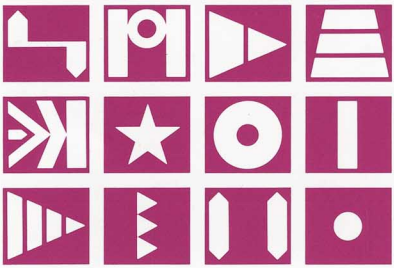
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REAR DERAILLEUR AND FRONT DERAILLEUR

VERSATILE COMPONENTS

Versatility, especially for a bicycle whose specifications lend it toward a wide range of uses, is an indispensable characteristic. A bicycle for professional racing can in fact be used for competition, touring, triathlons and non-competitive cycling.

On account of these requirements and in view of using the same components for all kinds of roads, Campagnolo designed the CHORUS gear, the first gear with variable geometry, thanks to the exclusive patented "DUAL-MODE SYSTEM".



The "DUAL-MODE SYSTEM" allows the parallelogram to be rotated in two different working positions at angles of 5° and 30°, while the jockey wheel cage can rotate as well to provide optimum chain alignment.

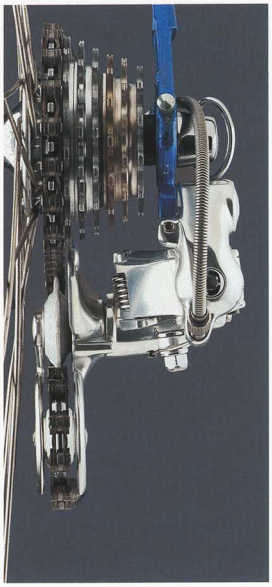
Two Allen-head screws situated in the parallelogram provide easy switching from one position to the other.

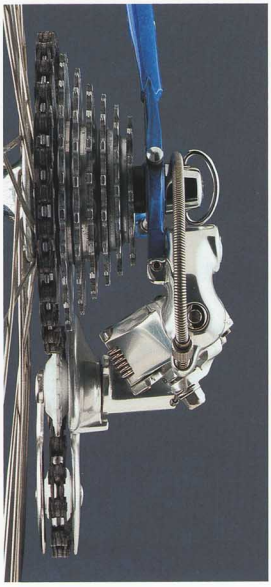
The CHORUS gear is designed in two versions, SM and LG, with different shifting capacities and biggest utilizable sprockets (see table).

CHOOSE THE BEST GEOMETRY

The geometry of the CHORUS gear must be arranged according to the used freewheel.

There are two elements that must be considered:
– the number of teeth of the sprocket in the last position
– the type of taper of the freewheel.





To determine the taper of the freewheel, one may use the fast and easy system of the difference between the number of teeth of the sprocket in the last position and the one of the sprocket in the first position.

If this difference is less than or equal to 11 teeth (f.i. 12/21 or 15/26), the freewheel has an acute taper; if the difference between the first and the last sprocket is more than or equal to 12 teeth (f.i. 13/25 or 15/28), the freewheel has an open type taper.

The position of the "DUAL-MODE SYSTEM" must be chosen following three simple rules:
1) With the CHORUS SM gear, when the largest sprocket has 28 or more teeth (31 with the CHORUS LG gear), position B should be used.
2) When the freewheel has an acute taper (difference between the first and the last sprocket $\leq$ 11 teeth), position A should be used.
3) When the freewheel has an open type taper (difference between the first and the last sprocket $\geq$ 12 teeth), position B should be used.

PERFECT ALIGNMENT

As well as dual positions in both parallelogram and cage plate, the CHORUS rear derailleurs feature an adjustment screw to vary the inclination with respect to the chainstays. Thus the best working position of the derailleurs can be selected on the basis of the biggest sprocket, and the winding of the chain onto the sprockets.

MAXIMUM COMFORT

The movement of the CHORUS derailleurs is made smoother with the application of an antifriction treatment to the stainless stell pin joints. This treatment along with the narrow profile of the rollers considerably improves the silent operation of the gear.

COMPATIBILITY WITH SYNCRO

The CHORUS derailleur is adaptable to all Campagnolo's shift levers including Syncro. With the Syncro kit for CHORUS will come two toothed inserts for 7 speed freewheels, one for each trim position of the derailleurs parallelogram. Appropriate inserts for 6 speed freewheels are also available. In order to regulate cable tension the CHORUS derailleurs utilize a barrel adjuster incorporated into the upper body.





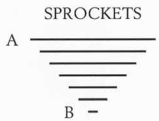
With the experience gained from its commitments to the world's most famous racing teams Campagnolo was able to develop a new front derailleur for the CHORUS group. Computer designed and tested in our Research & Development Department, this derailleur accompanies the chain during transfer, then allows it to run free eliminating the need to constantly adjust the changer after each shift.

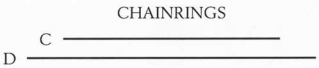
The stainless steel pivot pins of the CHORUS front derailleur receive the same antifriction treatment as the rear derailleur to enhance shifting even under severe conditions.

The CHORUS front changer is available in 3 versions, one for frames with a braze-on attachment and two clip-on models. The standard clip-on version will accept frames with a tube diameter of 28,5 mm while the second version has an adjustable clip for frames with tube diameters from 28 to 33 mm.

The derailleur's inner and outer range adjustments are made with two stainless steel screws located on the upper body. Coaxial keeper springs insure adjustment accuracy and the adjustments can be made with either a Phillips head or conventional screwdriver.

CHORUS





	CHORUS SM		CHORUS LG	
	POS. A	POS. B	POS. A	POS. B
Gear change capacity = (D + A) – (C + B) =	31	33	35	37
Biggest sprocket utilizable = A =	27	32	30	34
Front changer capacity = (D – C) =	18	18	18	18



CHAINWHEEL AND BOTTOM BRACKET

MAXIMUM SAFETY

The geometrical pattern of the spokes and arm of the CHORUS chainwheel have been computer-designed using numerical analysis of the distribution of forces. This analysis has established a special curved profile to achieve the best transfer of working loads directly to the bottom bracket axle.

This geometrical arrangement also brings the center of the crank closer to the main body of the bottom bracket, thus reducing the loss of energy that occurs due to the flexure of the system. To keep the distances between the cranks at an optimum position (about 115 mm) the two crankarms have a curvature that moves them outward from the frame.

Campagnolo engineers have studied in depth the behavior of the Avional aluminium alloy used. As a result of our research, there is an increased resistance to stress, a great improvement to the traditional method.

Tests used to measure the resistance of the crankarms to stress underline resistance levels decidedly higher than those encountered in actual use. This insures maximum reliability.



The chainrings supplied with the CHORUS crankset have a center span of 135 mm. These chainrings are made with a high resistance alloy used in aerospace applications and a geometrical arrangement that has proven successful in the Record group used by professional cyclists. The teeth have the classic Campagnolo profile. This precision design is guaranteed consistent by computer controlled gear cut machining rather than by stamping, a process that compromises precision and consistency.



MINIMUM FRICTION AND WEAR

A further contribution to the silent and efficient operation of the CHORUS equipped bicycle is minimum chain friction.
This is enhanced with the perfectly circular chainring.

The bottom bracket has a steel axle which turns on hardened chrome-steel balls of 1/4" diameter. The races of the axle, and cups are precision-ground to ensure maximum smoothness.

Consistent with all Campagnolo bottom brackets, the balls are selected to a tolerance of 1 micron. To the user this means minimum wear of the races and a longer bottom bracket life. Crankarm lengths can be supplied from 170, 172.5 and 175 mm. Chainrings range from 39 to 54 teeth.



BRAKES

The new CHORUS brakes with the "MONO-PLANER SYSTEM" have been designed to provide safe, sure stopping power regardless of road or weather conditions.

With the "MONO-PLANER SYSTEM" the caliper arms are not simply overlapped but actually inserted into one another.

This design not only eliminates excess friction but provides extremely high resistance to torsional stresses as well.

PARTICULAR COMFORT

With this special structure it has been possible to develop two particulary sturdy arms with a streamlined profile resulting in a very compact brake. The front brake center bolt is made from a special steel, selected and tested to guarantee a resistance to solicitations higher than 80 Kg per square millimeter. Campagnolo's precise machining guarantees the perfect alignment of the bolt with the bearing surface of the levers to a tolerance of one millimeter.



All this contributes to the rigidity of the system during braking, avoiding dangerous vibrations especially in the front brake.



ABSOLUTE RELIABILITY

The CHORUS brakes have been equipped with Campagnolo's famous brake pads. The composition of these pads have long since been the favorite of the world's best cyclists. The pad's compound has been tested and perfected in such laboratories as The Tour de France, Paris Roubaix and Giro d'Italia and is second to none in stopping ability and overall performance. The design criteria are as follows:

1) Friction coefficient not too high for dry roads so as to avoid lock up and overheating.
2) Friction coefficient as high as possible for wet roads.
3) Extended wear characteristics.
4) Consistent braking even as pad wear increase.





EXTREME SAFETY

Applying the experience gained in designing professional racing bicycles, Campagnolo has incorporated the quick release mechanism into the brake lever instead of the caliper. The advantage of this system, which varies the position of the brake lever as a means to expand the caliper, is simple in design and safe to use. In fact, with one button located under the brake lever the release can be activated without removing the hands from the handlebars.

Safety is considerably higher than traditional systems in that if the brake quick release is left in the off position, braking is still possible in that the brake lever limit stop does not vary during braking. Under no circumstances will the brake lever contact the handlebar as in traditional systems. The only difference between the on and the off position is the distance between the brake lever and the handlebar which in the off position is greater than 12 mm.

The increased distance does not inhibit the maneuverability of the lever. Furthermore this 12 mm increase is only present during extreme braking conditions.

Fitting the brake lever is convenient and accessible with the use of a 5 mm. Allen bolt to attach the lever clip to the handlebar. The fixing bolt is accessible by holding the lever in the braking position. With the CHORUS brake, cables may be routed traditionally, inside the handlebar or under the handlebar tape.

For non-traditional routing Campagnolo engineers have enhanced the patented system in use with the brake of the Record group. With this system the cable rests on a stainless steel plate that moves in unison with the lever and the cable itself. Cable travel avoids the critical conditions of curving and friction that will eventually cause fraying and failure.

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





HEADSET AND HUBS

The headset in the CHORUS group has three basic characteristics: smooth operation, long life and reduced weight. Smoothness is achieved by Campagnolo's system of cones, balls and locknut. The system has been successfully used for over thirty years on bicycles ridden by professional athletes.



LONG DURATION

The most significant innovation for headsets is SELFORM. This system effectively dampens the ball races of the cones and allows optimum distribution of loads over the balls and the races, avoiding areas of stress that may cause friction and brinelling of the races.



The SELFORM and a nylon seal, situated on the lower part of the cone prevents water directed up by the wheel from infiltrating the system. With the CHORUS headset one can expect to double the life of ordinary headsets.

Hubs are available in 32 and 36 hole drillings. The hubs can accomodate either six or seven speed freewheels. The wellproven Campagnolo hubs have hardened chrome-steel ball bearings which rotate on steel races with cups that are fitted into the light alloy hub body.

A hole in the hub's dust cover allows lubrication of the bearings. The hub also features the world renowed Campagnolo quick release skewer with its patented design.



SEAT PINS

The seat post is available in 130 mm and 180 mm legths. It has the same slim profile as the seat post used in the Record group. The seat post brackets have seat rail



cradles with a radius of 4 mm and a center distance of 42,2 mm. This combination allows saddles with 7 and 8 mm diameter rails to be used and that includes practically all the saddles on the world market.

So thanks to the precise adjustment of this seatpost (in 2 degree increments) the cyclist can find the best saddle position and avoid discomfort.

Saddle trim can be adjusted by varying the coupling of the opposed surfaces of the seat post and the lower face for fixing the saddle. The two surfaces are knurled vertically to ensure locking with no risk of slippage.

The system for adjusting the trim and fixing the saddle is anchored with a single 6 mm. Allen head screw of hardened and tempered steel which allows adjustment and fixing operations that are much faster than those possible with the two-screw system.



PEDALS

After thoroughly studying the ergonomic balance of the pedals, Campagnolo has developed pedals that are widely used in the racing world by professional and amateur cyclists. As an evolution of this study the CHORUS pedals combine ergonomic considerations with the anatomical and functional needs of the athletes' pedal stroke.

COMFORT AND EFFICIENCY

The shape of CHORUS pedal considers the body's anatomical requirements by following the outline of the foot. The result is a pedal with a slim profile that ensure maximum lightness without compromising strength.

The rear pedal plate, derived from the ergonomic pedal of the Record group, accompanies the outer foot rest as far as the axle. Incorporated into this plate is a 4 mm tab to prevent the foot from sliding outwards when pedaling. This tab is specially shaped to protect the shoe and to eliminate sharp edges that exert pressure on the side of the foot.

The safety of the pedal/crank system is further improved by the larger size of the pedal axle support collar on the crank, the diameter of which has been increased to 20 mm.

Code 700 "CHORUS" Campagnolo group composed of:

Cat. No.	Description
715/100	Subgroup brakes (front and rear brake, two brake levers, cables and casings)
265/CS	Subgroup SM gear and braze-on front changer
542/S	"Friction" levers braze-on version (left and right hand lever, cables, stainless steel outer casing)
722/101	Subgroup small flange hubs, (front and rear quick release hub)
706/101	Subgroup chainwheel (r.h. crank with two chainrings, l.h. crank)
703/101	Bottom bracket set
705/000	Subgroup pedals (l.h. and r.h. pedals complete with steel toe-clips and straps)
704/101	Head set
545	Seat pin 180 mm, with fixing seat pin screw and nut Ø 8

Alternative subgroups and components

Cat. No.	Description
280/CS	Subgroup LG gear and braze-on front changer
702/101	clip-on front changer
D056	Complete COMPACT brake control lever "FRICTION" levers with cables and stainless steel outer casing, versions:
543/ST	braze-on on top of tube
544/F	clip-on
	"DOPPLER" levers with cables and stainless steel outer casing, versions:
325	braze-on
326	braze-on on top of tube
327	clip-on
	"SYNCRO" levers with micrometric inserts for A and B positions of "DUAL-MODE SYSTEM", cables e stainless steel outer casing, versions:
535/6AB	braze-on for 6 speed
536/6AB	braze-on on top of tube for 6 speed
537/6AB	clip-on for 6 speed
538/7AB	braze-on for 7 speed
539/7AB	braze-on on top of tube for 7 speed
541/7AB	clip-on for 7 speed
716/102	Seat pin 130 mm, with fixing seat pin screw and nut Ø 8.

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