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### USE OF THE MANUALS (PART 1 + PART 2)

#### **WARNING!**

Carefully read, understand and follow the instructions given in both manuals (PART 1 + PART 2), that are an essential part of the product, and keep them for future reference.

Please be advised that many bicycle service and repair tasks require specialized knowledge, tools and experience.

General mechanical aptitude may not be sufficient to properly service or repair your bicycle. If you have any doubt whatsoever regarding your ability to properly service or repair your bicycle, please take your bicycle to a qualified repair shop.

Improper adjustment or service can result in an accident, personal injury or death.

**WARNING!**

Carefully read, follow and understand the instructions given in this manual. It is an essential part of the product, and you should keep it in a safe place for future reference.

**MECHANIC QUALIFICATION** - Please be advised that many bicycle service and repair tasks require specialized knowledge, tools and experience. General mechanical aptitude may not be sufficient to properly service or repair your bicycle. If you have any doubt whatsoever regarding your service/repair ability, please take your bicycle to a qualified repair shop.

**INTENDED USE** - This Campagnolo® product is designed and manufactured for use only on road racing style bicycles that are ridden **only** on smooth road or track surfaces. Any other use of this product, such as off-road or on trails **is forbidden**.

**"AN ACCIDENT"** - Please note that throughout this manual, reference is made that "an accident" could occur. Any accident could result in damage to your bicycle, its components and, more importantly, could cause you or a bystander to sustain severe personal injury or even death.

**LIFESPAN - WEAR - INSPECTION REQUIREMENT** - The lifespan of Campagnolo® components depends on many factors, such as rider size and riding conditions. Impacts, falls, improper use or harsh use in general may compromise the structural integrity of the components and significantly reduce their lifespan. Some components are also subject to wear over time. Please have your bicycle and its components regularly inspected by a qualified mechanic for any cracks, deformation, signs of fatigue or wear (use of penetrating fluid or other visual enhancers to locate cracks on parts is recommended). Disassembly your bicycle components and especially the pedals, is required during these inspections. If the inspection reveals any deformation, cracks, impact marks or stress marks, no matter how slight, **immediately** replace the component; components that have experienced excessive wear also need **immediate** replacement. The frequency of inspection depends on many factors; check with your authorized representative of Campagnolo S.r.l. to select a schedule that is best for you. If you weigh 82 kg/180 lbs or more, you must be especially vigilant and have your bicycle inspected more frequently (than someone weighting less than 82 kg/180 lbs) for any evidence of cracks, deformation, or other signs of fatigue or stress. Check with your mechanic to discuss whether the components you selected are suitable for your use, and to determine the frequency of inspections.

**Important PERFORMANCE, SAFETY and WARRANTY Notice** - The parts and components of Campagnolo® 9s, 10s, 11s drivetrains, braking systems, rims, pedals and all other Campagnolo® products, are designed as a single integrated system. To avoid compromises in terms of safety, performance, durability, function, and to prevent voiding the WARRANTY, use only the parts and components supplied or specified by Campagnolo S.r.l., without interfacing them with or substituting them with products, parts or components manufactured by other companies.

**Note:** Tools supplied by other manufacturers for components similar to Campagnolo® components may not be compatible with Campagnolo® components. Likewise, tools supplied by Campagnolo S.r.l. may not be compatible with components supplied by other manufacturers. Always check with your mechanic or the tool manufacturer to insure compatibility before using tools supplied by one manufacturer on components supplied by another.

*The user of this Campagnolo® product expressly recognizes that there are risks inherent in bicycle riding, including but not limited to the risk that a component of the bicycle can fail, resulting in an accident, personal injury or death. By his purchase and use of this Campagnolo® product, the user expressly, voluntarily and knowingly accepts and/or assumes these risks and agrees to hold Campagnolo S.r.l. harmless against any resulting damages.*

**If you ever have any questions, please contact your mechanic or your nearest Campagnolo® dealer for additional information.**

**1. SAFETY RECOMMANDATIONS**

- Please be advised that if the maintenance and repair procedures provided in this manual are not properly performed, or if the other instructions in this manual are not followed, an accident could occur.
- Never make any modifications whatsoever to any component of any Campagnolo® product.
- Parts which have been bent or otherwise damaged in an accident or as a result of any other impact must not be re-straightened. They must be replaced immediately with original Campagnolo parts.
- Wear clothes which are snug-fitting and which make you visible to traffic, such as neon fluorescent or other bright colors.
- Avoid biking at night because it is more difficult for you to be seen by traffic, and it is more difficult for you to see obstructions on the ground. If you do ride at night, you should equip your bicycle with and use a headlight and a tail light.
- Never use a bicycle or bicycle component unless you are thoroughly familiar with its use and maintenance history. "Used" equipment may have been misused and abused, and can unexpectedly fail resulting in an accident.
- When riding in wet conditions, remember that the stopping power of your brakes is greatly reduced and that the adherence of the tires on the ground is considerably reduced. This makes it harder to control and stop your bicycle. Extra care is required when riding your bicycle in wet conditions to avoid an accident.
- Always wear a properly fitted and fastened bicycle helmet that has been approved by ANSI or SNELL.

**BEFORE EVERY RIDE**

DO NOT RIDE YOUR BICYCLE IF IT DOES NOT PASS THIS PRE-RIDE TEST CORRECT ANY CONDITION BEFORE YOUR RIDE.

- Be sure that all of the components of your bicycle, including but not limited to your brakes, pedals, handgrips, handlebars, frame and seating system, are in optimum condition and suitable for use.
- Be sure that none of the components of bicycle are bent, damaged or out of alignment.
- Check to be sure that all quick release fasteners, nuts and bolts are properly adjusted. Bounce the bicycle on the ground and listen and look for anything which may be loose.
- Be sure that your wheels are perfectly centred. Spin the wheels to be sure that they do not wobble up and down or from side to side, and that they do not make contact with the fork legs or brake pads while rotating.
- Check all reflectors to make sure that they are clean, straight and securely mounted.
- Check you brake pads and cables to be sure they are in good condition.
- Test your brakes in the beginning of your ride to make sure that they are operating properly.
- Learn and follow the local bicycle laws and regulations, and obey **all** traffic signals, signs and laws while you ride.

**If you ever any comments, questions or concerns, please contact your nearest Campagnolo Service Center. A list of service centers may be found on our website at [www.campagnolo.com](http://www.campagnolo.com).**

## 2. SPROCKET ASSEMBLY AND REMOVAL

See "PART 2" instruction sheet.

## 3. FITTING THE WHEEL ON THE FRAME

See the "Quick Release" instruction sheet.

## 4. USING THE QUICK RELEASE

See the "Quick Release" instruction sheet.

## 5. ADJUSTMENT OF SPOKES TENSION AND WHEEL CENTERING

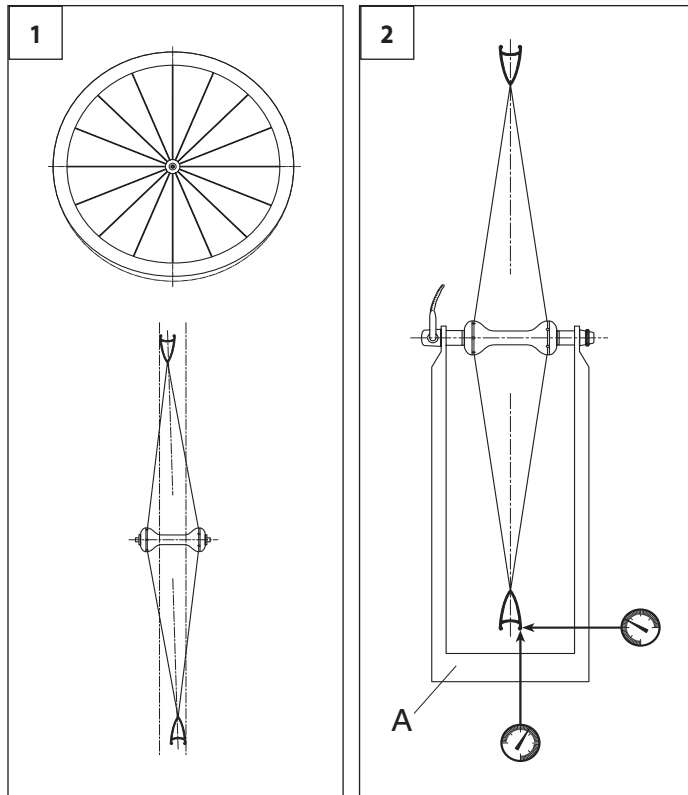
- Centering the wheel involves checking and correcting axial (centering) and radial (roundness) offsets (Fig. 1).



### WARNING!

**This is one of the most important stages in assembling the wheel. Using wheels that have not been centred properly or which have broken or damaged spokes may result in accidents, personal injury or death.**

- To center, place the wheel on a rigid wheel-centering support (A), lock it by means of the quick release skewer and check the axial and radial offsets using a dial gauge (Fig. 2).
- To correct excessive axial deformation to the left in part of the wheel, adjust the spoke in the area in question, either by increasing the tension of the RH spoke or reducing the tension of the LH spoke.
- Carry out this operation over the whole surface of the wheel, bearing in mind that the decision to tension or relax the spokes also directly influences the wheel dishing.
- To correct excessive outwards radial deformation, adjust the pair of spokes in the area in question by increasing their tension; to correct excessive inwards radial deformation, adjust the pair of spokes in the area in question by reducing their tension.



- Repeat the axial and radial trueness checks until a maximum error of 0.4 mm is obtained.
- Balance the wheel as described in para 5.1.
- Alternate nut (or nipple) tensioning and trueness and circularity check until correct spoke tension is obtained and a maximum deformation error within the following limits:
  - centering (axial offset): 0.3 mm
  - circularity (radial offset): 0.4 mm
- Repeat balancing and correct again, if necessary, until the wheel is properly centered (Fig. 3).

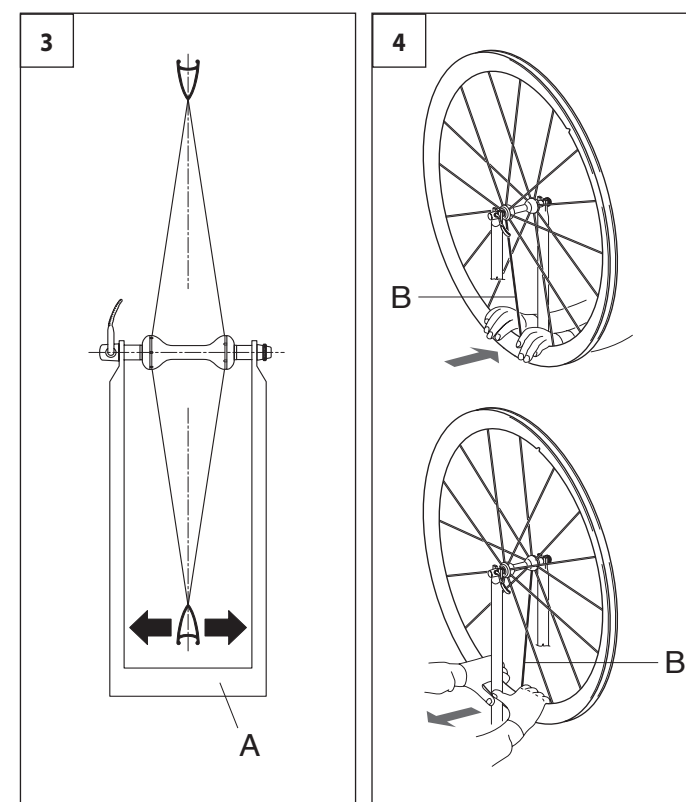
### 5.1 - BALANCING THE WHEELS



### WARNING!

**This is one of the most important stages in assembling the wheel. Incorrect balancing may damage the wheel or cause the wheel to unexpectedly fail, resulting in an accident personal injury or death.**

- To carry out this operation, the wheel must be fitted on a very rigid wheel centering support (A - Fig. 3).
- Spoke after spoke, pull the rim forcefully with both hands from the side opposite the spoke (B - Fig. 4) to balance.
- Repeat the operation from the other side of the wheel (Fig. 4).



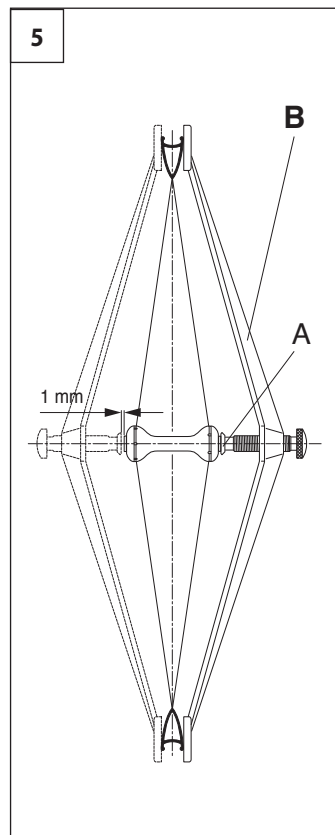
## 5.2 - CHECKING WHEEL DISH

- To check wheel dish, use the template (B); place it on one side of the wheel and screw or unscrew the measuring screw until it touches the nut or the counter-cup of the hub.
- Place the template on the other side of the wheel and check that the measuring screw (A - Fig. 5) rests on the nut or counter-cup of the hub. If there is any distance between the screw and hub, the wheel dish must be corrected.
- The maximum permitted wheel dish tolerance is 1 mm.
- Front wheels: if the rim axis is excessively displaced to one side, slacken all the spoke nuts (or nipples) on the same side by approximately one-quarter turn and then tighten all the spoke nuts (or nipples) on the opposite side by approximately one-quarter turn; check dishing again and repeat the operation as required, taking care not to tension the spokes excessively.
- Rear wheels: if the rim axis is excessively displaced to one side, slacken all the spoke nuts (or nipples) on the same side by approximately one-half turn and simultaneously tighten all the spoke nuts (or nipples) on the opposite side by approximately one-quarter turn. Remember that the different angle of the right and left spokes (respectively shallower and steeper) significantly affects wheel dishing; inasmuch, never increase the left spoke nuts (or nipples) by more than approximately one-quarter turn to avoid difficulties in setting dishing. Repeat the operation as required, taking care not to tension the spokes excessively.



### CAUTION!

The values given above (approximately 1/2 turn and approximately 1/4 turn) are indicative. However, bear in mind that if the tension of the right-hand spokes is changed in one direction, then the tension of the left-hand spokes must be changed almost twice as much in the opposite direction.



## 6. BRAKES

### 6.1 - CAMPAGNOLO® BRAKES



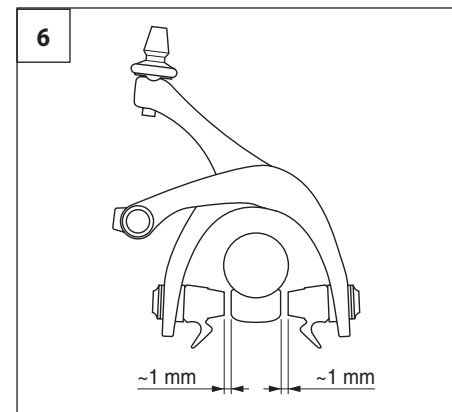
### WARNING!

For carbon wheels, please also consult the section "Brakes" of the "Owner's Manual PART 2" of the wheel.

- Before every ride, check your brake pads and cables to be sure they are in good condition. In addition, test your brakes in the beginning of your ride to make sure they are operating properly.
- Make sure that the brake pads are perfectly aligned with the wheel braking surface, adjust the brake pads so that they are centered in height in relation to the braking surface of the rim and parallel to it horizontally and vertically and make sure that they are about 1 mm from the surface of the rim (Fig. 6).
- Check the wear status of the brake pads at regular intervals and replace them when the braking surfaces reach the limit marked by the wording "WEAR LIMIT" or if braking power is in any way insufficient (consult the brake instruction leaflet).
- Check the tension of the brake control cables at regular intervals.
- Keep the braking surface of the rim and the brake pads free from oil and grease.
- Using a file, periodically remove any traces of debris or sand from the brake pads which could lead to deep scoring on the sides of the rims, reduce the braking efficiency and adversely affect the integrity of the rim itself.
- Check the brake cable for any evidence of wear or stretching, and replace the cables if necessary. In addition, check that the screw locking the cable to the brake is correctly tensioned (consult the brake instruction leaflet).
- Check torque setting(s) of the brake, brake pad and cable locking screws at regular intervals.
- When riding in wet conditions, remember that the stopping power of your brakes is greatly reduced and the adherence of the tires to the ground is considerably reduced. Also bear in mind that because of the progressive drying of the braking surface during braking itself, braking power may vary sharply. This makes it harder to control and stop your bicycle. Extra care is required when riding your bicycle in wet conditions to avoid an accident. An accident could result in severe personal injury or death.
- For further information please consult the instruction sheet supplied with the brakes.

### 6.2 - BRAKES OF OTHER MANUFACTURERS

Please consult the instruction sheet supplied by the manufacturer.



## 7. PERIODICAL WHEEL MAINTENANCE

- After using the wheel for the first time, check wheel trueness and circularity.



### WARNING!

**Using wheels that have not been centred properly or which have broken or damaged spokes may result in accidents, personal injury or death.**

- Before every ride, check the condition of the tires and inflation pressure.
- Periodically take your bicycle to a qualified mechanic to lubricate the hubs. Check with your mechanic to select a schedule that is best for you (approximately every 2,000/5,000 km - 1,200/3,000 miles).
- Every 10,000/20,000 km (6,000/12,000 miles) please take your bicycle to a qualified mechanic to lubricate, remove, disassemble and check the hubs.
- Periodically get the mechanic to verify every component that is subject to wear (rims, ball bearings, brake pads) and, if necessary, get it replaced.
- At least once each month, please take your bicycle to a qualified mechanic to check the tension of the spokes, wheel centering and wheel dish and correct as necessary.
- Periods and riding distances are purely indicative and may be significantly different in relation to conditions of use and the intensity of your activity (for example: racing, rain, salted Winter roads, weight of the rider etc.). Check with your mechanic to select a schedule that is best for you.

### 7.1 - CLEANING THE WHEELS

When cleaning the wheels, only use non-aggressive, non-corrosive products such as water and neutral soap, or specific products specially designed for cleaning bicycles. Absolutely never use abrasive or metal sponges. Dry with a soft cloth.

#### NOTE

Never spray your bicycle with water under pressure.

Pressurized water, even from the nozzle of a small garden hose, can pass seals and enter into your Campagnolo® components, damaging them beyond repair. Wash your bicycle and Campagnolo® components by wiping them down with water and neutral soap.



### WARNING!

**Salt water environments (as found on winter roads and near the seaside) can cause galvanic corrosion on most bike parts. Carefully rinse, clean, dry and re-lubricate all exposed parts to avoid damage, malfunctions and accidents.**

### 7.2 - TRANSPORT AND STORAGE

When transporting the wheel separately from the bike or if the wheel will not be used for a long period of time, store it in the wheelbag to protect it against impacts and dirt.

Avoid exposing the carbon wheels to direct and indirect high temperatures (e.g. sun, boots of motor vehicles parked in the sun, etc.).