



INTRODUCTION TO SYNCRO

Due to the demand of the American bicycling consumer, Campagnolo has developed and introduced SYNCRO, an indexing shift lever system for rear derailleurs. Previously exhibited at the Cologne Bike Show in September of 1986, the fully developed production version was debuted at the BDS Expo in Long Beach, California in January, 1987.

Indexing shift lever systems are a means to facilitate gear selection with currently available conventional style derailleurs. The index systems currently available all use some type of detent arrangement in the lever to positively locate the lever in the exact position for the gear selected. The cyclist can usually hear as well as feel the lever engage the detents as the lever is moved throughout its range.

Attempts had been made prior to the current generation of index systems to market similar indexing derailleur controls. In fact, index shifting has been around for a long time. The most successful being the familiar Sturmey-Archer three speed trigger.

Syncro has been designed by Campagnolo to provide index shifting for the consumer that desires it incorporated with the quality, durability and serviceability that are Campagnolo standards.



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The Syncro lever system is provided in a lever kit which includes the Syncro index right hand lever, a conventional friction left hand lever, front and rear gear cables, rear gear cable housing with ferrules, cable tension barrel adjuster and instruction booklet. All are packaged in a compact, two tiered box which holds the levers in place over a compartment for the other items.

External finish of the levers is to Campagnolo bicycle jewelry standards. All possible surfaces are polished to a mirror like finish or chrome plated.

Basic shape of the shift levers themselves is quite similar to the C-Record levers. The right hand lever is much larger in the boss area to accomodate the Syncro mechanism. With conventional friction lever innards, the left hand lever is normal in exterior dimensions and appearance.



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SYNCHRO ASSEMBLY INSTRUCTIONS

1. Remove all paint from brazed on frame boss.
2. The Synchro comes assembled on a plastic dummy boss. Disassemble the right side shift lever by unscrewing the D-ring (part #2 on assemble instructions) remove part #'s 3,4,5 and 6. Unscrew boss #7 and remove thrust washer #8 and friction washer #9. Do not remove the toothed insert or the bushing which fits inside it from the shift lever assembly.
3. Place the aluminum stop plate #11 on the frame boss.
4. Lubricate the frame boss and brass washer #11 with Campagnolo grease and place the brass washer on the frame boss against the stop plate.
5. Slide the shift lever assembly complete with parts #12 & 13 in place onto the frame boss. Make sure that part #12 is fully inserted onto the flats of the frame boss. The tabs on part #12 should be flush with the surface of the toothed insert #13. You may have to tap lightly on part #12 to insure that it is fully inserted onto the brazed on frame boss. Pack unit with Campagnolo grease.



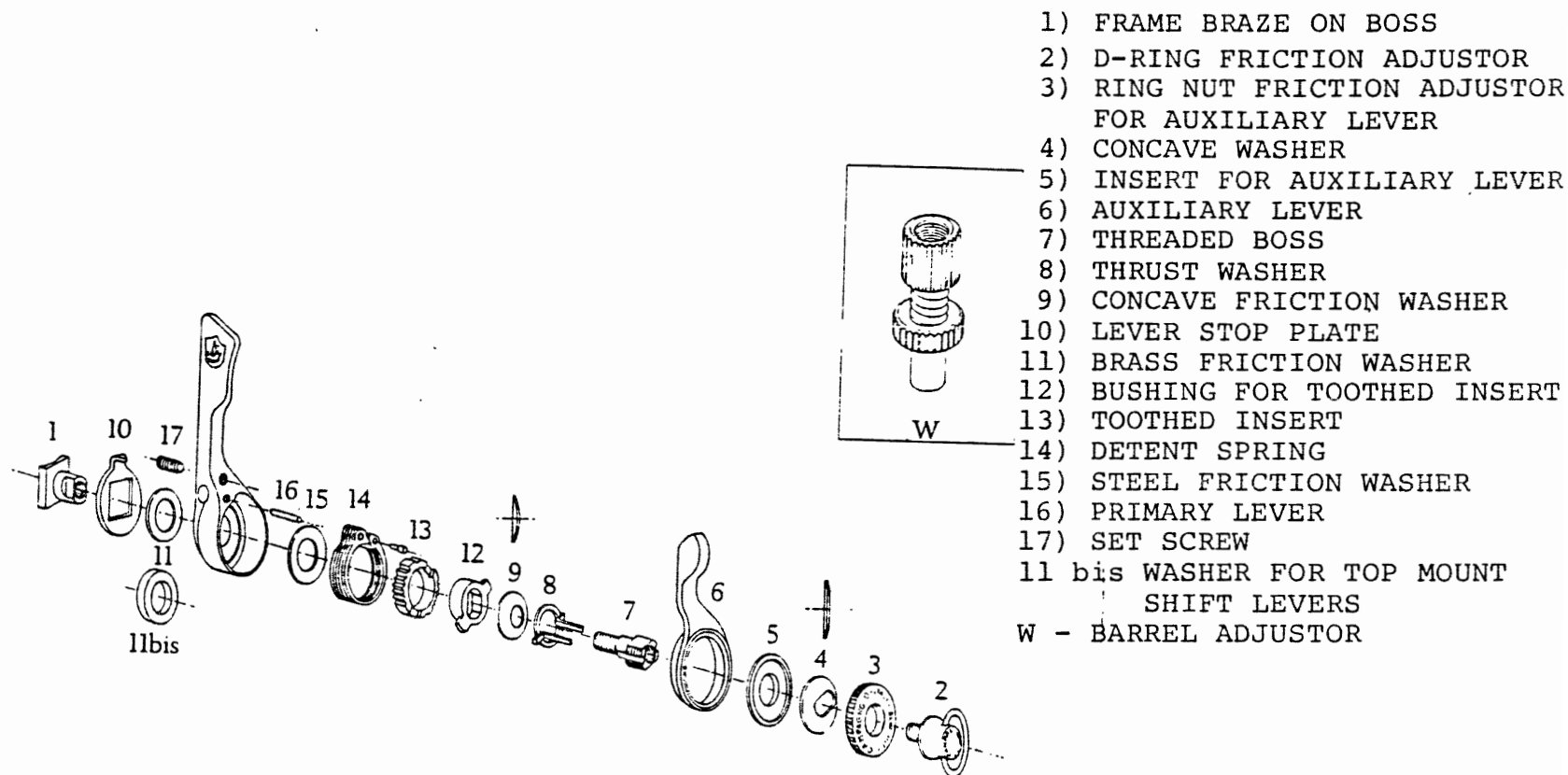
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6. Place the thrust washer #8 and the spring washer #9 onto the threaded boss #7 making sure that the concave face of the spring washer is turned toward part #12.
7. Screw the threaded boss with washers #7 & 8 onto the braze on boss and fully tighten it.
8. Next fit part #'s 6,5 and 4 onto the threaded boss #7 making sure that the concave face of #4 is facing insert #5.
9. Screw the knurled ring nut #3 onto the threaded boss #7. Tighten part #3 only enough to insure that the auxiliary lever #6 is not loose and that you can still depress the lever to disengage the indexing mode.
10. Place the small tension spring inside part #7 and screw the D-ring part #2 in place.
11. Assemble the left side shift lever onto its brazed on boss. Do not lubricate the nylon washers on this lever.
12. Assemble the cables in the normal way. Make sure to insert the barrel adjuster into the rear derailleur before routing the cable. The rear cable casing may have to be trimmed to allow a smooth bend. Too sharp of a bend in the casing will cause undue friction on the cable.



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SYNCHRO (RT. LEVER) - EXPLODED VIEW



FREEWHEEL, CHAIN AND SYNCRO COMPATIBILITY CHART

FREEWHEEL	REAR DERAILLEUR			
	C RECORD	SUPER RECORD	VICTORY	TRIOMPHE
CAMPAGNOLO 6 SPD	A	A	A	A
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
CAMPAGNOLO 7 SPD	B	B	B	B
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
MAILLARD CORSA 6 SPD	A	A	A	A
	■ ● ▲	■ ● ▲	■ ● ◆ ▲	■ ● ◆ ▲
MAILLARD CORSA 7 SPD	B	B	B	B
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
REGINA AMERICA	A	A	A	A
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
REGINA ORO	A	A	A	A
	■ ● ◆ ▲	■ ◆ ▲	■ ● ◆ ▲	■ ◆ ▲
REGINA CX S 7 SPD	B	B	B	B
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ◆ ▲
SUNTOUR 6 SPD WP 6000	A	A	A	A
	▲	▲	■ ▲	■ ▲
SUNTOUR 7 SPD ULTRA	C	C	C	C
	▲	▲	▲	▲
SUNTOUR 7 SPD WP7000	B	B	B	B
	◆ ▲	◆ ▲	■ ● ◆ ▲	
SHIMANO 105 6 SPD	A	A	A	A
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
SHIMANO DURA ACE 6 SPD	A	A	A	A
	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲
SHIMANO DURA ACE 7 SPD	B	B	B	B
	■ ● ▲	■ ● ▲	■ ● ▲	■ ● ▲
GIPIEMME ALLOY 6 SPD	A	A	A	A
	■ ● ▲	■ ● ◆ ▲	■ ● ◆ ▲	■ ● ◆ ▲

CHAIN USED :

- SIDISPORT ● SHIMANO 600 UNIGLIDE (NARROW)
- ▲ REGINA CXS ◆ SUNTOUR SUPERBE SP6000

SYNCRO TOOTHED INSERT USED :

- A - SHIFT LEVER 6 SPEED 0118084 BRAZI-ON WITH TOOTHED INSERT 7222064
SHIFT LEVER 6 SPEED 0118086 TOP-TUBE BRAZI-ON WITH TOOTHED INSERT 7222064
SHIFT LEVER 6 SPEED 0118087 CLAMP-ON WITH TOOTHED INSERT 7222064
- B - SHIFT LEVER 7 SPEED 0118088 BRAZI-ON WITH TOOTHED INSERT 7222063
SHIFT LEVER 7 SPEED 0118089 TOP-TUBE BRAZI-ON WITH TOOTHED INSERT 7222063
SHIFT LEVER 7 SPEED 0118090 CLAMP-ON WITH TOOTHED INSERT 7222063
- C - SHIFT LEVER 7 SPEED 0118094 BRAZI-ON WITH TOOTHED INSERT 7222069
SHIFT LEVER 7 SPEED 0118095 TOP-TUBE BRAZI-ON WITH TOOTHED INSERT 7222069
SHIFT LEVER 7 SPEED 0118096 CLAMP-ON WITH TOOTHED INSERT 7222069



ADJUSTING THE SYNCRO

The toothed insert is the key to Syncro index shifting operations. It is a precision cut piece of hardened steel which has been hard chromed to provide maximum life. By altering the tooth contour and number, it is possible to have different inserts for various freewheel cog spacing and freewheel configurations (six or seven speed, standard or narrow). This is a readily serviced part which can be changed in a couple of minutes providing a relatively inexpensive changeover from one freewheel configuration to another. Switching from index shifting to friction is accomplished by the means of an auxiliary or secondary lever co-axial with the main lever. This lever when pushed approximately forty five degrees forward of the main lever, locks out the index mechanism by disengaging the tooth of the spring from the detents on the insert. This lock out lever is retained by a thrust plate, cupped spring washer and knurled ring nut. There is a small allen set screw in the main lever which should be adjusted to protrude about 1/2mm to provide an engagement with the lock out lever sufficient to retain it in the index position without requiring undue force to shift to the friction mode.



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Friction shifting mode lever adjustment is accomplished with the familiar wing nut. The knurled ring nut is to be used for adjusting the auxiliary lever tension only. Too tight an adjustment of the ring nut will impede functioning in the index mode.

Once the levers are installed, the cables are fitted in a normal manner. You will notice a difference in diameter and finish of the cables supplied with Syncro. The cables are of a new material that has a smoother surface than the traditional Campagnolo gear cables. While of a smaller diameter, the new material also has a more supple quality which allows it to conform to the contour of the lever and cable guides more easily than the old cables.

The cable housing supplied with the kit is the same part 617 that has been standard for years. This cable housing should be cut to length for each installation. It is not necessary or desirable to leave the housing the supplied length.

Absolutely necessary to any index system is a means to adjust the gear cable tension. This is accomplished by a barrel adjuster that is simply inserted into the cable housing stop on the rear derailleur.



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The Syncro barrel adjuster is not screwed into the derailleur as no Campagnolo derailleur is threaded in that area. This means that any Campagnolo derailleur can accept the barrel adjuster and be adapted to the Syncro system.

After all parts are in place, initial rough adjustment of the derailleur should be made to insure there is no overshift off of the freewheel on either the high or low limits. The derailleur should be shifted onto the smallest freewheel cog with the lever fully forward and all cable slack removed.

Adjustment of the index mechanism is accomplished by proper tightening of the ring nut, friction wing nut and adjustment of the barrel adjuster at the rear derailleur. All of these must be properly set to insure consistent index shifting. First is the auxiliary lever ring nut. Just enough tension should be applied to the auxiliary lever to insure it remains in the index position with the small allen screw adjusted to protrude about 1/2mm or a bit more. There will be some play in the auxiliary lever which is normal.

The wing nut controls the friction action on the main lever. Tightening the wing nut excessively will impede the index action.



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Proper adjustment of the wing nut would be to screw it in until resistance is felt and to continue a bit further until it becomes snug but not extremely tight. Then back it off one half turn. It should feel slightly loose at this point. To check for proper adjustment, shift the lock out lever to the forward position after tightening the wing nut one half turn. Proceed to shift, in the friction mode, through the entire range and determine if the friction tension is adequate. If the tension is adequate shift the lock out lever to the index position and back off one half turn on the wing nut.

Adjustment of the barrel adjuster is accomplished by screwing the two parts together to slacken the cable and screwing them apart to tighten the cable. Start by placing the chain on the large front chainring. Shift the rear derailleur up the freewheel. Adjust the barrel adjuster as required to obtain clean shifting. It will usually be easier to adjust if the chain is on the next to smallest cog on the freewheel. Shift up and down from this cog to make the initial adjustments and fine tune as needed for the lower gears. Now is when too much



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tension on either the ring nut for the auxiliary lever or the wing nut will become apparent. If there is too much tension on either of them the lever will not be able to center in the index detents with sluggish shifting as a result. Properly adjusted, Syncro will find the gear for you.

While more complex than a friction type shift lever, Syncro is made of relatively few parts that are very robust, in comparison to other index shift lever systems on the market. The mechanism is easily serviced, with a minimum of tools required.

If service of the index mechanism is required, it will probably be just cleaning and lubrication. Wear should be minimal, due to the quality of the materials used. If the toothed insert does happen to wear, it may be removed and turned 180 degrees to present a fresh set of teeth to be engaged.

A major advantage of Syncro is that it will work with a wide variety of freewheels and chains. Although a narrow chain is recommended, satisfactory performance with standard width freewheel and chains is possible. Some of the possible combinations are listed in the instruction



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booklet.

Campagnolo offers Syncro as an option on any group. It is not a standard part of any group and must be specified, just like seat post diameter and hub drilling.



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GETTING THE MOST FROM YOUR SYNCRO SHIFTING SYSTEM

Congratulations for investing in better performance for your bicycle with Syncro from Campagnolo.

In order to achieve the maximum from your new Syncro shifting system remember the following:

1. A misaligned frameset will impair the performance of your Syncro.
2. Check the derailleur hanger for proper alignment. This is critical to the performance of any index shift system.
3. The proper relationship between front chainwheels and rear free-wheel sprockets (chain line) is necessary.
4. Your rear derailleur should be in good working order and within specifications.
5. Your Syncro shifting system is designed to work best when used with Campagnolo derailleurs, cables and dropouts.
6. Use as long a chain as possible in order to keep the derailleurs jockey wheels close to the freewheel cogs. This will insure less friction in the drivetrain and more precise shifts.



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7. When mounting your Syncro shift lever (right side) all metal to metal contact areas should be lubed with Campagnolo grease to insure smooth, silent, long lasting performance.
8. The fit of the Syncro shift lever (right side) and toothed insert assemble on the frames brazed on boss is critical. The lever itself should be able to rotate freely without binding whatsoever. The toothed insert assembly (part #12 & 13 on assembly insert) should fit on the flats of the brazed on boss snugly, a loose fit here can impair the performance of your Syncro. All paint on the boss should be removed prior to fitting the Syncro on the braze on boss.
9. After installing your Syncro you will notice that the unit will become smoother and more precise as the cables and internal mechanisms "wear in" together. Allow a short time for this before final adjustments are made.
10. Remember not to over tighten the knurled nut (part #3 on assembly instructions) which controls tension on the auxiliary lever.

10. Use only enough tension to keep the auxiliary lever from being too loose. Too much friction will impair the self-centering action of the primary lever when in the indexing mode.
11. Do not over tighten the D-ring bolt (part #2) in the indexing mode. This bolt controls the friction on the primary lever. Too much friction will impair the self-centering action of the primary lever. This is a critical adjustment. To properly adjust the friction tighten the D-ring fully and then back it off approximately 1/2 turn. This will reduce the overall friction enough to allow the primary lever to self-center the derailleur after a shift has been completed. In order to obtain enough friction (when in the Friction Mode) to hold the derailleur in the gear selected tighten the D-ring up to 1/2/turn. The Campagnolo Syncro lever is one of the only index shifting mechanism which allows the user to adjust the amount of friction on the lever. All others have a pre-set friction which can become too loose to properly hold the derailleur in place.



12. Your Syncro system will work with a large variety of different chain and freewheel combinations. The best combination will vary from bicycle to bicycle due to different frame geometry. Use the chain and freewheel chart included with your Syncro lever set to select recommended combinations and then experiment to find which combination works best for your bicycle. Some chain/freewheel factors to consider are:

- a. chain flexibility
- b. freewheel tooth profile
- c. wheel position in drop-out
- d. chain stay length
- e. drop-out type
- f. overall chain length