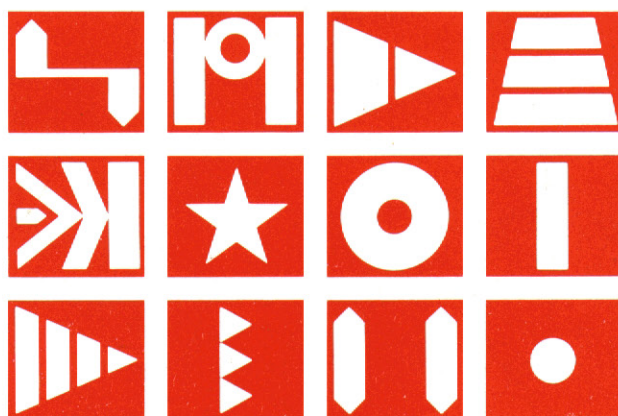


Campagnolo®

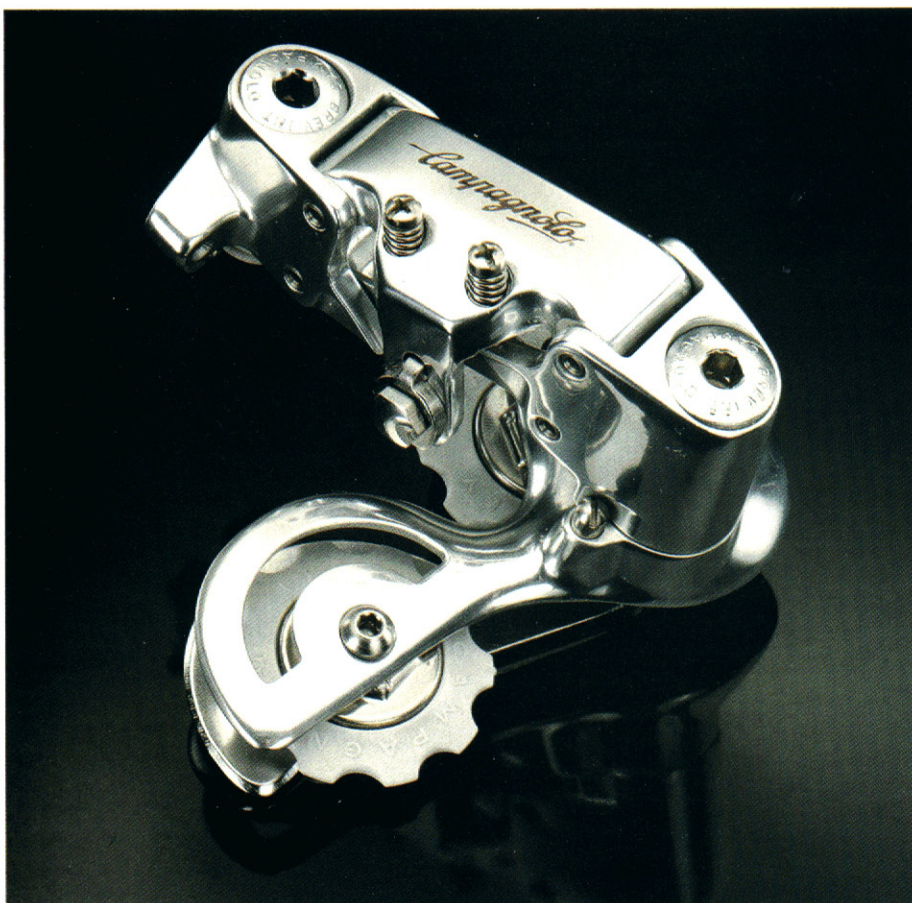
RECORD®



RECORD®







REAR DERAILLEUR AND FRONT DERAILLEUR

All gears work... for some time.

Only some gears can change millions of times as efficiently and as silently as they did on the first day: gears made by Campagnolo.

And this is no coincidence: from Fausto Coppi to Felice Gimondi, from Vittorio Adorni to Eddy Merckx, dozens of champions have contributed to help Campagnolo racing components to reach the level of perfection they enjoy today. In recent years, superstars like Hinault, Fignon and Lemond have also contributed to provide Campagnolo with the unbeatable combination of technology and racing experience built into every Campagnolo derailleur.

The RECORD gear is styled in the classic Campagnolo racing design, an articulated parallelogram with a perpendicular movement to the chain. This ensures that the cage plate and sprockets remain on the same plane allowing the chain

the chain to run with maximum efficiency and silent precision.

The gear capacity, from 12 to 28, is the usual range for racing.

Since 1986 the RECORD group has become the racers choice in the world of professional cycling, being used by over 75% of the pro teams.

This experience has made it possible for Campagnolo to add the finishing touches to the RECORD derailleur enabling it to exceed the stringent demands of professional racing.



The cage plate is made of heat-forged aluminium alloy. The spring which controls the movement of the cage plate is made from square-shaped silicon wire and may be adjusted to support two different load levels.

The upper body contains a set screw that can be adjusted with a 2 mm allen wrench. This allows micrometric adjustments to the derailleur's inclination providing greater chain wrap and quicker shifts.

Thanks to this precision of adjustment, changing is always smooth and safe, and the materials of the chain and the freewheel are optimally exploited, with consequent increased efficiency and long life.

For a perfect fit of the derailleur to the gear hanger three 0,05 mm thick shims are placed under the head of the upper pivot bolt and may be added or removed as the type and condition of the gear hanger changes.

The joint action of spring calibration and the ability to adjust derailleur inclination allow the chain to run smoothly even in extreme conditions such as 42x12 or 53x28 gear combinations.

The jockey wheels on which the chain runs have a new thinner profile and run on adjustable ball bearing surfaces. These new jockey wheels not only run quieter but also shift the chain with greater accuracy and provide a friction-free environment for the drive train.

The distance between the two conical surfaces and, therefore, the friction and play of the roller may be adjusted by means of the dust caps. The play of the roller can thus be adjusted, varying with the tension of the chain, to ensure smooth running of the chain on every occasion, thus precious hundredths of a second are gained to those who do not use professional equipment.



Eddy Merckx was well aware of this in 1974 when he won the Giro d'Italia by only 12 seconds over his nearest rival while using the Super Record derailleur, and today as well with Sorensen winning the Tirreno-Adriatico by just 5 second with the help of his RECORD derailleur.

An important detail is the cable fixing system. A molded clamp washer compresses the cable against the connecting rod arm by means of a fixing screw, the clamp washer has a tooth inserted into the arm hole, preventing the clamp washer from rotating.

Consequently, wearing and slipping of the cable is prevented.

Further improvements to the derailleur include the repositioning of the derailleurs limit stop screws making them more convenient to adjust along with the addition of coaxial springs to ensure the adjustment will not be affected by vibrations.

To complete the changes to the derailleur, Campagnolo has re-profiled the parallelogram for a smoother look and added the famous script logo to the front.

The RECORD gear changers are compatible with all Campagnolo shift levers: DOPPLER, SYNCRO, SYNCRO 2 and FRICTION (with traditional friction).

As standard equipment with the RECORD group Campagnolo supplies the DOPPLER retrofriction shift levers. These levers are the ones used by all professional riders and are engineered with a system to balance the action exerted by the derailleur return spring.



The patented friction system uses 1.4 mm diameter spiral springs pushing 3/32" diameter stainless steel balls, selected with a tolerance of 1 micron.

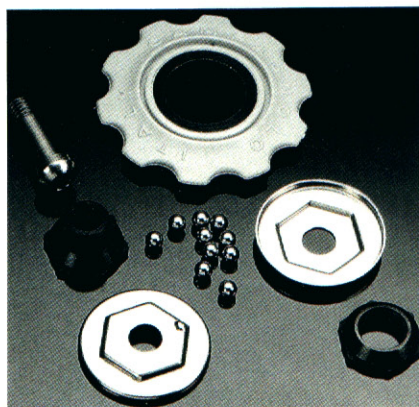
The traditional friction, which is engaged when the balls are blocked in a wedge, is also fully adjustable by means of two springs with a thickness of 3/10 mm, whose load is adjusted with a wing nut.

When the lever is shifted from small sprockets to large ones and the gear spring has to be loaded,

the balls come out of the wedge, thus excluding the traditional friction.

The resulting mechanism offers the same degree of sensitivity in the two directions of lever movement giving the cyclist the precision needed for each shift. It is a high tech mechanism fit for the sensitive touch of a champion.

For those who do not prefer friction shift levers the RECORD derailleur is also compatible with the SYNCRO "selector" system.



RECORD

SPROCKETS

A

B

CHAINRINGS

C
D

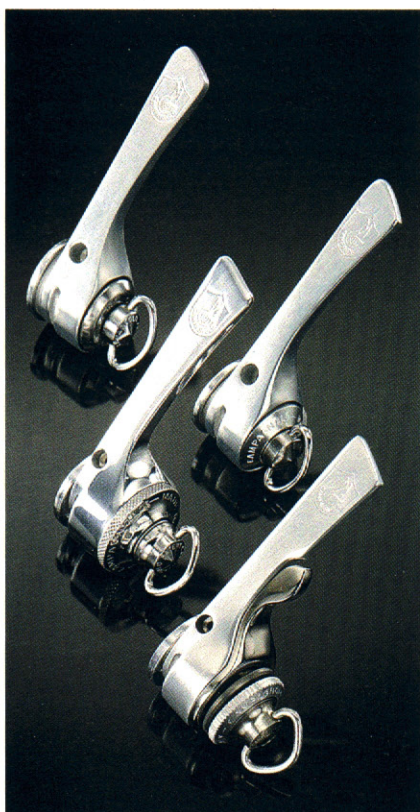
Gear change capacity = $(D + A) - (C + B) = 30$

Biggest sprocket utilizable = A 28

Front changer capacity = $(D - C) = 18$



With these levers the gears may be changed by positioning the chain on the desired cog by means of a series of predetermined clicks. The SYNCRO mechanism offers the user the ability to shift gears with the traditional friction method as well.



The fork of the front changer is made from carbonitratated steel, reducing significant wear of the surface over which the chain passes when changing chain rings.

The fork has been designed on the basis of Campagnolo's experience with professional racers. It reduces to a minimum the need to adjust the position of the gear changer and avoids the possibility of the chain slipping, even though it may not be perfectly adjusted.

The double hinge between the body and the arm moves on heat-

treated nickel-chrome steel pivot pins, thus reducing and silencing the play of the fork.

The adjustment is particularly easy because of the position of the screws which can be found on the upper part of the body. It is also extremely precise, due to the fine calibration of the fixing screws.

The stability of the adjustment is guaranteed both on the gear and on the front changer by means of springs, coaxial with the screws, which are held in place by the pressure of the springs thus avoiding any play which may result from vibration.

The front changer is available in three versions. One version for frames with a brazed on attachment and two clamp on versions. The first accomodating frames with a tube diameter of 28,5 mm and a second with an adjustable clamp for frames with tube diameters ranging from 28 mm to 33 mm.



BRAKES

The RECORD group is equipped with center pull DELTA brake with an articulated parallelogram.

This patented mechanism consists of eight arms which link the two brake shoe levers, the cable lock nut and cable guide pivot. The smoothness of the articulation is ensured by eight ferrules 0.5 mm thick.

The articulated parallelogram allows braking power on the brake shoes higher than the power applied to the lever. This positive increase of the applied power grows during the actual braking because it depends on the angle formed by the arms of the parallelogram. Thus, there is a progressive, calibrated, braking action.

The use of progressive brakes is an additional guarantee for professional racers and for anyone's racing bicycle.

By not immediately applying the maximum braking power on the brake lever, any undesired locking of the wheels is avoided.

This is further evidence of Campagnolo's research and reliability.

The brake shoes may be adjusted the two traditional ways which allow them to slide up and down and to rotate on the fixing washer. There are also two completely new adjustments:

due to the insertion of a concave washer, precise to one hundredth of a millimeter, there is fine variation of the angle of incidence of the brake shoe on the rim of the wheel. This means that the brake shoes may be adapted to various types of rims.

Also, two allen screws 4 mm. in diameter, one for each brake shoe, allow to adjust to the millimeter the parallelism so no matter how worn the shoes may be, they will always function efficiently.

The distance between the two brake shoes may be finely adjusted by using a bolt placed on the top of the brake caliper.

All the internal component parts of the brakes are made of stainless steel, while the external



parts are manufactured from heat-forged, highly resistant, avional aluminium alloy – which gives an absolute guarantee of quality and long-lasting reliability.

The DELTA brake set is equipped with new brake levers offering the exclusive "POWER GRADE System".

This new lever features a push button type quick release for fast and efficient opening of the brake

caliper. Due to the exclusive "POWER GRADE System", the Delta brake set offers the possibility of micrometric variation of the ratio between the force applied to the lever and the brake force response.

The cables, too, are the result of experience acquired in competition, and are particularly flexible and are entirely lined with Teflon which increases their lifespan and performance.

The rubber support hoods whose design was based on the hand anatomy, have internal ribbing making them more comfortable to use.

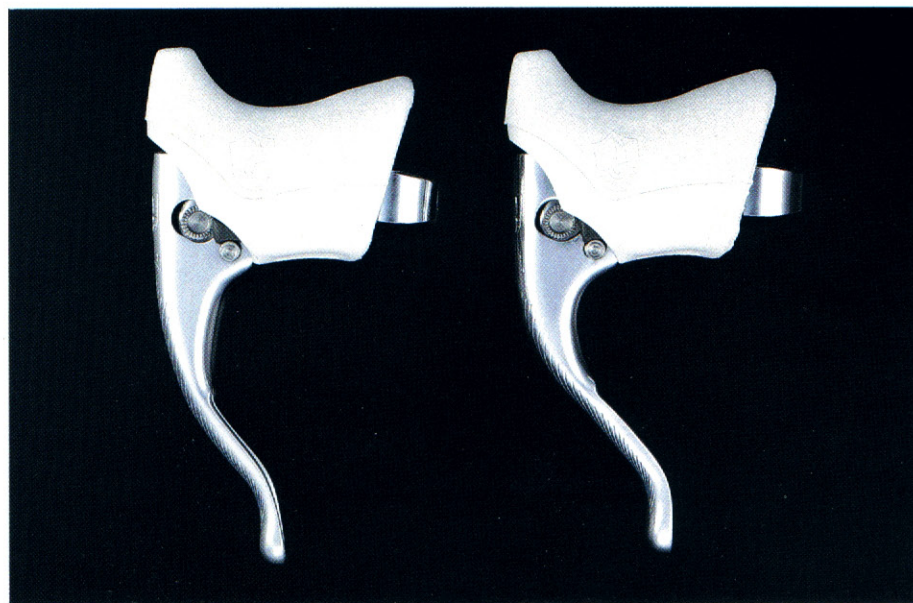
The brake lever and supports are suitable for many types of handlebars, including the new "cow horn" models.

It is possible to pass the brake



cables inside the handlebars, without having any critical curvature problem. A stainless steel bearing plate moves with the cable itself, thus avoiding friction (patented system).

In addition, as optional, Record Compact brake levers are also available. The geometry of these levers has been designed for riders who want to reach the brake levers more easily. The Record Compact brake levers will mount 12 mm. closer to the handlebar than traditional levers.

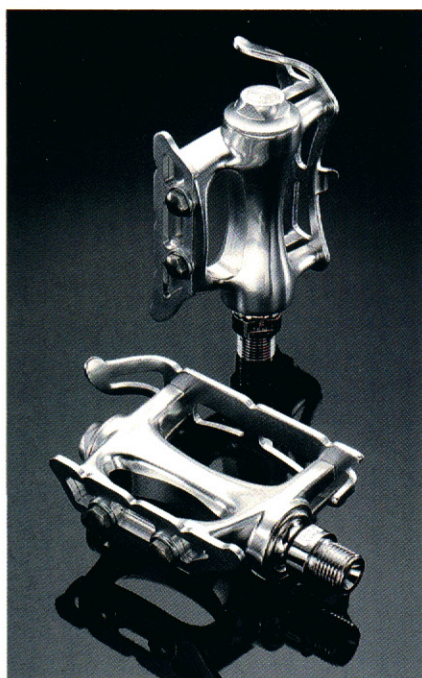




PEDALS

In order to satisfy the various requirements of professional racing cyclists, four different pedals are available for the RECORD group. The first is a pedal designed to have the same shape as the shoe: these pedals are particularly appreciated by cyclists who habitually pedal "on their toes".

The axle of the pedal is the traditional Campagnolo one, manu-

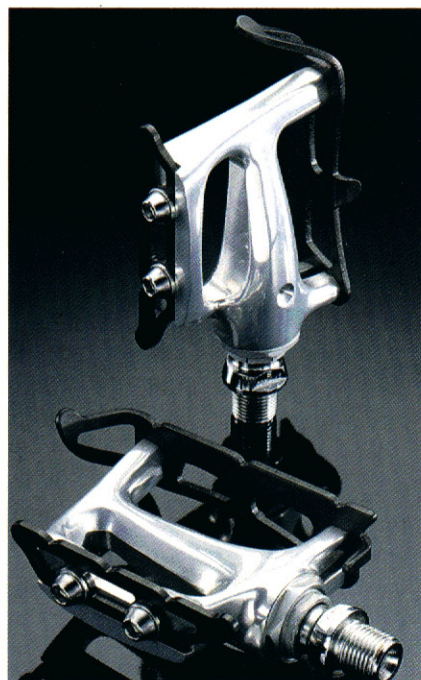


factured from heat-forged nickel-chrome-molybdenum steel of exceptional reliability.

The second pedal, ergonomically designed, is ideal for cyclists used to pedaling "round" where the ball of the foot exerts the maximum force of the push. The two plates, equidistant from the central axle, guarantee minimum stress to the foot.

The races surrounding them ensure perfect sealing also in the case of particularly soles.

Both pedals are made of heat-



forged Avional. Their smooth rotation is ensured by the presence of ball bearing 5/32" in diameter in heat-treated chrome steel.

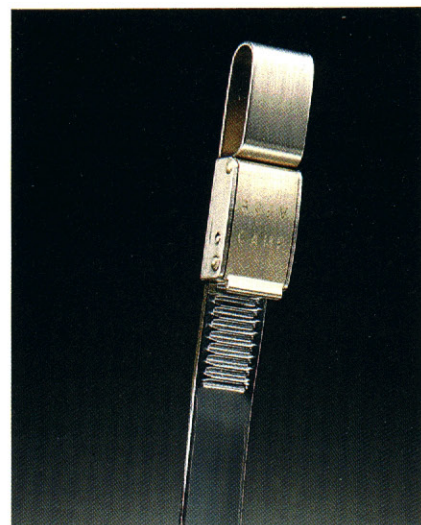
The third pedal is made using the new, patented "TRIPLE BEARING System". This system uses an axle only 60 mm long and makes it possible to design a pedal body that allows the bicycle to be cornered at an angle of 34°, which is 6° more than other pedals. The "TRIPLE BEARING System" is based on a combination of rolling mechanisms which, besides allowing the use of a short axle, absorb the radial and axial forces applied to the pedal during rotation. With the "TRIPLE BEARING System" the axle works radially on a roller bearing composed of 14 1/8" balls working in opposed positions on two sym-

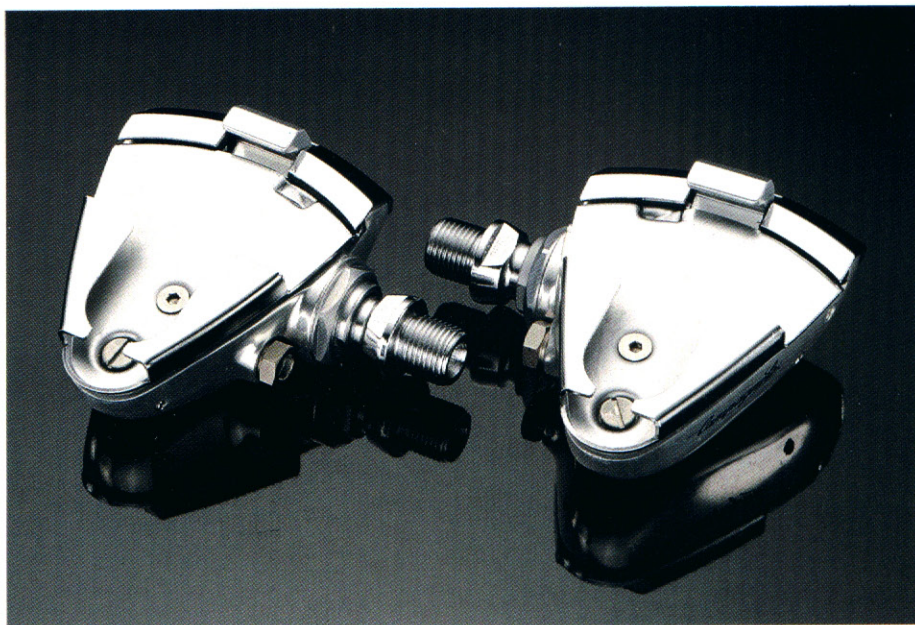
metrical axes at an angle of 60° to the axle, thus absorbing the axial components of thrust applied by the rider.

The toe-clips for the RECORD pedals are available in



small, medium and large and with the new "MULTI-SIZE System". This new feature allows for the complete and total anatomic adjustment of the toe-clip in conjunction with the riders foot. This is accomplished by one adjustment located where the toe strap passes through the toe clip. This is especially important for the cyclist that rides for a prolonged period of time.



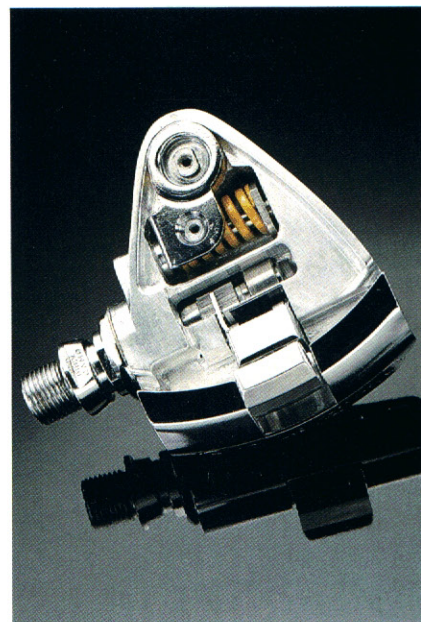
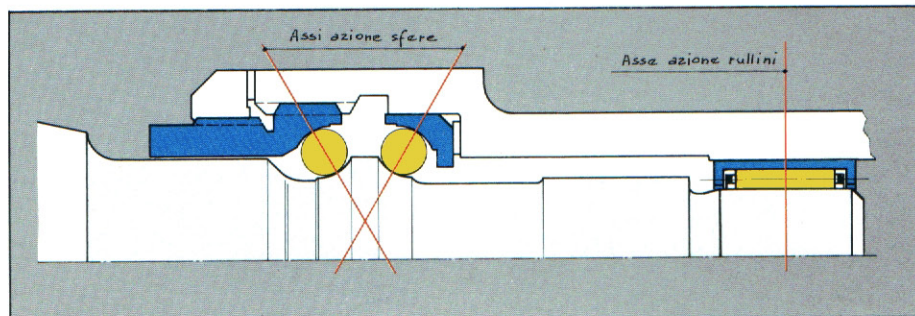


The fourth pedal is quick release model that does not require toe clips or straps. The new SGR pedal utilizes Campagnolo's patented "TRIPLE BEARING System" with a shortened axle that allows cornering limits never before possible.

The SGR is more than just a simple component and in keeping with the latest technology from Campagnolo the SGR is a true machine in itself. Concealed within the pedal body are three separate mechanisms: the adjustable release tension, the adjustment of lateral freeplay and Campagnolo's patented unique "EASY FITTING System". Thanks to the technically innovative "EASY FITTING System" the pedal will maintain a horizontal position after the shoe has been disengaged. This feature eliminates the need to "kick" the pedal up when engaging the shoe

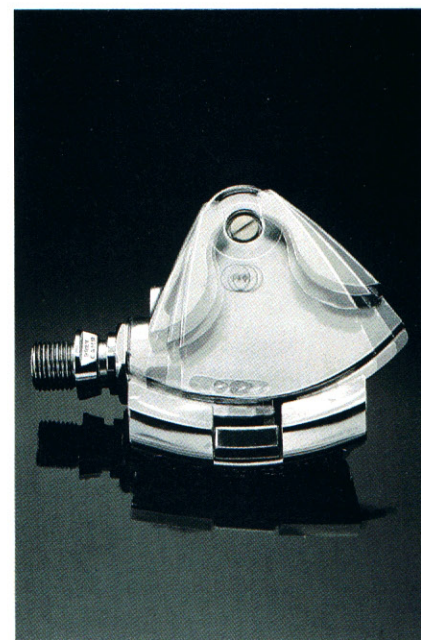
guaranteeing fast, easy entry whether in a tightly bunched peloton or on a crowded city street.

The "EASY FITTING System" uses a wear resistant, carbon nitrided, stainless steel toothed cylinder, a posterior lever for engagement, and a catch to engage the shoe. As soon as the shoe has locked itself into the pedal, the toothed cylinder is disengaged and the pedal is free to rotate. The second mechanism allows one to adjust the amount of lateral freeplay the shoe has on the pedal. This lateral movement can be adjusted from 0 degrees (shoe completely locked) up to a maximum of 5 degrees. A third mechanism uses a 4 mm allen screw to easily adjust the tension of the release spring.



The SGR features Campagnolo's new "TRIPLE BEARING System" supporting a hardened chromemoly axle. The body is made of Avional aluminium and all internal parts are sealed from the elements. The pedal can be easily lubricated via two lube ports on the underside of the pedal.

The range of RECORD pedals is available with Italian-BSA 9/16"x20f and French 14x1,25 thread.





CHAINWHEEL AND BOTTOM BRACKET

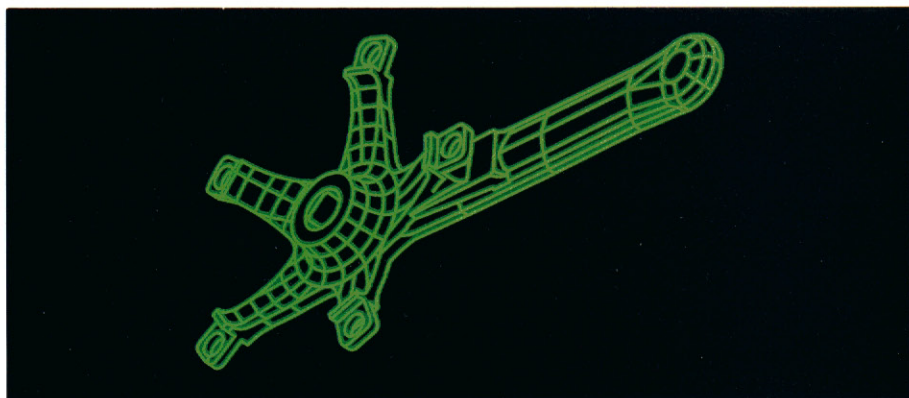
The RECORD chainwheel is a perfect example of the harmony of modern design and mechanical strength. The crank, designed by CAD to establish the optimal sections for resistance to stress, has the crankarm over one of the fixing spokes for the chain ring.

The cranks are manufactured in AVIONAL, heat-forged aluminium alloy which guarantees maximum reliability.

Particular attention has been paid to controlling the rigidity of



the crank, which is carried out on resistance-testing machines with controlled loads.



The RECORD crank has a fixing bolt with an extractor incorporated to make dismantling the chainwheel fast and easy. For mechanics, this device is particularly useful for after-race maintenance operations, when at least ten bicycles must be serviced within a few hours. The available lengths of the cranks are: 165, 167.5, 170, 172.5, 175, 177.5, 180 mm.

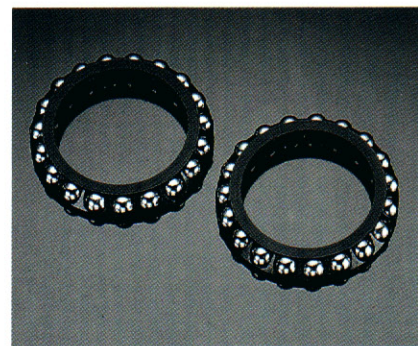


The RECORD bottom bracket combines an exceptionally reliable axle of heat-treated steel with a system of bearings resulting in almost imperceptible friction.

The bottom bracket is available with the following threads: Italian mm 36x24f, BSC 1,370"x 24tpi, French M 35x1 and with bracket width 68 and 70 mm.

The balls of hardened chrome steel are held together in special resin retainers to guarantee maximum smooth running and run on the ground track of the axle and in the cups made of very resistant light alloy. The entire movement is protected from weather conditions by a sleeve made from polythene.

For perfect operation, it is important to pay attention to frame preparation and bearing adjust-





ment. Campagnolo produces four tools expressly designed for assembly: 721 bottom bracket double tap, 725 bottom bracket face cutter, 712 and 712/1 wrenches.

A complete series of chainrings, inner from 39 to 47 and outer from 48 to 57 teeth is available. The width is of 135 mm. These are made by pressing. They are manufactured in very resistant light alloy used in aeronautic applications, which guarantees that they will last a very long time. The shape of the teeth is the Campagnolo classic, which has been tested for many years by professional teams. The tooth shape has been obtained using a gear cutting machine, operated mechanically using numerical control rather than shearing.

The teeth are not sheared in order to guarantee their perfect geometry: thus obtaining precise fit with the chain, avoiding friction and wear, critical factors when hundredths of seconds are important.



HEADSET AND SEAT PINS

The RECORD headset is now equipped with SELFORM, a dampening patented system created by inserting a 0,5 mm thick elastic membrane between the induction – hardened chrome steel bearing race and the aluminium housing of the lower cup. The SELFORM system reduces the risk of pitting to a minimum thus prolonging the life of the headset. The headset uses 3/16" ball bearings held in special resin retainers to guarantee perfect, smooth running.



The head set is available with the following threads: Italian mm 25,4x24f, BSC 1"x24tpi, French mm 25x1.

The seat pin, made from heat-forged aluminium alloy comes in a wide range of diameters (25, 25.8, 26, 26.2, 26.4, 26.6, 27, 27.2, 27.4) and in two lengths (180 and 130 mm).

The seat pin is available either in a cylindrical or oval-shaped version.

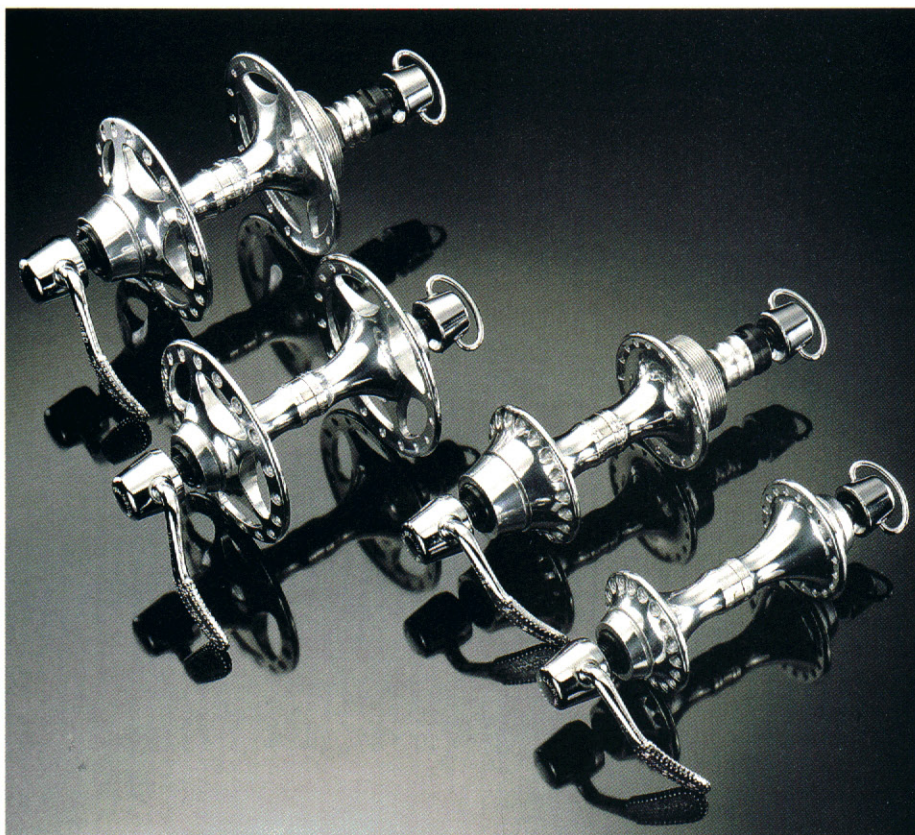
The system for fixing the seat consists of only one bolt which locks the two opposite brackets. Two cradles at the sides of the brackets are perfectly adapted for the seat frame and guarantee its stability.



The anchoring system has only one screw to greatly increase the speed of seat assembly and adjusting the seat, something that mechanics often need to do after a race.

The seat position is not adjusted by means of steps but rather by friction – which allows an infinite number of seat positions.

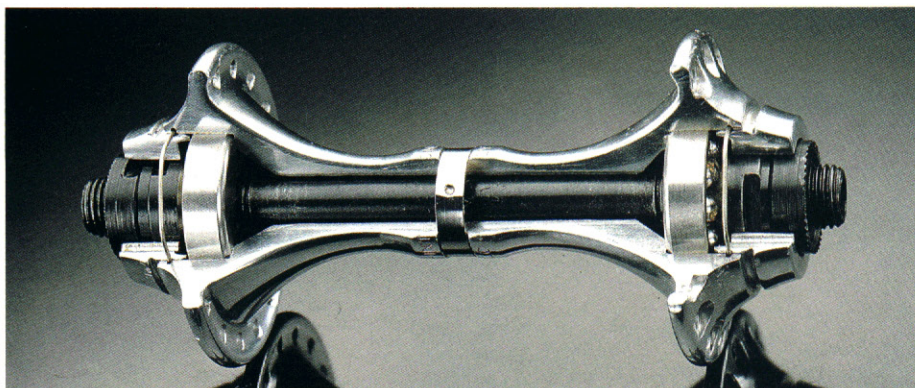
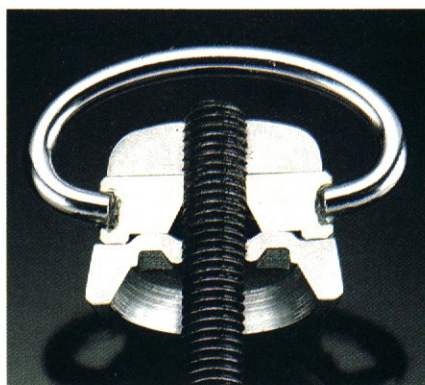
This means that the individual racer can choose the most comfortable and anatomically correct seat position for himself.



HUBS

The RECORD hubs, which are also available in large flange, have countersunk holes for perfect setting of the spoke heads. The durability of the wheel is improved and also truing and automatic assembly of the wheel is facilitated.

The smooth rotation of the hub is insured by the tested Campagnolo ball system. The bearings are chrome steel, 7/32" in diameter for the front hub and 1/4" for the rear hub, run on cups and cones.



The cone, cup, ball mechanism, unlike the scales bearing system allows for fine adjustment (by means of Campagnolo wrenches 7130010).

The quick-release consists of the famous closure system, with the off-center lever that is the foundation of Campagnolo's technology.

A recent patented improvement has been brought about using a blind cap which does not have a cut hole. The internal quick release pivot is tempered steel, with a shank of only 3.5 mm in length that operates on the seat of the off-center lever.

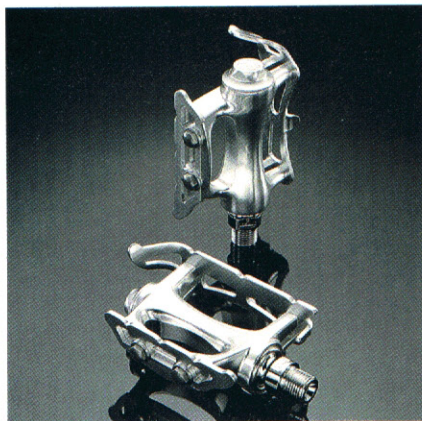
The adjustment nut found on the cup contains two small cylinders, 5.5 mm in diameter in chrome plated brass, with bevel and blocking plane worked to a tolerance of one hundredth of a mm, guaranteeing constant friction on the thread of the skewer.

A quick release system made in this manner allows for the maximum safety when locking a wheel to the fork and permits the assembly and dismantling of the wheels very quickly without affecting the adjustment of the spacing.

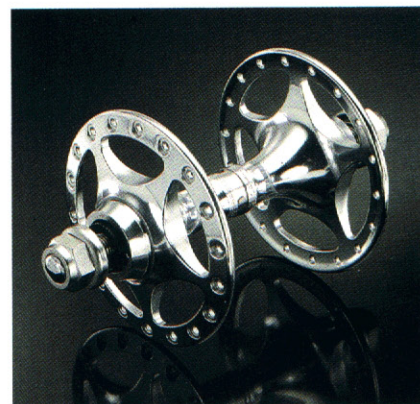
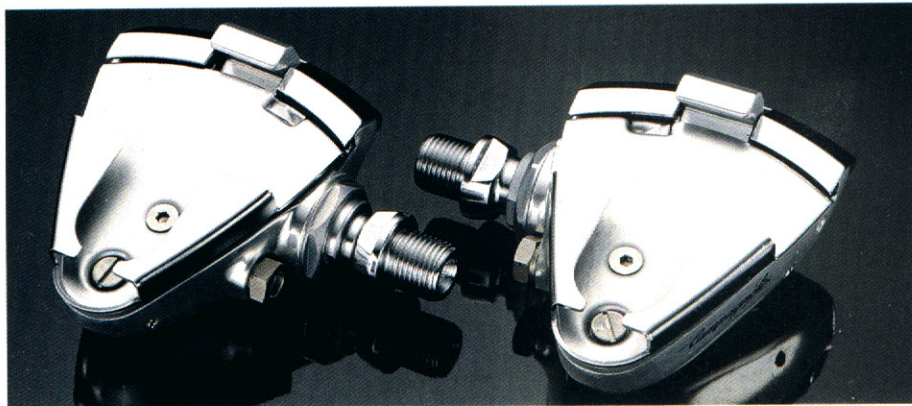
The hubs are available with the following drillings: 24, 28, 32, 36, 40. The threads are: Italian mm 35x24f, BSC 1,370"x24f, French M 34,7x1, ISO 1,375"x24f.



While the Pista crankset maintains the same design as the RE-



A technology of great traditions projected toward the future and towards records.





The Record track group is also available in a Keirin version. The Keirin speciality, born and developed in Japan is now becoming popular all over the world. In order for components and bicycles to be used in the Keirin Velodrome in Japan they must bear the NJS mark. Our Keirin components have been officially approved to be used in the Japanese Keirin Velodrome circuit, and bear the official NJS mark. This mark certifies that the standards of quality demanded of the components used for Keirin are met. The speed and power developed by these riders require components that are special. In fact, even special threadings for hubs, bottom bracket, crankarms, pedals and headsets, must be used in order to guarantee interchangeability with other existing equipments.

The hubs used for Keirin are large flange, these allow the wheels to be extremely rigid and therefore transmit to the ground the maxi-



mum amount of acceleration developed by the riders.

In addition to meeting the standards required by NJS, the Campagnolo Keirin components are particularly appreciated for the lightness and reliability of their alloys. Campagnolo's rigid quality control guarantees the constant respect of the safety standards required by the Keirin Board.

A000A	"RECORD" group Basic composition:
Cat. No.	Description
A500D	Subgroup "DELTA" brakes (front brake, rear brake, double "POWER-GRADE System" levers, cables and casings)
A100	Subgroup gear and braze-on front changer
0271	"DOPPLER" braze-on levers (r.h. and l.h. levers, steel cables and casings)
A300	Subgroup small flange hubs (front and rear hub complete with quick release)
A040	Chainwheel with incorporated extractor (r.h. crank, width 135 with two chainrings, l.h. crank)
A0H0	Bottom bracket
A600-L	Subgroup pedals (r.h. and l.h. pedal complete with aluminium toe-clip and double layer leather strap)
A0D0	Aluminium headset
A0R2	Styled seat pin 180 mm. complete with locking screw and nut Ø 8

Subgroups and alternative components

Cat. No.	Description
A055	Complete Record Compact brake lever, "POWER-GRADE System", cables fitted externally
A022	Fixed clip-on front changer (pipes Ø 28,5 mm.)
C023	Adjustable clip-on front changer (pipes Ø from 28 to 33 mm.)
	"DOPPLER" levers complete with steel cables and casings, versions:
0272	clip-on
0273	braze-on, on-top-of-tube
	"FRICTION" levers complete with steel cables and casings, versions:
0281	braze-on
0282	clip-on
0283	braze-on, on-top-of-tube
	"SYNCRO" levers complete with steel cables and casings, versions:
0211	braze-on, 6-7 speed
0212	clip-on, 6-7 speed
0213	braze-on, on-top-of-tube, 6-7 speed
	"SYNCRO 2" levers complete with steel cables and casings, versions:
0221	braze-on, 6-7 speed
0222	clip-on, 6-7 speed
0223	braze-on, on-top-of-tube, 6-7 speed
A300-FG	Subgroup large flange (front and rear hub complete with quick release)
A600-A	Subgroup pedals (r.h. and l.h. pedal complete with steel toe-clip and double layer leather strap)

A610	Subgroup RECORD SGR pedals with "TRIPLE BEARING System" (r.h. and l.h. pedal complete with fixing shoe plate and fixing screws with washers)
A620	Subgroup pedals "TRIPLE-BEARING System" (r.h. and l.h. pedal complete with toe-clip in the version: aluminium code A620-L steel code A620-A MULTI SIZE System code A620-R and double layer leather strap)
A630	Subgroup Ergonomic pedals (r.h. and l.h. pedal complete with toe-clip in the version: aluminium code A630-L steel code A630-A MULTI SIZE System code A630-R and double layer leather strap)
A0R2-S	Styled seat pin 130 mm. complete with fixing screw and nut Ø 8
A0R8	Cylindrical seat pin 180 mm. complete with fixing screw and nut Ø 8
A0R8-S	Cylindrical seat pin 130 mm. complete with fixing screw and nut Ø 8

A000P "RECORD" track group Basic composition:

Cat. No.	Description
A300PFG	Subgroup track large flange hubs (front and rear hub with solid spindle and nuts)
A040P	Track chainwheel set with passing screw (r.h. crank width 144 with one chainring, r.h. crank)
A0H0P	Track bottom bracket
A620-L	Subgroup pedals "TRIPLE-BEARING System" (r.h. and l.h. pedal complete with aluminium toe-clip and double layer leather strap)
A0D0P	Aluminium track head set
A0R2	Styled seat pin 180 mm. long, complete with fixing screw and nut Ø 8

Subgroups and alternative components

Cat. No.	Description
A300P	Subgroup small flange track hubs (front and rear hub with solid spindle and nuts)
A600	Subgroup pedals (r.h. and l.h. pedal complete with toe-clip in the versions: aluminium code A600-L steel code A600-A and double layer leather strap)
A610	Subgroup Record SGR pedals with "TRIPLE-BEARING System" (r.h. and l.h. pedal complete with fixing shoe plate and fixing screws with washers)

A620	Subgroup pedals "TRIPLE-BEARING System" (r.h. and l.h. pedal complete with toe-clip in the versions: aluminium code A620-L steel code A620-A MULTI SIZE System code A620-R and double layer leather strap)
A630	Subgroup Ergonomic pedals (r.h. and l.h. pedal complete with toe-clip in the versions: aluminium code A630-L steel code A630-A MULTI SIZE System code A630-R and double layer leather strap)
A0R2-S	Styled seat pin 130 mm. long complete with fixing screw and nut Ø 8
A0R8	Cylindrical seat pin 180 mm. long complete with fixing screw and nut Ø 8
A0R8-S	Cylindrical seat pin 130 mm. long complete with fixing screw and nut Ø 8

A000K "RECORD KEIRIN" group Basic composition:

Cat. No.	Description
A300KFG	Subgroup Keirin large flange track hubs (front and rear hub with solid spindle and nuts)
A040K	Keirin chainset with passing screw (r.h. crank width 144 with one chainring, l.h. crank)
A0H0K	Keirin bottom bracket
A630KA	Subgroup Ergonomic pedals (r.h. and l.h. pedal complete with steel toe-clip and double layer strap)
A0D0K	Keirin aluminium head set
00R8K	Cylindrical seat pin 180 mm. with two fixing screws, complete with fixing screw and nut Ø 8

Alternative subgroups and components

Cat. No.	Description
A620K	Subgroup pedals "TRIPLE-BEARING System" (r.h. and l.h. pedal complete with toe clip in the version: aluminium code A620KL steel code A620KA and double layer leather strap)
A630KL	Subgroup Ergonomic pedals (r.h. and l.h. pedal complete with aluminium toe-clip and double layer strap)
00R8KS	Cylindrical seat pin 130 mm. with two fixing screws, complete with fixing screw and nut Ø 8

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