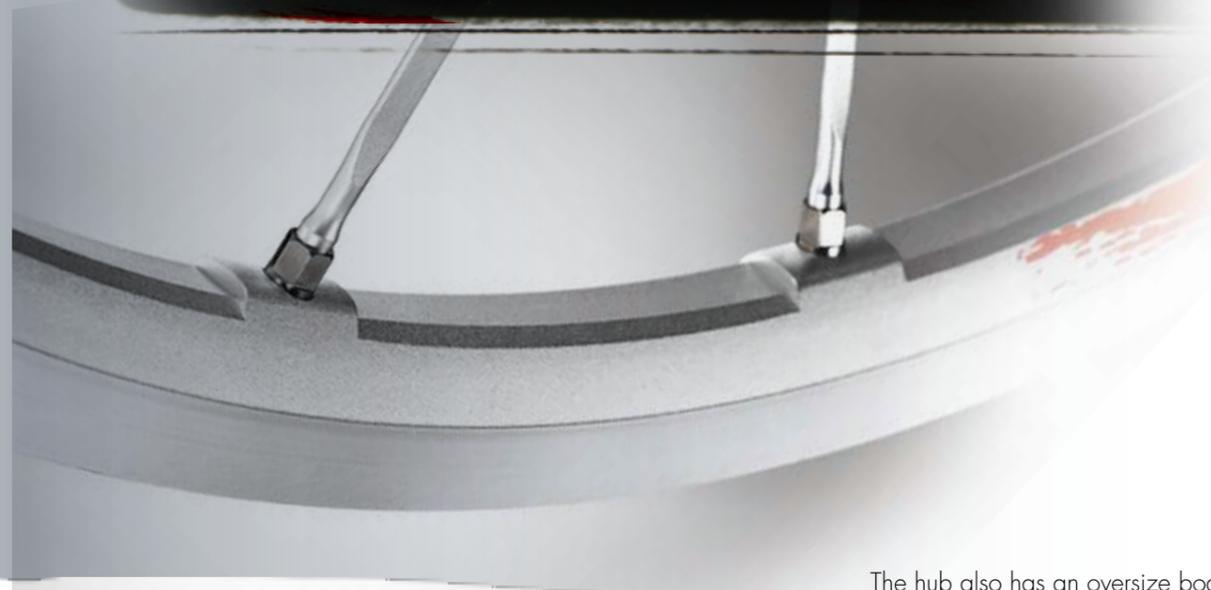


Red Metal™ Zero The most prestigious wheel in the Fulcrum® range is also available for cantilever brakes. The limitation of the number of spokes and the disc-free hub make it possible to obtain a decisive weight reduction: 1486 g. 18 radial spokes are fitted on the front wheel while the rear employs the Fulcrum® 2:1 Two-to-One™ system and envisages 14+7 spokes on the drive side. Given the use of the specific braking system it was possible to reduce the front axle diameter to 17 mm, while the diameter of the rear remains at 20 mm.

The valve on the rim has special pressure-proof gaskets to ensure tightness at the inflation setting values.

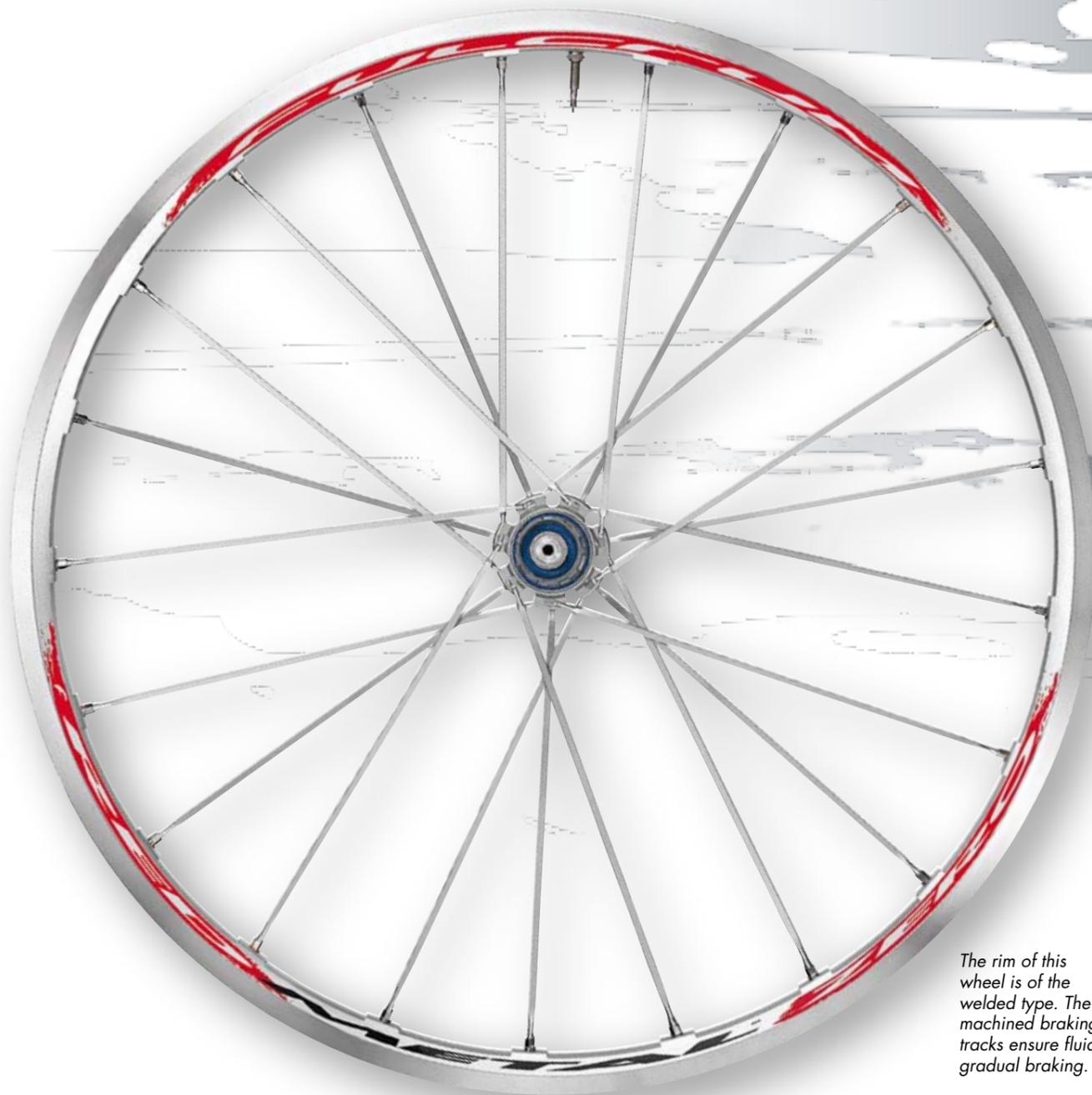


The rim is lightened between the spoke anchoring points by initially milling the internal diameter, followed by two operations diagonally to the radial axis.

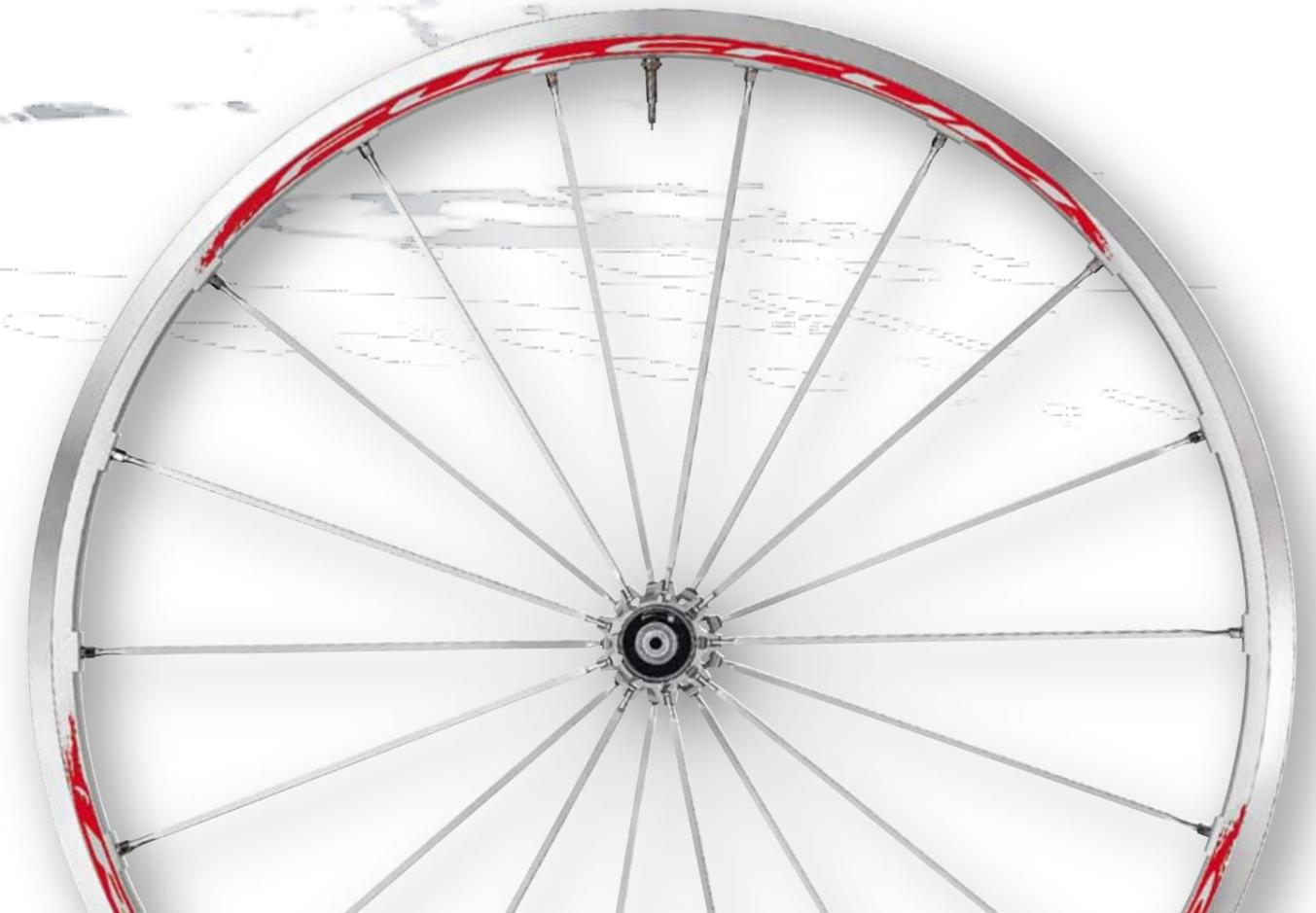


The hub also has an oversize body with adjustable high-precision bearings with cones and cups. The freewheel, with a steel body, also turns on two sealed bearings. The rim is compatible with UST Tubeless tyres.

As this wheel is dedicated to cantilever brakes the front hub axle diameter is 17 mm while the rear diameter is 20.



The rim of this wheel is of the welded type. The machined braking tracks ensure fluid gradual braking.





Red Metal™ 1 Red Metal™ 1 wheels represent the top end of the Fulcrum® range. These wheels are only available in the disc brake version and are aimed at professional racers and high-level users with very high quality demands. They use an aluminium rim with a welded joint, lightened in the spaces between the spokes and with a calibrated profile without a braking track. They are fitted with aerodynamic stainless steel spokes, with variable 2-1.8-2 mm thickness, and with a 2:1 Two-to-One™ configuration at both the front and rear in a 16+8 unit combination.

The hubs run on high-precision bearings that can be adjusted by cones and cups.



6 Bolts & AFS™

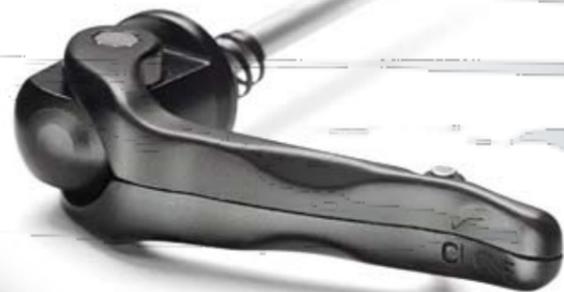
The wheel is fitted with stainless steel spokes, with double 2.0-1.8-2.0 thickness and aerodynamic profile, tensioned by brass nipples.

The hub features an oversize body with both axles measuring 20 mm and adjustable precision bearings with cones and cups. The wheel is available in versions for International Standard disc and AFS™.



The fluidity and operability of the release is guaranteed by the double joint on both ends of the cam pin.

Red Metal™ 3 The Red Metal™ 3, the solid and reliable wheels for everyday use, distinguished by an enviable quality-price ratio, are in the middle of the Fulcrum® range. Available in the disc version only, with welded joints and anodized black, they weigh 1853 g overall. They employ stainless steel spokes with a 2 mm thickness in the 2:1 Two-to-One™ assembly configuration on both wheels, with 16 elements on the sprocket set side of the rear wheel and on the disc side of the front, and 8 on the opposite side. The hubs fitted are of the aluminium oversize type fitted with a 20 mm axle front and rear. These wheels are compatible with Tubeless UST tyres whose availability in International Standard and AFS™ versions means that they can be combined with the main disc braking systems on the market.



The design of the quick-releases aimed for secure locking, obtained by an optimum lever-closure ratio.

The rim side height is 25 mm. Specific use with disc brakes makes it possible to reduce the wall thicknesses and provide greater peripheral lightness.

6 Bolts & AFS™



The freewheel body of the rear hub is made of steel while the entire mechanism runs on two sealed bearings.





Red Metal™ 5 Red Metal™ 5 wheels allow all enthusiasts to enter the Fulcrum® Off-Road universe. Their rim has a specific profile for disc brakes with a height of 19 mm, a bonded joint and black anodized finish. This is the same finish that distinguishes the spokes mounted in a 2:1 Two-to-One™ configuration with 16 elements on the sprocket set and disc side and eight elements on the other. The axles, with a 20 mm diameter both front and rear, run on sealed bearings. The freewheel, with a steel body, turns on sealed bearings. The total weight is 1805 g, compatibility is

The double fulcrum of the quick-release guarantees easy locking and more secure fastening



6 Bolts & AFS™

Two bearings sealed to prevent the infiltration of dust and dirt, for the rotation of the 20 mm oversize axle; plus another two for the freewheel body.



Red Metal™ 5 wheels are provided with a normal rim with the drilling required for spoke insertion. The tyres therefore must have standard rim tapes.

guaranteed with standard tyres with rim tape, and the disc assembly option is envisaged in the International Standard and with AFS™, and therefore with the most common braking system.



ZERO 1 3 5 AIRROAD



REDMETAL™

	REDMETAL™ ZERO front Rim Brake	REDMETAL™ ZERO rear Rim Brake	REDMETAL™ ZERO front Disk Brake	REDMETAL™ ZERO rear Disk Brake	REDMETAL™ 1 front Disk Brake	REDMETAL™ 1 rear Disk Brake	REDMETAL™ 3 front Disk Brake	REDMETAL™ 3 rear Disk Brake	REDMETAL™ 5 front Disk Brake	REDMETAL™ 5 rear Disk Brake
nominal weight*	633	823	706	862	760	905	815	1000	805	965
finish	silver	silver	black	black	black	black	black	black	black	black
welded rim joint	yes	yes	yes	yes	yes	yes	yes	yes	no	no
RIM TAPE	not needed	not needed	not needed	not needed	not needed	not needed	not needed	not needed	yes	yes
machining	yes	yes	yes	yes	yes	yes	no	no	no	no
nominal width	17	17	19	19	19	19	19	19	19	19
spoke material	aluminium	aluminium	aluminium	aluminium	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel	stainless steel
number of spokes	16 radial	7 left 14 right	16 left 8 right	8 left 16 right	16 left 8 right	8 left 16 right	16 left 8 right	8 left 16 right	16 left 8 right	8 left 16 right
type of spokes	aero with variable section	aero with variable section	aero with variable section	aero with variable section	aero with variable section	aero with variable section	aero	aero	aero	aero
hub material (body/axle/Fwbody)	Alu/ Alu/-	Alu/ Alu/ Steel	Alu/ Alu/-	Alu/ Alu/ Steel	Alu/ Alu/-	Alu/ Alu/ Steel	Alu/ Alu/-	Alu/ Alu/ Steel	Alu/ Alu/-	Alu/ Alu/ Steel
O.L.D.	100mm	135mm	100mm	135mm	100mm	135mm	100mm	135mm	100mm	135mm
braking system compatibility	Linear Pull		ISO INTL 6 Bolts AFS™		ISO INTL 6 Bolts AFS™		ISO INTL 6 Bolts AFS™		ISO INTL 6 Bolts AFS™	

* The weight of the wheels does not include the quick release, and it refers to the lightest configuration.



Fulcrum Wheels s.r.l.

Via Enrico Fermi 13

36057 Arcugnano

Vicenza, Italy

tel. +39-0444-289306

fax +39-0444-280749

www.fulcrumwheels.com

info@fulcrumwheels.com

AUSTRALIA

De Grandi Cycle & Sport
Geelong 5099
Tel: +61 3 5221 5099
Fax: +61 3 5222 3850
shane@degrandi.com.au

AUSTRIA

EHS
Export und Handelsges mbH
A-4600 Wels
Tel: +43-7242-206360
Fax: +43-7242-206360-20
office@ehs.at

BENELUX

Advanced Bicycle Components B.V. Philippine
Tel: +31 115 610308
Fax: +31 115 649904
hremijnsen@zeelandnet.nl

CANADA

Cycle Lambert
Quebec City
Tel: +1 418 835 1685
Fax: +1 418 835 5322
info@cycleslambert.com

CZECK REPUBLIK & SLOVAK

Carosello Ostrava
Tel: +420 596 745 693
Fax: +420 596 745 692
maxcursor@maxcursor.cz

DENMARK

Marker Scandinavia
Roskilde
Tel: +45 70 228075
Fax: +45 46 498088
marker@marker-scandinavia.com

FRANCE

Fulcrum France EURL
74960 Cran Gevrier
infos@fulcrumwheels.fr

GERMANY

RaiKo Radsport Großhandlung
53340 Meckenheim
Tel: +49 - 2225-70 67 10
Fax: +49- 2225-70 67 11
raiko@t-online.de

JBS Radsport Großhandel

52249 Eschweiler
Tel: +49-2403-783610
Fax: +49-2403-783679
info@jbs-trading.de

ITALY

Fulcrum Wheels Srl
Arcugnano, Vicenza
Tel: +39 0444 289306
Fax: +39 0444 280749
service-center@fulcrumwheels.com

JAPAN

Kawashima Cycle Supply Co.
Osaka
Tel: 072 238 6126
Fax: 072 238 6213
info@riogrande.co.jp

NICHINAO SHOKAI CO., LTD

Tokio
Tel: 33832 6251
Fax: 33832 6266
info@nichinao.co.jp

KOREA

E.P.S. International
Seoul
Tel: +82 2 3401 4723
Fax: +82 2 3401 4466
sookyung624@hanmail.net

NEW ZEALAND

W.H. Worrall & Co. Ltd. Auckland
Tel: +64-9-6360641
Fax: +64-9-6360631
allister@worrall.co.nz

PORTUGAL

Vieira Graca & Ca.Lda.
Alferrarede
Tel: +351 241 371 902
Fax: +351 241 371 902
vegraca.armazem@sapo.pt

SINGAPORE

Local Motion Sports
Singapore
Tel: +65 9022 3280
Fax: +65 6745 4675
lmsports@singnet.com.sg

SPAIN

Casa Masferrer S.A. Granollers
Tel: +34-93-84634 44
Fax: +34-93-84653 55
cmventas@casamasferrer.com

SOUTH AFRICA

Cycling J & J
Pretoria
Tel :+27 83 268 1808
Fax :+27 12 807 4267
jr@jicycling.co.za

TAIWAN

Colmax International Ltd
Tainan
Tel: +886 6 265 6001
Fax: +886 6 265 1388
colmax@colmax.com.tw

UNITED KINGDOM

Jim Walker & Co.
Uckfield
Tel: +44 1825 762400
Fax: +44 1825 762455
info@jimwalker.co.uk

USA

Quality Bicycle Products
Bloomington MN
Tel: +1 952 941 9391
Fax: +1 952 656 5252
info@qbp.com

BTI

Santa Fe NM
Tel: +1-505-473-1010
Fax: +1-505-473-0011
info@bti-usa.com

AUSTRALIA

De Grandi Cycle & Sport
Geelong 5099
Tel: +61 3 5221 5099
Fax: +61 3 5222 3850
shane@degrandi.com.au

AUSTRIA

EHS
Export und Handelsges mbH
A-4600 Wels
Tel: +43-7242-206360
Fax: +43-7242-206360-20
office@ehs.at

BELGIUM

Van Der Wal N.V.
2627 Schelle
Tel: +32-3-880 63 84
Fax: +32-3-880 63 90
info@van-der-wal.be

BENELUX

Advanced Bicycle Components B.V. Philippine
Tel: +31 115 610308
Fax: +31 115 649904
hremijnsen@zeelandnet.nl

CANADA

Cycles Lambert
Quebec City
Tel: +1 418 835 1685
Fax: +1 418 835 5322
info@cycleslambert.com

CZECK REPUBLIK & SLOVAK

Carosello Ostrava
Tel: +420 596 745 693
Fax: +420 596 745 692
maxcursor@maxcursor.cz

DENMARK

Marker Scandinavia
Roskilde
Tel: +45 70 228075
Fax: +45 46 498088
marker@marker-scandinavia.com

FRANCE

Fulcrum France EURL
74960 Cran Gevrier
infos@fulcrumwheels.fr

GERMANY

Hanrahan Industrievertretung
86008 Augsburg
Tel: +49 821 522571
Fax: +49 821 529471
info@hanrahan.de

RaiKo Radsport Großhandlung

53340 Meckenheim
Tel: +49 - 2225-70 67 10
Fax: +49- 2225-70 67 11
raiko@t-online.de

Stier GmbH

70176 Stuttgart
Tel: +49(0)711-61 88 01
Fax: +49(0)711-62 85 77
stiergmbh@t-online.de

JBS Radsport Großhandel

52249 Eschweiler
Tel: +49-2403-783610
Fax: +49-2403-783679
info@jbs-trading.de

ITALY

Fulcrum Wheels Srl
Arcugnano, Vicenza
Tel: +39 0444 289306
Fax: +39 0444 280749
info@fulcrumwheels.com
technical@fulcrumwheels.com

Puppi Paolo

Triveneto
Tel: +39 335 800 7217
puppi.paolo@virgilio.it

Delle Cave Emilio

Piemonte/Lombardia
Tel: +39 335 611 6754
dellecavem@virgilio.it

Masini Gabriele

E-Romagna/Toscana
Tel: +39 335 7736984
gabrielemasini@tiin.it

Piersanti Filippo

Marche/Lazio/Umbria
Tel: +39 348 265 5323
fipiers@yahoo.it

JAPAN

Kawashima Cycle Supply Co.
Osaka
Tel: 072 238 6126
Fax: 072 238 6213
info@riogrande.co.jp

NICHINAO SHOKAI CO., LTD

Tokio
Tel: 33832 6251
Fax: 33832 6266
info@nichinao.co.jp

KOREA

E.P.S. International
Seoul
Tel: +82 2 3401 4723
Fax: +82 2 3401 4466
sookyung624@hanmail.net

NETHERLAND

AGU B.V.
Alkmaar
Tel: +31 (0)72 5411511
Fax: +31 (0)72 5411528
info@agu.nl

NEW ZEALAND

W.H. Worrall & Co. Ltd. Auckland
Tel: +64-9-6360641
Fax: +64-9-6360631

POLAND

Wertykal
Zabierzow
Tel: +48 12 285 14 97
Fax: +48 12 285 14 97
biuro@wertykal.com

PORTUGAL

Vieira Graca & Ca.Lda.
Alferrarede
Tel: +351 241 371 902
Fax: +351 241 371 902
vegraca.armazem@sapo.pt

RUSSIA

HBSPORT
Moscow
Tel: +7 (495) 2234328
Fax: +7 (495) 2234428
info@hbSPORT.ru

SINGAPORE

Local Motion Sports
Singapore
Tel: +65 9022 3280
Fax: +65 6745 4675
lmsports@singnet.com.sg

SPAIN

Casa Masferrer S.A. Granollers
Tel: +34-93-84634 44
Fax: +34-93-84653 55
cmventas@casamasferrer.com

SOUTH AFRICA

Cycling J & J
Pretoria
Tel :+27 83 268 1808
Fax :+27 12 807 4267
jr@jicycling.co.za

THAILAND

Piriya International Co., Ltd Bangkok
Tel: +662-51-501 79-80
Fax: +662-51-501 02
noppadon@piriya-international.com

TAIWAN

Colmax International Ltd
Tainan
Tel: +886 6 265 6001
Fax: +886 6 265 1388
colmax@colmax.com.tw

UNITED KINGDOM

Jim Walker & Co.
Uckfield
Tel: +44 1825 762400
Fax: +44 1825 762455
info@jimwalker.co.uk

USA

Quality Bicycle Products
Bloomington MN
Tel: +1 952 941 9391
Fax: +1 952 656 5252
info@qbp.com

Security Bicycle Accessories

Hempstead NY
Tel: +1-800-645-2990
Fax: +1 516 485 6117
sales@securitybicycle.com

Sinclair Imports

Verdi NV
Tel: +1-775-345-0600
Fax: +1-775-345-6013
ldonnell@sinclairimports.com

BTI

Santa Fe NM
Tel: +1-505-473-1010
Fax: +1-505-473-0011
info@bti-usa.com