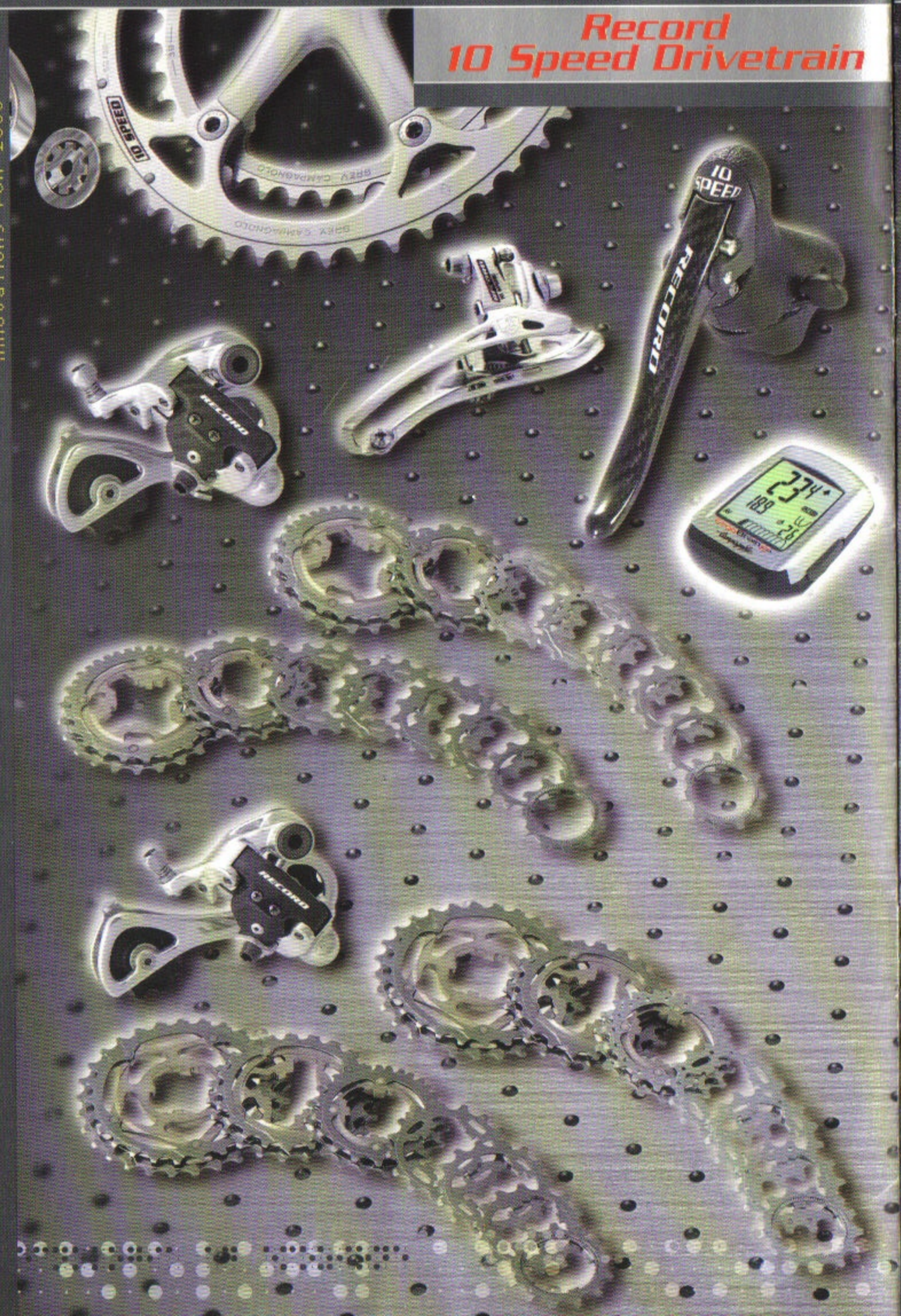

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10 SPEED
TECHNOLOGY AND EMOTION
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news

10 speed drivetrain

innovations for 2000

Record 10 Speed Drivetrain



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Chorus 10 Speed Drivetrain

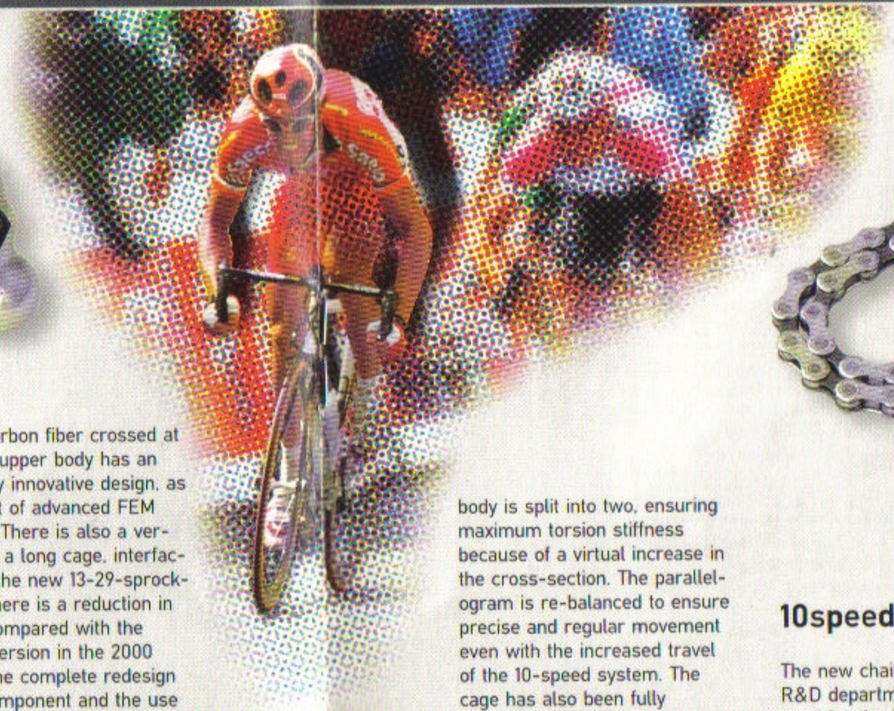


10speed drivetrain

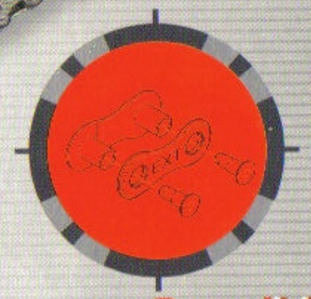
INNOVATIONS FOR 2000

10 Speed Drivetrain







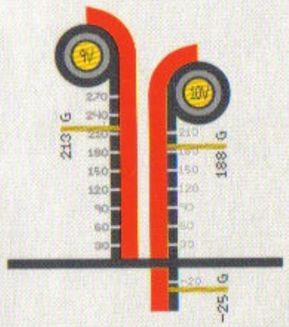


10speed drivetrain

What extraordinary innovation could Campagnolo ever have developed for the 2000 range that would not merely be a feat of technology, but effectively offer racers, and enthusiasts a genuine advantage in competition at all levels... other than 20-speed gearing? This substantial development is designed to provide an even greater performance in shifting. This is due to the distance between the sprockets, the reduction of chain angle, and an increased selection of sprocket combinations. The extra sprocket effectively ensures a wider choice of gears. This can be seen from an analysis of the combinations available. For example, the 10speed 11-23 combination is based on the 9speed 11-21. A combination extremely popular with professional riders, now with the addition of a 23 tooth sprocket. Or the 10speed 12-25 based on the 9speed 12-23, with the addition of a 25. Moreover, a brand new sprocket set is now available, designed for riders who prefer climbs but are not fond of a triple crankset. The 13-29, extending the classic 13-26 combination by the addition of a precious 29-tooth sprocket. The modifications brought about by this evolution have helped achieve further improvements in terms of silent running. To those who may ask what is the cost, in terms of weight, of these larger selection of ratios? We can answer that the new sprockets, and new chain achieve weight reductions better than the increase in weight generated by the extra sprocket: consequently, the new 10speed drivetrain is actually lighter than the corresponding 9speed models. Moreover, Campagnolo's astonishing technological expertise has ensured that it has not been necessary to change the hubs. Still the same as the 9speed versions, with the same dishing and the same over-lock dimension (130-mm). The same can be said for the 9speed wheels, which are therefore perfectly compatible with the 10speed drivetrain. Better "performance" and more choice, since the victory roster gets longer and longer, year after year.

Record 10speed Rear Derailleur

The new Record 10speed rear derailleur embraces all the innovations already launched with the 9speed version in the 2000 range, but with some substantial differences. For the first time in the world, the rear derailleur has a front arm in woven carbon fiber crossed at 90°; the upper body has an extremely innovative design, as the result of advanced FEM analysis. There is also a version with a long cage, interfacing with the new 13-29-sprocket set. There is a reduction in weight compared with the 9speed version in the 2000 range. The complete redesign of the component and the use of carbon fiber make this a sensational 25 grams less. Yet there are also many important innovations especially in terms of performance. Both the upper and lower bodies have been redesigned and made significantly lighter. By moving the adjustment system to the lower body (patent-pending) this increases the amount of adjustment and improves its uniformity, while also achieving a slight reduction in overall lateral dimensions. In particular, the central section of the upper body is split into two, ensuring maximum torsion stiffness because of a virtual increase in the cross-section. The parallelogram is re-balanced to ensure precise and regular movement even with the increased travel of the 10-speed system. The cage has also been fully redesigned, not only for the new adjustment system but also to interface it with the new 10speed chain. Lastly, rear dearailleur adjustment is easier and quicker than ever before. Aesthetics combine a strong "racing" style with exceptional elegance. Making this product a top-flight benchmark in terms of both technology and performance.



Chorus 10speed Rear Derailleur

The Chorus drivetrain offers the same performance and quality as the Record set. The differences being in the materials used in certain components, where titanium is replaced by steel and carbon fiber by aluminum. But the reduction in weight compared with the 9speed version in the 2000 range is nevertheless significant. Modifications to the bodies lead to the overall component weight of 13 grams less.

10speed Chain

The new chain Campagnolo's R&D department has developed for the 10-speed drivetrain is a truly astonishing product, which equally takes up a major technological challenge. The spacing of the sprockets demands a very thin chain, with special contours, and geometry, involving very high precision machining and infinitesimal tolerances.
Yet chain closure is even more critical, since the dimensions do not allow the links to be opened and closed as on 8 or 9speed chains. This is why a special link has been designed and produced. Covered by a specific patent, to close the chain permanently. We could not rely on conventional special links, given the tiny thickness involved and the major requirement for manufacturing precision for the links and miniature pins. The new permanently closed link, christened "perma-link", ensures tensile and strip-out strength superior to ISO standards and even greater than our current 9speed chain, despite weighing 20 g. less.



10speed Sprockets

The sprockets for the 10speed drivetrain are a further evolution of the 9speed versions, with smaller centers and special machining processes. Three versions are available, titanium, steel-titanium, and steel. These are always the MK2 types, which use the light alloy supports. The spacers are all in aluminum, while the supports in alloy, and the chrome plating of the steel sprockets have a slightly different finishing to distinguish them from the 9speed version.



10speed Ergopower

The two Ergopower Record and Chorus system are substantially unchanged compared with the '99 range. With one exception, on the inside of the right hand the mechanism is designed to adapt to the different spacing of the 10speed. The other features are those already renowned and highly regarded. Total ergonomics, and lightness, with the only difference between the two models being the use of levers in composite material for the Record model. Yet there is an interesting innovation involving the right hand Ergopower controls. The inclusion of an electronic microcircuit with an alphanumeric control code. This involves very advanced recognition technology; totally new in regards bike components. Based on a microscopic passive electronic circuit, i.e. without batteries, it is remote-powered by a magnetic field oscillating at high frequency.

The system is able to transmit the serial product code via radio, even passing through a large range of materials. This ensures effective traceability for the product over time, for warranty and other purposes, since the transmitter circuit is encapsulated in the composite body and can neither be removed nor tampered with.

10speed Crankset

The 10speed crankset differs from the 9speed model in the outer chainring. It is closer to the inner ring and involves special machining processes for the teeth and surfaces.

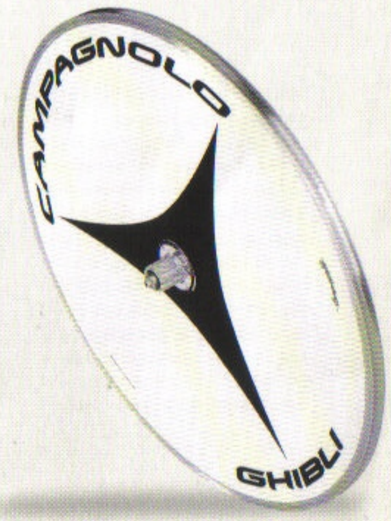


10speed Front Derailleurs

The front derailleurs for the 10speed drivetrains are geometrically identical to the 9speed versions, but mount an insert of anti-friction technopolymer to ensure perfect performance even with the thin 10speed chain. The outer fork of the Chorus front derailleur is identical to the Record model, with weight-cutting risers to allow the use of special inserts.

Ghibli 9speed, 10speed spacing

A special version of the new Ghibli wheel has been developed with a lightweight hub (already introduced as an 8speed version with 9speed spacing). Ghibli, with it's specific structural, and construction features which have made the system unique, is also the only wheel in the 2000 range which had to be modified for the 10speed drivetrain. All the other 9speed wheels in the '99 and 2000 range are perfectly compatible with the 10speed drivetrain.



10 Speed Drivetrain

Technical specifications	RECORD 10 Speed drivetrain	
COMPONENT	WEIGHT	DESCRIPTION
REAR DEAILLEUR	187	10 Speed - Carbon front arm - Max sprocket: 26 teeth - Capacity: 27 teeth Titanium hanger, pivot bolt and cable clamping bolt
REAR DERAILLEUR (long cage)	193	10 Speed - Carbon front arm - Max sprocket: 29 teeth - Capacity: 30 teeth Titanium hanger, pivot bolt and cable clamping bolt
FRONT DERAILLEUR	91 104*	10 Speed – For double crankset – Capacity: 15 teeth Max. chainring: 54 teeth – Adjustable spring – Lightened fork – Resin insert Braze-on Clip-on Ø 28.6 mm – Ø 32 mm – Ø 35 mm
ERGOPOWER	342	10 Speed – Carbon body – Composite levers - Ball bearings – Light alloy small parts Cables and pre-lubricated casings - No brake housing ferrules ErgoBrain 10 computer ready
STEEL/TI SPROCKETS	192	10 Speed Exa-Drive MK2 – Steel/Ti – Nichel-chromed – With alloy carrier Combinations: 11/21 – 11/23 – 12/25 – 13/26 – 13/29 – supplied without lockring
TITANIUM SPROCKETS	156	10 Speed – Exa-Drive MK2 – Titanium – With alloy carrier Combinations: 11/23 – 12/25 – 13/26 – 13/29 - supplied without lockring
CHAIN	279	10 Speed - "Floating Link Action" - Chrome-Nichel-Teflon finish – 114 links "Perma-Link" locking link
CRANKSET	632*	10 Speed - Anodized - Alloy fixing bolts and nuts - L. 170 - 172,5 - 175 mm Exa-Drive chainrings: 39 x 52 – 42 x 52 – 39 x 53

Technical specifications	CHORUS 10 Speed drivetrain	
COMPONENT	WEIGHT	DESCRIPTION
REAR DERAILLEUR	209	10 Speed – Anodized – Max. sprocket: 26 teeth – Capacity: 27 teeth
REAR DERAILLEUR (long cage)	215	10 Speed – Anodized – Max. sprocket: 29 teeth – Capacity: 30 teeth
FRONT DERAILLEUR	89 102*	10 Speed – For double crankset – Capacity: 15 teeth Max. chainring: 54 teeth Braze-on Clip-on Ø 28.6 mm – Ø 32 mm – Ø 35 mm
ERGOPOWER	365	10 Speed – Carbon body – Anodized levers – Ball bearings- Light alloy small parts – Cables and pre-lubricated casings – No brake housing ferrules – ErgoBrain 10 computer ready
STEEL SPROCKETS	224	10 Speed – Exa-Drive MK2 – Steel - Nichel-Chromed - Light alloy carrier Combinations: 11/23 – 12/25 – 13/26 – 13/29 - supplied without lockring
TI SPROCKETS (RECORD)	156	10 Speed – Exa-Drive MK2 – Titanium – Light alloy carrier Combinations: 11/23 – 12/25 – 13/26 – 13/29 - supplied without lockring
CHAIN (RECORD)	279	10 Speed – "Floating Link Action" – Chromed-Nichel-Teflon finish – 114 links – "Perma-Link" locking link
CRANKSET	667*	10 Speed – Anodized finish – L. 170 – 172,5 – 175 mm – Exa-Drive chainrings: 39 x 52 – 42 x 52 – 39 x 53

* the nominal weight refers to: Ø 32 mm clip-on front derailleur, 11/23 sprocket set with lockring, 11/23 Ti sprockets set with titanium lockring, double crankset L. 170 – 39/53

Campagnolo

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