

Campagnolo® **IN THE WORLD**

CAMPAGNOLO S.r.l.

Via della Chimica, 4
36100 Vicenza - ITALY

• Technical Information:
Phone: +39-0444-225600
Fax: +39-0-444-225400
E-mail: tech-info@campagnolo.com

• Service Center:
Phone: +39-0444-225605
Fax: +39-0444-225606
E-mail: service@campagnolo.com

CAMPAGNOLO DEUTSCHLAND GmbH

Alte Garten 60-62
51371 Leverkusen - GERMANY
Phone: +49-214-206953-0
Fax: +49-214-206953-15
E-mail: campagnolo@campagnolo.de

• Service Information:
Phone: +49-214-206953-0

CAMPAGNOLO FRANCE EURL

ZA du Tissot
42530 St Genest - Lerpt - FRANCE
Tel.: +33-(0)477-556305
Fax: +33-(0)477-556345
E-mail: campagnolo@campagnolo.fr

• Service Information:
Phone: +33-477-554449

CAMPAGNOLO IBERICA S.L.

Avda. de Los Huetos 46 Pab. 31
01010 Vitoria - SPAIN
Phone: +34-945-222504
Fax: +34-945-244007
E-mail: campagnolo@campagnolo.es

CAMPAGNOLO NORTH AMERICA INC.

2105-L Camino Vida Roble
Carlsbad CA 92009 - U.S.A.
Phone: +1-760-9310106
Fax: +1-760-9310991
E-mail: info@campagnolona.com

CAMPAGNOLO JAPAN LTD

65 Yoshida-cho, Naka-ku
Yokohama - 231-0041 JAPAN
Phone: +81-45-264-2780
Fax: +81-45-241-8030
E-mail: info@campagnolo.jp

AGENCIES:

**AUSTRALIA
CYCLING PROJECTS**

Shop 1 - 86 King Street - NSW 2193 Ashbury - AUSTRALIA
Tel. +61-2-97992407
Fax +61-2-97992107

**BENELUX
INTERNATIONAL CYCLE CONNECTION - I.C.C.**

Weststraat 42
P.O. Box 73 - 4527 ZH Aardenburg - NEDERLAND
Tel. +31-11-7492820
Fax +31-11-7492835

**BULGARIA - CZECH REPUBLIC - POLAND
RUMANIA - SLOVAKIAN REPUBLIC
SLOVENIA - HUNGARY**

FIRMA GALLIZIA
10. Oktoberstraße 7
9800 Spittal/Drau - AUSTRIA
Tel. +43-4762/2275
Fax +43-4762/2275

**DENMARK - SWEDEN - NORWAY- FINLAND
MARKER SCANDINAVIA**

Industrivej 1D - DK-4000 ROSKILDE- DENMARK
Tel. +45-70228075
Fax +45-46498088

**SOUTH AMERICA AND MEXICO
GEORGE PANARA**

Sao Paulo - BRASIL
Tel.: +55 11 4436 9123 - Fax: +55 11 4436 12 13

**TAIWAN - MAINLAND CHINA - VIETNAM
COLMAX INTERNATIONAL LIMITED**

No. 42, Alley 30, Lane 300
Section 2, Zhong Hwa S. Road
Tainan 702, TAIWAN
Tel. +886-6-265 6001
Fax +886-6-265 1388

**UNITED KINGDOM
SELECT CYCLE COMPONENTS**

The White House
Main Street - NEWTON NG13 8HN
Tel. +44-0780260628
Fax +44-1949-829039

RUOTE - WHEELS - LAUFRÄDER
ROUES - RUEDAS - WIELEN

Campagnolo®

**BORA™ ULTRA™
PART 2**

Manuale Uso e Manutenzione - Owner's Manual - Bedienungs-Anleitung
Manuel d'instructions et d'entretien - Manual de Uso y de Manutención - Handleiding



CONTENTS

1. The package	2
2. Technical specifications	3
3. Tires	4
4. Replacing the rim	6
5. Replacing a spoke	8
6. Disassembly, assembly and lubrication of hubs	14
7. Hubs adjustment	20
8. Sprocket assembly and removal	21
9. Brakes	23

This product is covered by the following patents:

Patents: FR 9810117 – IT 1296196 – US 5997104 – IT 1320644 – NL 1018963 – PT 102664 – TW 240365 – US 6783192 – BE 1201458 – EP 1201458 – FR 1201458 – DE 1201458 – DE 20121866.6 – IT 1320727 – IT 1201458 – NL 1201458 – PT 1201458 – CH 1201458 – TW 240364 – UK 1201458 – US 6491350

Patent applications: DE 19828009.2 – JP 10-217047 – CN 01140856.1 – CZ PV2001-3314 – FR 01.11810 – DE 10145149.0 – JP 2001-273748 – US 10/914454 – AU 79331/01 – CN 01123351.6 – CZ PV2001-2243 – IT TO2001A000210 – JP 2001-204664 – MX PAd2001010733 – EP 05425235.8 – EP 04425402.7 – TW 94113301

Design patent applications: IT DM/056139

Designs: CZ 30719 – IT 80805 – JP 1162273 – JP 1162274 – PT 30294 – TW 086727 – TW 086729 – US D458202 S – US D472507S

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.

Campagnolo S.r.l. reserves to modify the content of this manual without notice. The updated version will always be available www.campagnolo.com.

On our website you will also find information on the other Campagnolo products and the spare parts catalogue.

1. THE PACKAGE

The package your have purchased contains the following items (Fig. 1):

- A - The wheel
- B - The wheel carry-bag;
- C - "Owner's Manual PART 1" and "Owner's Manual PART 2 - **BORA**™ **ULTRA**™";
- D - The quick release skewer;
- E - The locking for clamping the Campagnolo® sprocketset (rearwheels with Campagnolo® FW body only);



WARNING!

This locking is not compatible with Campagnolo® 11T sprockets. Campagnolo® sprocket sets starting from 11 are sold with their special locking.

F - The locking for clamping the sprocket set of Shimano Inc. (rear wheels with FW body for sprockets of Shimano Inc. only);

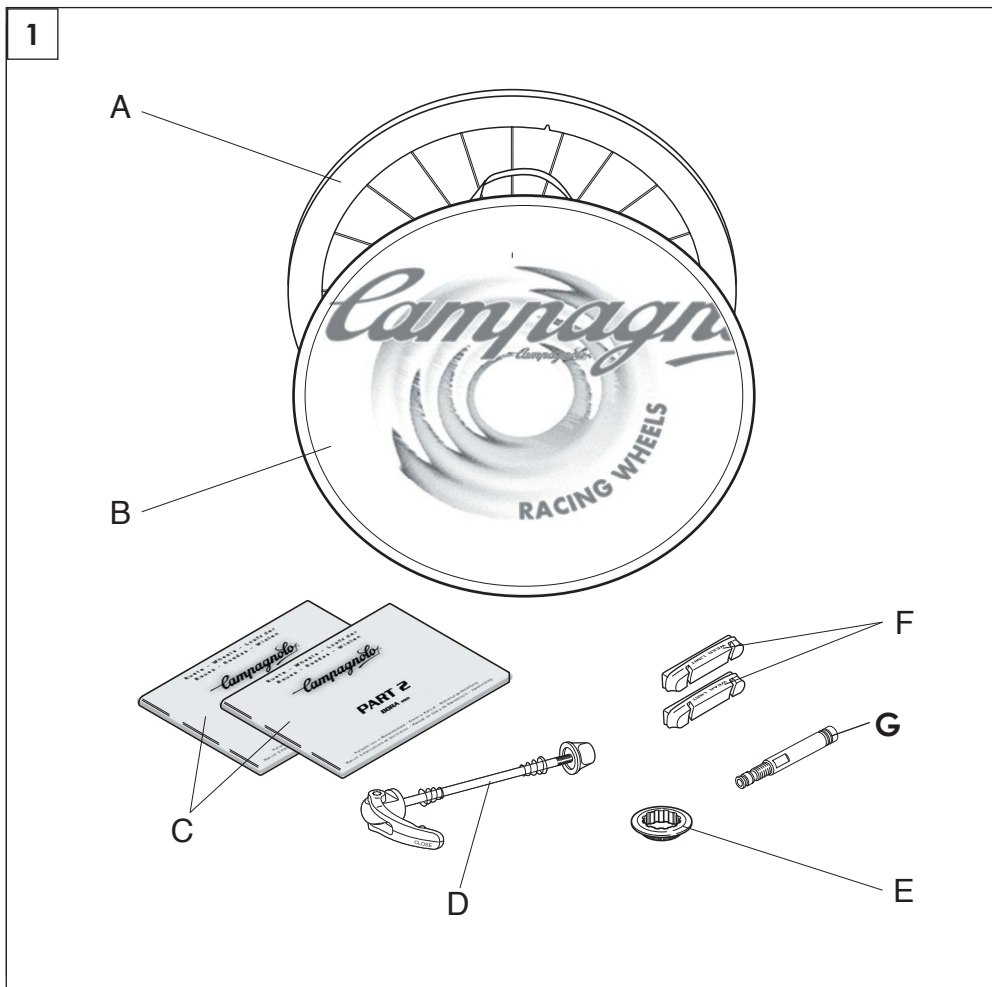


WARNING!

This locking is not compatible with Shimano® 11T sprockets that require their special locking code Campagnolo® CS-801.

G - Package containing a pair of dedicated brake pads which are mandatory for use with this model of wheels.

H - The adapter of inflating **UT-HU130**.



2. TECHNICAL SPECIFICATIONS

WHEEL TECHNICAL SPECIFICATIONS

- Rim diameter:
 - front: 634 mm
 - rear: 634 mm
- Hub type:
 - front: composite/light alloy
 - rear: composite/light alloy
- O.L.D.:
 - front: 100 mm
 - rear: 130 mm

SPOKES TECHNICAL SPECIFICATIONS



WARNING!

Only use genuine Campagnolo® spokes for your specific type and model of wheel. Failure to use correct spokes can result in an accident, personal injury or death.

Front wheel:

- Spokes type: AERO 2/1.5/2 - black
- Spokes number: 18
- Spokes length: 264 mm
- Recommended tension: 70÷90 Kg

Rear wheel - freewheel side:

- Spokes type: AERO 2/1.5/2 - black
- Spokes number: 14
- Spokes length: 268 mm
- Recommended tension: 110÷130 Kg

Rear wheel - side opposite the freewheel:

- Spokes type: AERO 2/1.5/2 - black
- Spokes number: 7
- Spokes length: 268 mm
- Recommended tension: 60÷80 Kg

The section of the two spokes adjacent to the position diametrically opposite the valve hole is oversized in order to obtain a dynamically balanced wheel. This occurs because the mass of these two spokes counterbalances the mass of the valve, thus obtaining a reduction of the unbalance of the masses in movement during rotation. In the event of replacement of the spokes themselves, keep them in the same position to maintain the wheel balancing effect.

3. TIRES

- The wheel you have purchased is designed to use tubular tires.
- Check to insure that the diameter and cross-section of the tubular tire you plan to use are compatible with the dimension of the rim.
- The installation of the tubular tire on the rim is an operation which requires special attention; refer to the instructions enclosed with the tubular tire. Use acetone to degrease the bonding surface of the rim before applying the glue for tubular installation. We recommend applying at least 3 coats of glue to the rim and 1 coat to the tire and to leave the tubular tire to "set" for at least 24 hours before using the wheel.



WARNING!

Failure to properly install the tire can cause sudden and unexpected loss of tire pressure, resulting in an accident, personal injury or death.

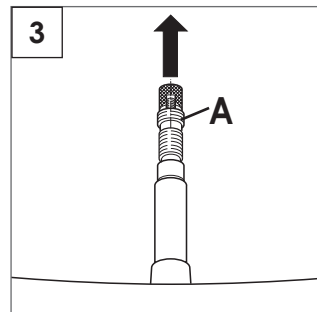
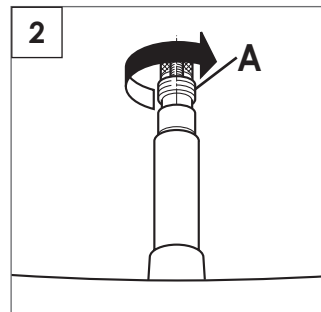


WARNING!

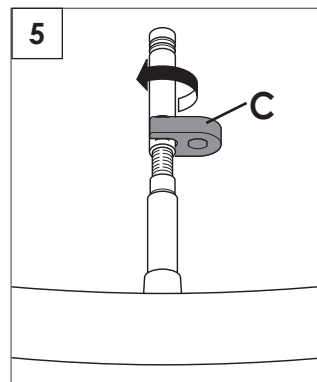
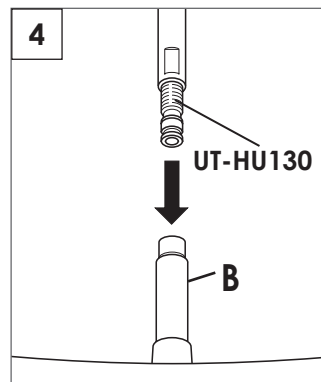
Do not sand-paper the rim before installing the tubular tire. Do not perform any operations which may cause abrasions, scratches or cuts to the rim or which may damage it in any other way. This damage could cause the rim to unexpectedly fail, resulting in an accident, personal injury or death.

3.1 - USE OF THE ADAPTER FOR INFLATING UT-HU130

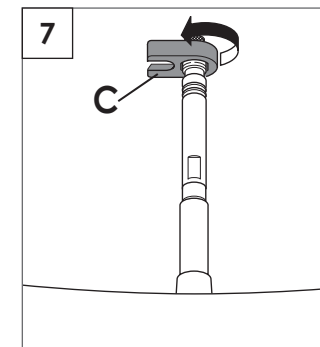
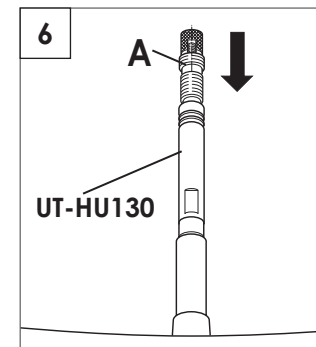
- Unscrew the valve A of the tubular (Fig. 2), by using if necessary the provided wrench (C - Fig. 7), and remove the valve (Fig. 3).



- Insert the adapter UT-HU130 into the small tubes B (Fig. 4) and screw it thoroughly by using **exclusively** the provided wrench C (Fig. 5).



- Insert the valve A into the adapter UT-HU130 (Fig. 6) and screw it strongly by using **exclusively** the provided wrench C (Fig. 7).



- Proceed with inflation of the tubular (follow the instructions on paragraph 3.2).

- To deflate the tubular, unscrew the valve and press it against the mechanism inside the adapter.

3.2 - INFLATING AND DEFLATING THE TIRE

- To inflate the tire: remove the cap, unscrew the valve and inflate using a pump with a pressure gauge to obtain the required pressure, then tighten the valve and re-fit the cap.
- To deflate the tire: remove the cap, slightly unscrew the valve, then press it until the required pressure is obtained; tighten the valve and re-fit the cap.



CAUTION!

Never exceed the maximum inflation pressure recommended by the tire manufacturer.

Excessive tire pressure reduces the grip of the tire on the road and increases the risk that the tire will unexpectedly burst. Inflation pressure that is too low reduces tire performance and increases the probability of sudden and unexpected loss of tire pressure. In addition, premature wear and damage to the rim may occur.

Note

- The tire pressure should also be adjusted depending on the weight of the rider; a heavy rider should have a greater tire pressure than a light rider.



WARNING!

Incorrect tire pressure could cause tire failure or loss of control of the bicycle, resulting in an accident, personal injury or death.

4. REPLACING THE RIM

Note

Exposure to sunlight may cause the rim to turn yellow. This does not affect the performance and safety of the wheel. Nevertheless, we recommend that you protect the wheels from direct sunlight when not in use.

- Before commencing wheel disassembly operations, write on a piece of paper the original layout of the rim and the spoke arrangement to ensure that the wheel can be re-assembled correctly.
- Only use new, original Campagnolo® spare parts.
- Always prevent the rotation of the spokes when nuts are tightened or loosened. Make sure that no damage is caused to the surface of the spokes.

CAUTION!

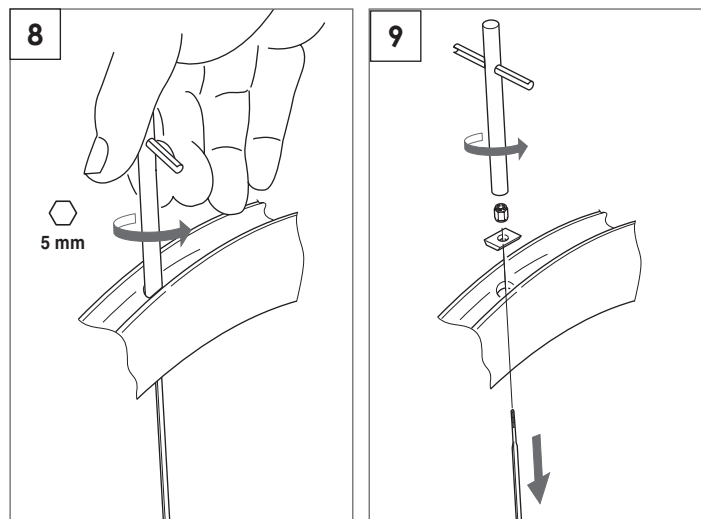
Take special care when handling the spokes during assembly to prevent accidentally scratching the rim.

- Using a 5 mm hex wrench, unscrew the nuts on all wheel spokes by one turn (Fig. 8), holding them steady to prevent rotation.

WARNING!

Be very careful not to damage the spokes. Using wheels that have not been centred properly or which have broken or damaged spokes may result in accidents, personal injury or death.

- For each spoke, completely unscrew the nut, remove the pad and slide the spoke out of the rim.



- For every spoke (Fig. 10):
 - insert the new spoke in the hole in the new rim.
 - insert the plate, positioning the longest side longitudinally compared with the rim rotation direction.
 - tighten the nut.

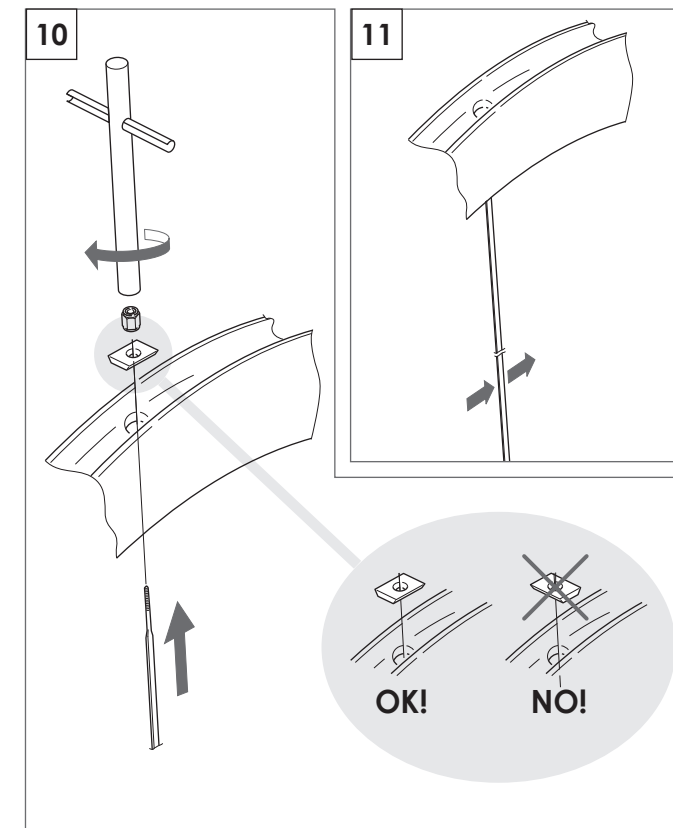
Attention

After completing the operation, check that the flat spoke (aero) is oriented in an aerodynamic position (Fig. 11).

WARNING!

When fitting the wheel, check that the plates remain in position since an incorrectly positioned plate may cause irreparable damage to the profile of the rim when tensioning the spokes. This damage could cause the rim to unexpectedly fail (Fig. 10), resulting in an accident personal injury or death.

- Perform these operations for all spokes.
- Following the operations described in Section 5 of the "Owner's Manual - PART 1":
 - Tighten and Settle the Spokes.
 - Check centering and wheel dishing.



5. REPLACING A SPOKE

5.1 - FRONT WHEEL AND REAR WHEEL ON THE SIDE OPPOSITE THE FREEWHEEL

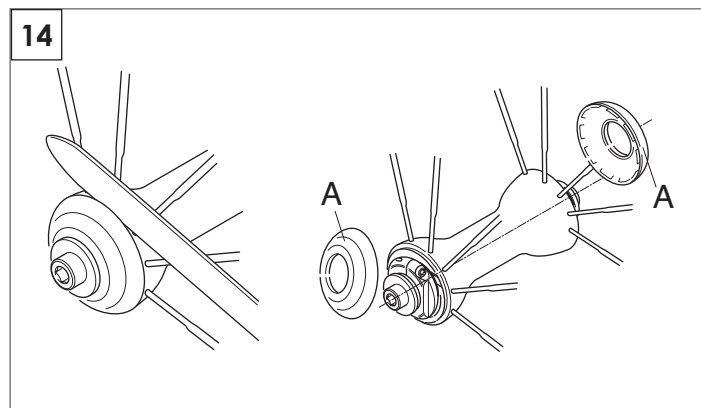
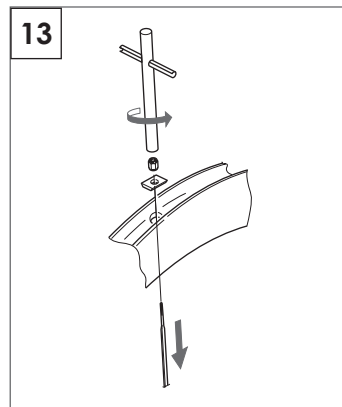
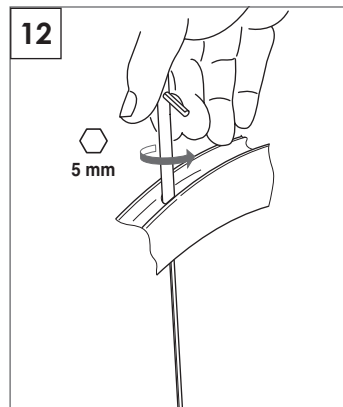
- Before proceeding with assembly, check in the technical specifications on page 3 the type and length of the spoke to be replaced, the recommended value and the maximum value which must not be exceeded when tightening the spokes.
- Check that there are no residues of sand or any other foreign material inside the rim and, if necessary, remove them with a jet of compressed air.
- Obtain a new original Campagnolo® replacement spoke.
- Always prevent the rotation of the spokes when nuts are tightened or loosened. Make sure that no damage is caused to the surface of the spokes.



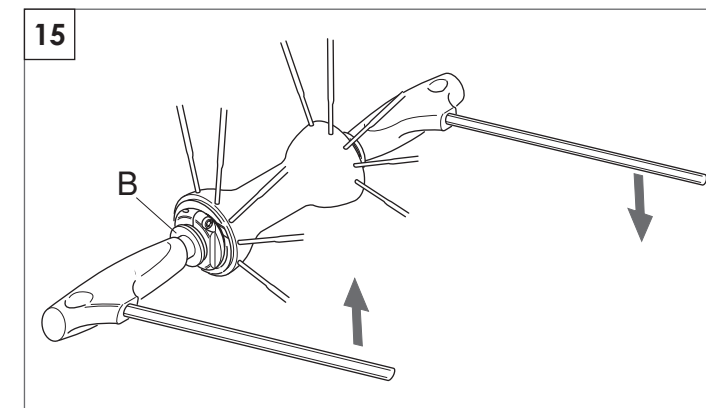
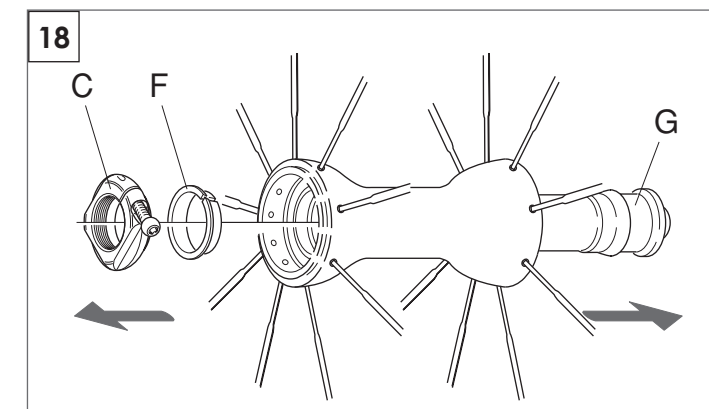
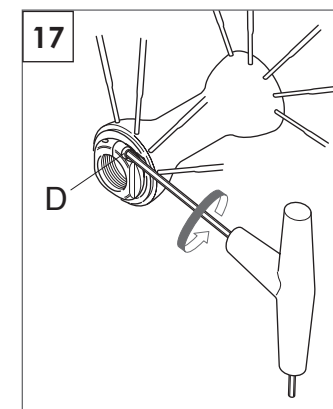
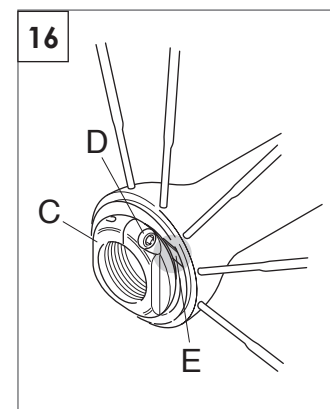
CAUTION!

Take special care when handling the spokes during assembly to prevent accidentally scratching the rim.

- Using a 5 mm hex wrench, completely unscrew the nut of the spoke to be replaced (Fig. 12), holding the latter steady to prevent rotation.
- Remove the nut and plate, then slide the spoke out of the rim (Fig. 13).
- Using a stiff blade (such as small knife) positioned as indicated in Fig. 14 and taking care not to damage the hub or the spokes, remove the side covers (A) from the hub.



- Unscrew the locking nut (B - Fig. 15) with a fully inserted 5 mm Allen wrench; counter the rotation of the axle with another 5 mm Allen wrench fully inserted on the opposite end of the axle itself.
- Align the screw (D - Fig. 16) of the lock ring (C - Fig. 16) with the groove (E - Fig. 6) on the hub body.
- Using a 2.5 mm Allen wrench, slacken the screw by 3 turns (D - Fig. 17).
- Unscrew and remove the lock ring (C - Fig. 18), remove the ring (F - Fig. 18), then slide out the axle (G - Fig. 18).



- Slide out the spoke to be replaced (H - Fig. 19) from the hub.
- Insert the new spoke (I - Fig. 20) in the hole in the hub, insert the plate and retighten the nut.



WARNING!
When fitting the wheel, check that the plates remain in position since an incorrectly positioned plate may caused irreparable damage to the profile of the rim when tensioning the spokes. This damage could cause the rim to unexpectedly fail, resulting in an accident, personal injury or death (Fig. 21).

- Refit the hub, performing disassembly operations in reverse order.

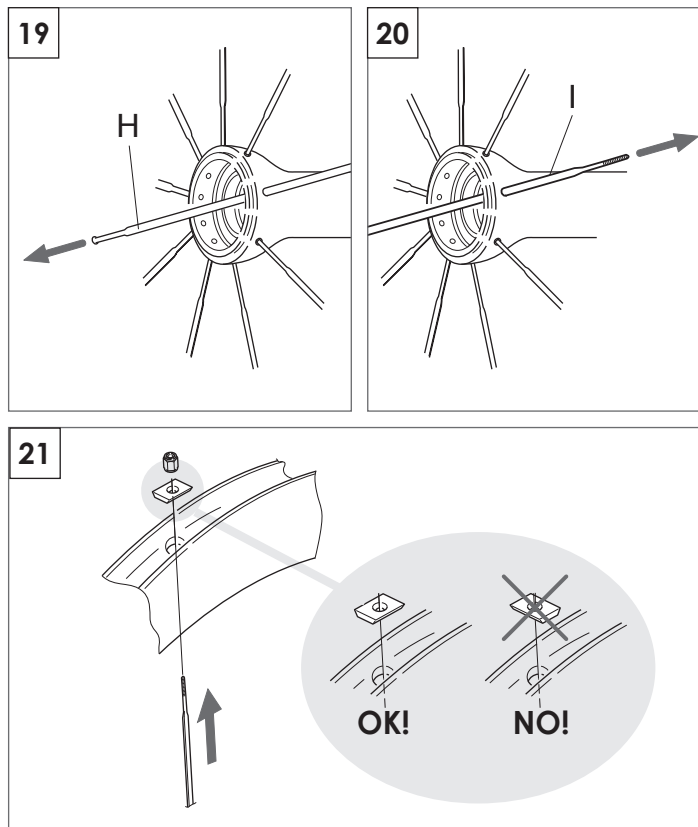
Attention

When inserting the axle, be careful not to move the ball bearings out of their seats.

Attention

After completing the operation, check that the flat spoke (aero) is oriented in an aerodynamic position (Fig. 11 - Page 8).

- Following the operations described in Section 5 of the "Owner's Manual - PART 1":
 - Tighten and Settle the Spokes.
 - Check centering and wheel dishing.
- After having replaced the spoke and tensioned and centered the wheel, adjust the hub (see section 7).



5.2 - REAR WHEEL ON THE FREEWHEEL SIDE

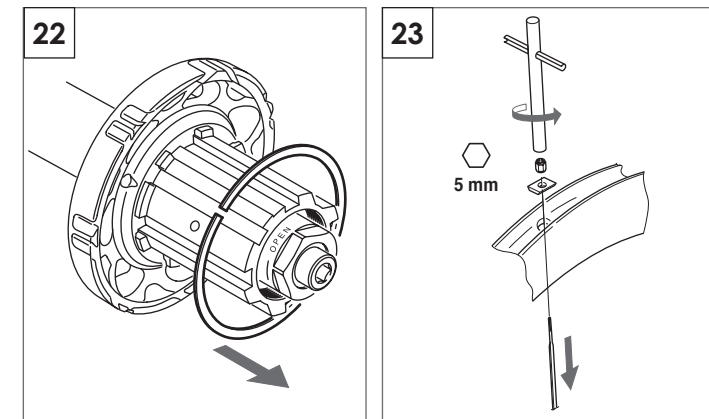
- Before proceeding with assembly, check in the technical specifications on page 3 the type and length of the spoke to be replaced, the recommended value and the maximum value which must not be exceeded when tightening the spokes.
- Check that there are no residues of sand or any other foreign material inside the rim and, if necessary, remove them with a jet of compressed air.
- Obtain a new, original Campagnolo® replacement spoke.
- Always prevent the rotation of the spokes when nuts are tightened or loosened. Make sure that no damage is caused to the surface of the spokes.



CAUTION!

Take special care when handling the spokes during assembly to prevent accidentally scratching the rim.

- Remove the sprocket set (see chapter 8).
- Slightly closed the spoke retainer ring and slide it out from the freewheel side (Fig. 22).
- Using a 5 mm hex wrench, completely unscrew the nut of the spoke to be replaced, holding the latter steady to prevent rotation, remove the plate and then slide the spoke out of the rim (Fig. 23).



- Remove the spoke together with the cable end (A - Fig. 24).

**CAUTION!**

If necessary, first lift the spoke overlapping the one to be replaced and, after assembly of the new spoke, make sure it is returned to exactly the same position.

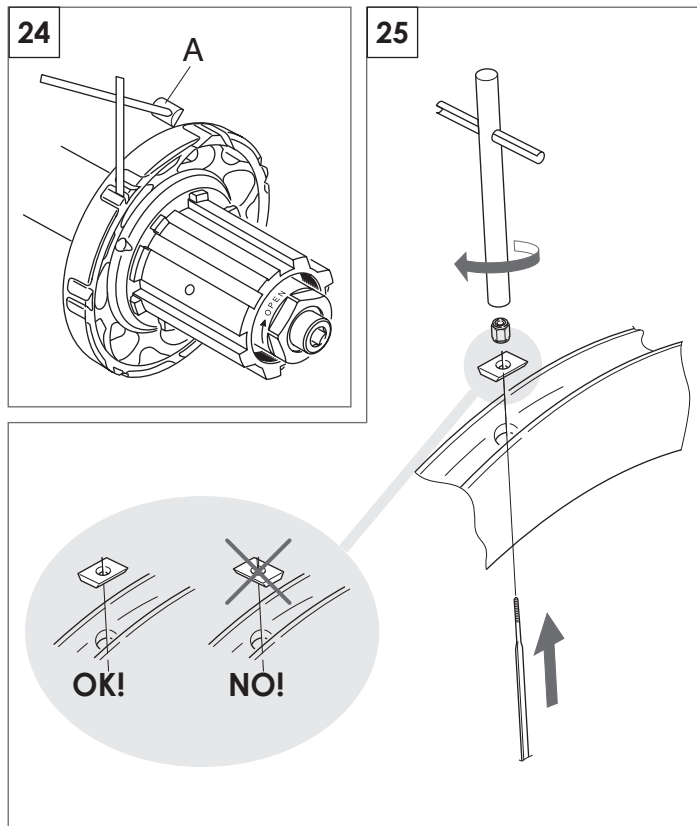
- Insert the new spoke in the hole in the rim, insert the plate positioning the longest side longitudinally compared with the rim rotation direction, then tighten the nut (Fig. 25).

**WARNING!**

When fitting the wheel, check that the plates remain in position since an incorrectly positioned plate may cause irreparable damage to the profile of the rim when tensioning the spokes. This damage could cause the rim to unexpectedly fail, resulting in an accident, personal injury or death (Fig. 25).

**WARNING!**

Check that the side of the rim does not show any sign of significant wear, damage or deformation on the braking track, which could cause the rim to unexpectedly break, resulting in an accident, personal injury or death.

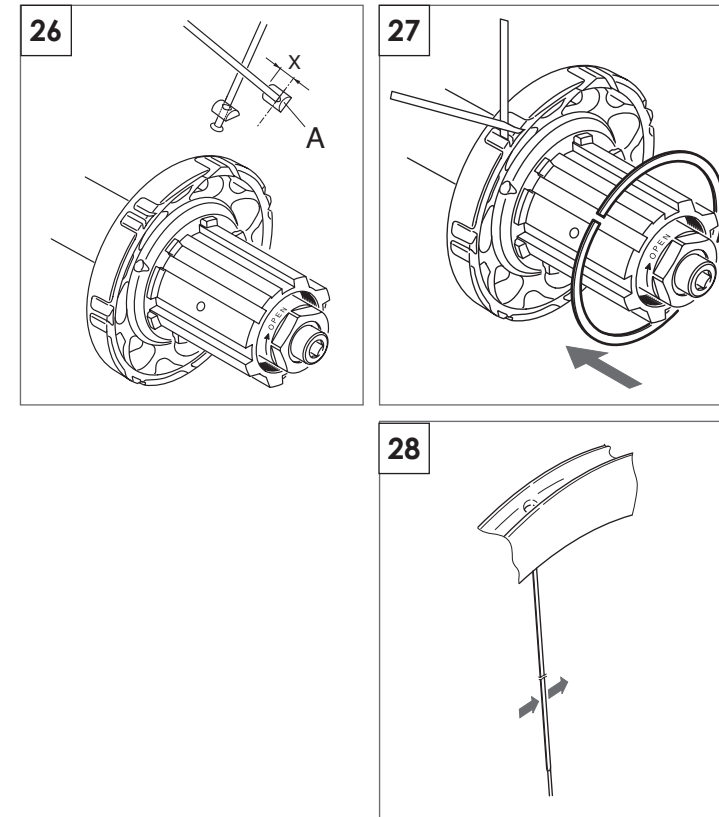


- Insert the new spoke in the specific seat in the hub, turning the longer side (X - Fig. 26) of the cable end (A - Fig. 26) towards the inside.
- If necessary, reposition the overlapping spoke, making sure that the overlap is correct where the two meet.
- Slightly closed the spoke retainer ring, then refit it (Fig. 27).

Attention

After completing the operation, check that the flat spoke (aero) is oriented in an aerodynamic position (Fig. 28).

- Following the operations described in Section 5 of the "Owner's Manual - PART 1":
 - Tighten and Settle the Spokes.
 - Check centering and wheel dishing.
- After having replaced the spoke and tensioned and centered the wheel, adjust the hub (see section 7).



6. DISASSEMBLY, ASSEMBLY AND LUBRICATION OF HUBS

BORA™ ULTRA™ wheel hubs do not have lubrication holes, so they have to be removed to perform this operation.

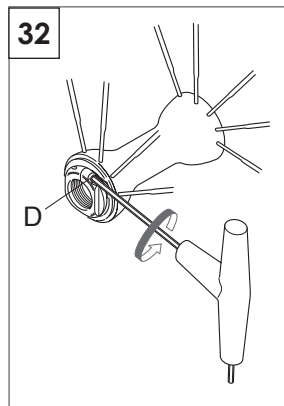
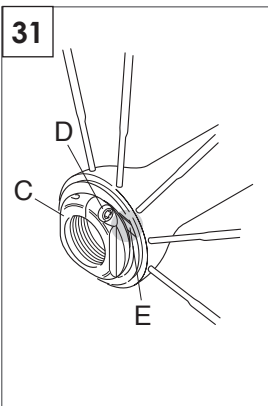
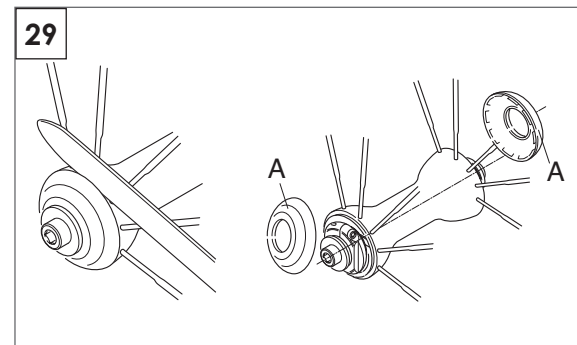
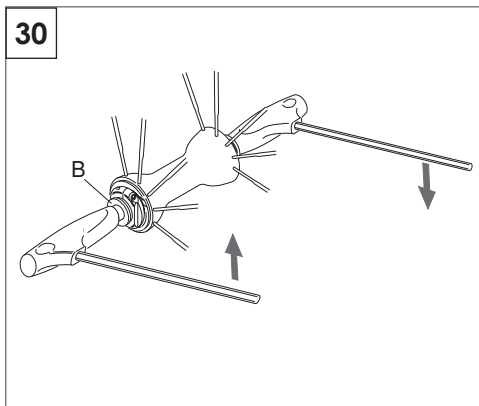


WARNING!

Always wear protective gloves and glasses while working on the hubs.

6.1 - DISASSEMBLY AND ASSEMBLY OF THE FRONT HUB

- Using a stiff blade (such as small knife) positioned as indicated in Fig. 29 and taking care not to damage the hub or the spokes, remove the side covers (A) from the hub.
- Unscrew the locking nut (B - Fig. 30) with a fully inserted 5 mm Allen wrench; counter the rotation of the axle with another 5 mm Allen wrench fully inserted on the opposite end of the axle itself.
- Align the screw (D - Fig. 31) of the lock ring (C - Fig. 31) with the groove (E - Fig. 31) on the hub body.
- Using a 2.5 mm Allen wrench, slacken the screw by 3 turns (D - Fig. 32).



- Unscrew and remove the lock ring (C - Fig. 33), press the axle (G - Fig. 33) towards the hub body, remove the ring (F - Fig. 33), the cone (H - Fig. 33), slide out the axle (G - Fig. 33) from the hub, remove the cone (I - Fig. 33), the gaskets (J - Fig. 33) taking care not to damage them and the ball bearings (K - Fig. 33).

- If it is necessary to replace the cups, contact a Campagnolo® Service Center.

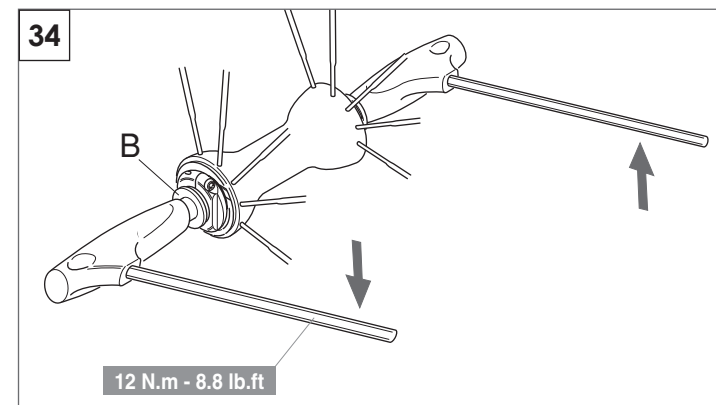
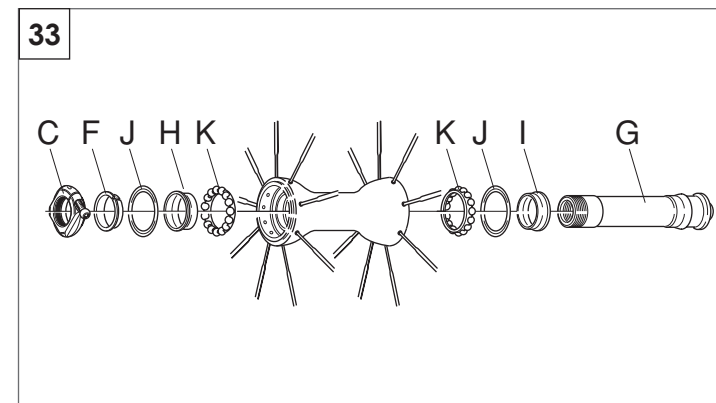
- Proceed to refit the system performing disassembly operations in reverse order.

Attention

When inserting the axle, be careful not to move the ball bearings out of their seats.

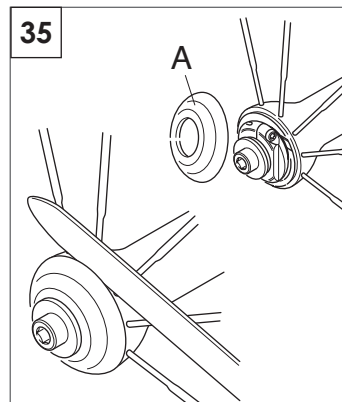
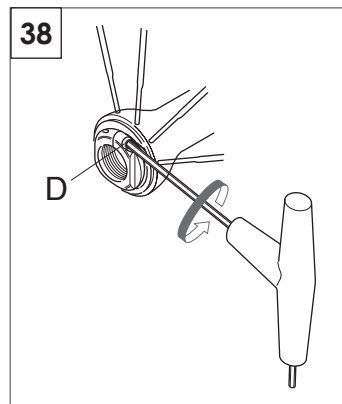
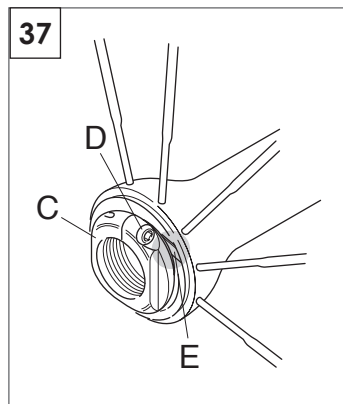
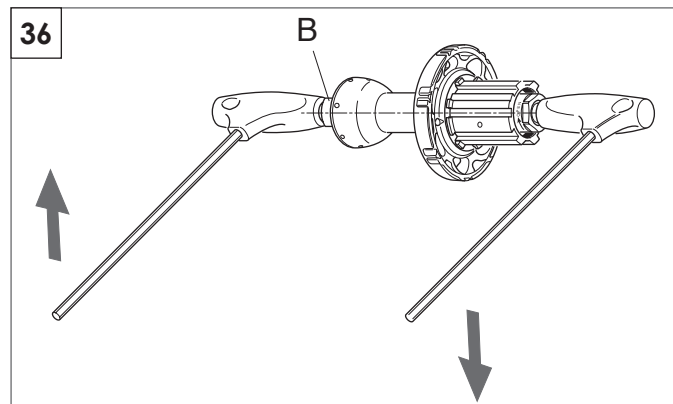
- Tighten the locking nut (B - Fig. 34) to a torque setting of 12 N.m - 8.8 lb.ft.

- Adjust the hub as illustrated in section 7.



6.2 - DISASSEMBLY AND ASSEMBLY OF THE REAR HUB

- Remove the sprocket set (see chapter 8).
- Using a stiff blade (such as small knife) positioned as indicated in Fig. 35 and taking care not to damage the hub or the spokes, remove the side covers from the hub (A - Fig. 35).
- Unscrew the locking nut (B - Fig. 36) with a fully inserted 5 mm Allen wrench; counter the rotation of the axle with another 5 mm Allen wrench fully inserted on the opposite end of the axle itself.
- Align the screw (D - Fig. 37) of the lock ring (C - Fig. 37) with the groove (E - Fig. 37) on the hub body.
- Using a 2.5 mm Allen wrench, slacken the screw by 3 turns (D - Fig. 38).



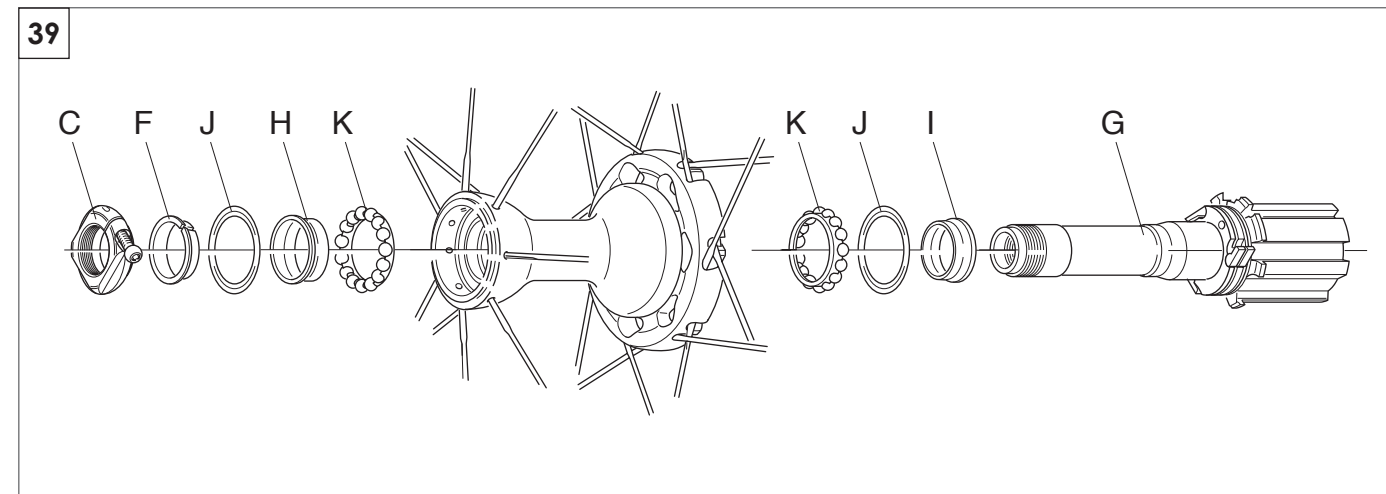
- Unscrew and remove the lock ring (C - Fig. 39), press the axle (G - Fig. 39) towards the hub body, making sure that the freewheel body comes out of its seat; slide out the axle-freewheel body unit, remove the ring (F - Fig. 39), the cone (H - Fig. 39), the cone (I - Fig. 39), the gaskets (J - Fig. 39) taking care not to damage them and the ball bearings (K - Fig. 39).

- If it is necessary to replace the cups, contact a Campagnolo® Service Center.

- Carefully clean the components, grease the ball bearings and proceed to refit the system performing disassembly operations in reverse order.

Attention

When inserting the axle, be careful not to move the ball bearings out of their seats.



- Position the freewheel close to the hub and hold it pressed against the latter; lower one by one the three pawls with an Allen wrench or a screwdriver and insert freewheel fully into its seat (Fig. 40).

- Tighten the locking nut (E - Fig. 41) with a 17 mm wrench, holding the axle steady from the freewheel side with a snugly fitted 5 mm Allen wrench (approximate torque setting: 15 N.m - 11 lb.ft).

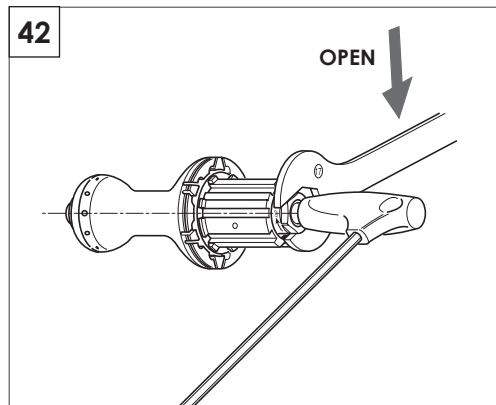
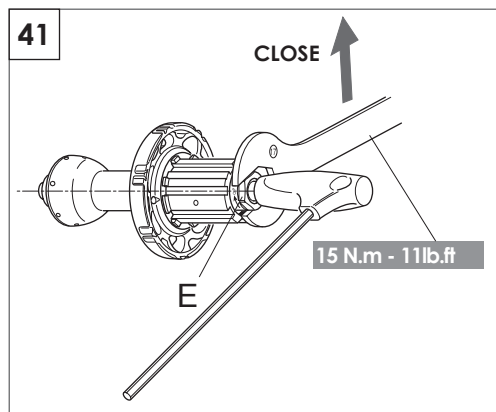
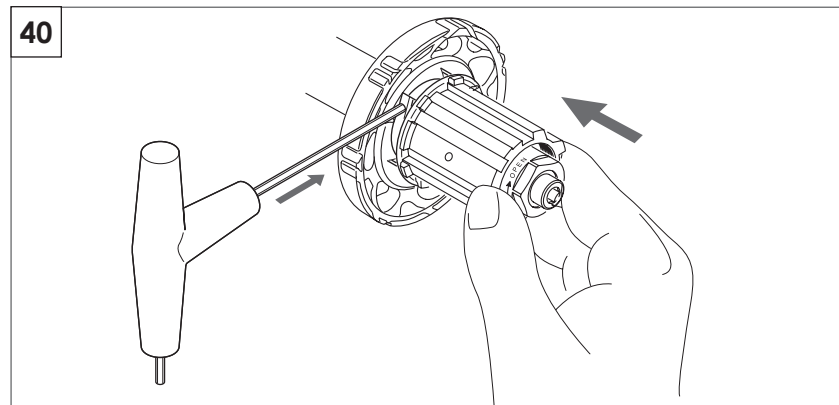
- Adjust the hub as illustrated in section 7.

Note

The BORA freehub is not compatible with sprocket sets with last position sprocket (near the flange) lower than 21 teeth.

6.3 - REMOVING THE FREEWHEEL BODY

Hold the axle steady by fully inserting a 5 mm Allen wrench on the freewheel side (Fig. 42). Completely unscrew the nut by turning it clockwise with a 17 mm wrench. Turn the FW body until the grooves of the FW body and the axle (Fig. 43) match. Remove the freewheel body from the axle.

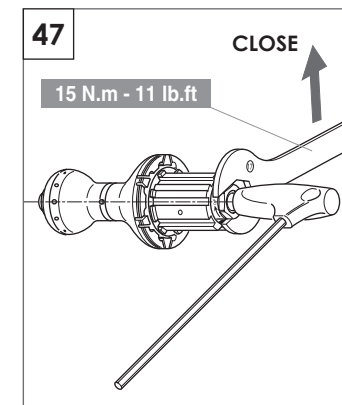
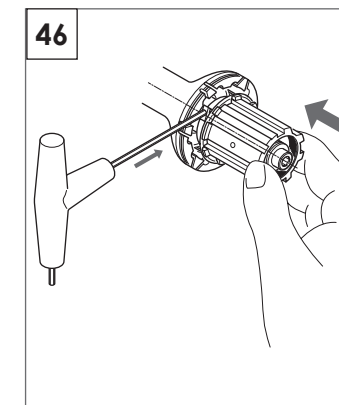
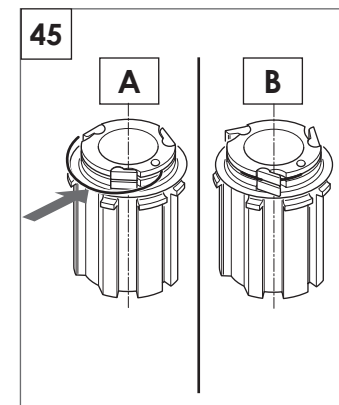
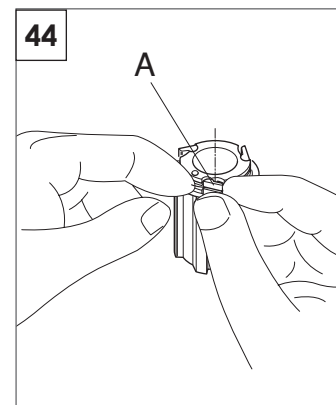
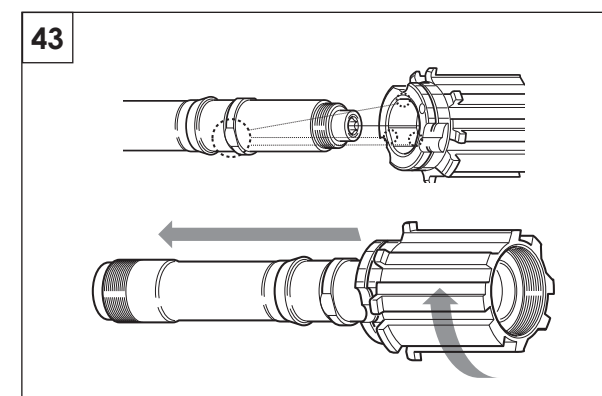


6.4 - REMOVAL AND INSTALLATION OF PAWLS

Remove the spring by slightly raising the pawl (A - Fig. 44), being careful not to distort it. Pull out the pawls and replace them if necessary. Insert the bent part of the spring into the hole of the pawl carrier. Fit the spring between the openings in each pawl, simultaneously setting the pawls into their final position (Fig. 45A). When the operation is complete make sure that all three pawls rotate freely and remain in the open position (Fig. 45B).

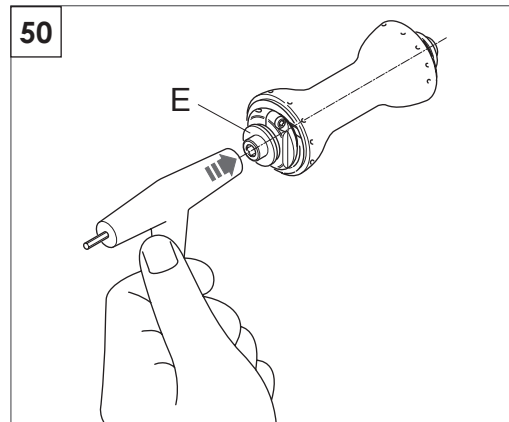
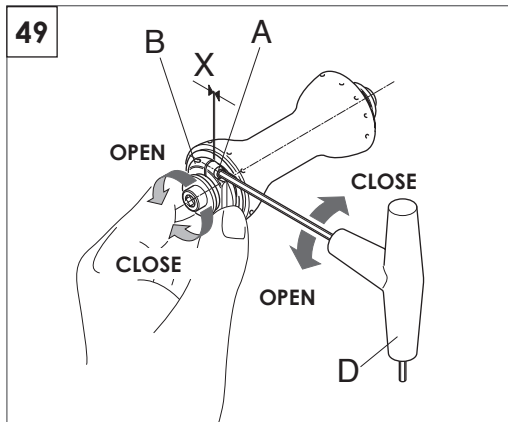
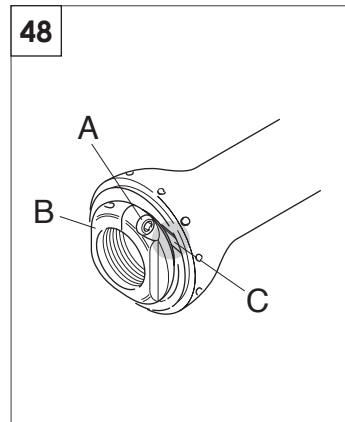
6.5 - FITTING THE FREEWHEEL BODY ON THE HUB

Turn the FW body until the grooves of the FW body and the axle (Fig. 43) match. Fully insert the freewheel body on the axle. Place the freewheel on the hub and hold it in position. Lower the three (3) pawls one by one with an Allen wrench or screwdriver, and fully insert the freewheel in its seat (Fig. 46). Hold the axle steady by fully inserting a 5 mm Allen wrench on the freewheel side. Tighten the locking screw with a 17 mm wrench to a torque of 15 N.m (11 lb.ft).



7. HUBS ADJUSTMENT

- Using a stiff blade (such as small knife) positioned as indicated in Fig. 29 (page 15) and taking care not to damage the hub or the spokes, remove the side covers from the hub.
- Align the screw (A - Fig. 48) of the lock ring (B - Fig. 48) with the groove (C - Fig. 48) on the hub body.
- Fully insert the 2.5 mm Allen wrench (D - Fig. 49) into screw (A - Fig. 49) and tighten it by about three (3) turns.
- To reduce axle clearance, tighten locking (B - Fig. 49) by turning it clockwise by hand or with a 21 mm wrench.
- To increase axle clearance, loosen locking (B - Fig. 49) by turning it counter-clockwise by hand or with a 21 mm wrench. Strike screw (E - Fig. 50) lightly with the plastic handle of the Allen wrench.
- Tighten the Allen screw (A - Fig. 49) with the wrench properly seated on it until the gap (X - Fig. 49) on the locking (B - Fig. 49) is completely closed.
- Make sure that the adjustment is correct (the axle slides easily and without play), otherwise repeat the adjustment procedure.



8. SPROCKET ASSEMBLY AND REMOVAL



WARNING!

Always wear protective gloves and glasses while working on the sprockets.

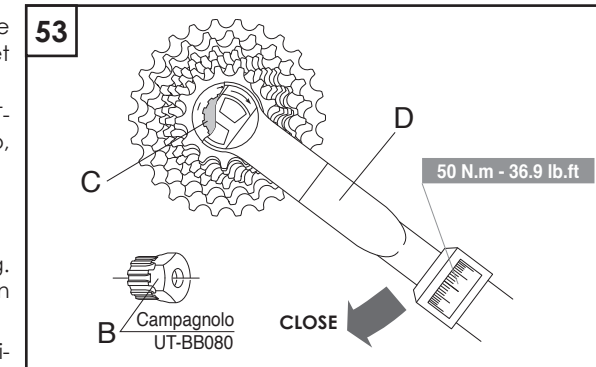
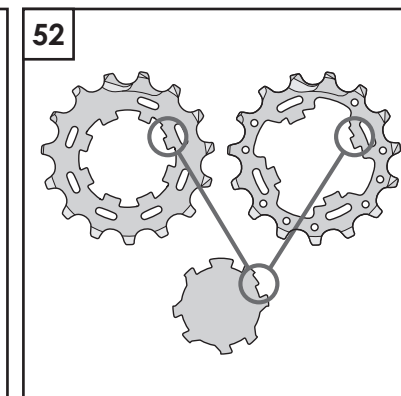
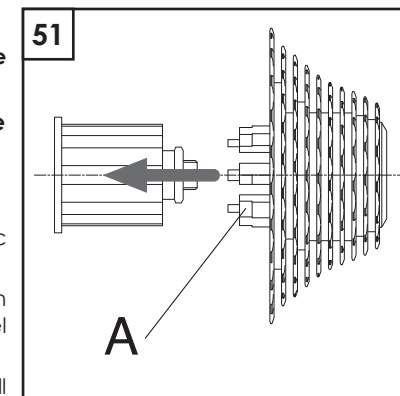
8.1 - CAMPAGNOLO® SPROCKETS (on Campagnolo® type FW body)

8.1.1 - ASSEMBLY

- The sprockets are pre-assembled and timed on the plastic support (A - Fig. 51).
- Insert the support on the side of the freewheel body, align the spline patterns, press the sprockets onto the freewheel and extract the support (A) from the hub (Fig. 51).
- If installing the sprockets without the plastic support, install the individual or preassembled sprockets and the spacers on the sprocket body of the hub aligning the spline patterns (Fig. 52). The profile of the freewheel body with two asymmetrical grooves ensures automatic sprocket timing since there is only one assembly option.
- Using a torque wrench (D - Fig. 53) equipped with the Campagnolo tool UT-BB080 (B - Fig. 53), tighten the locking (C - Fig. 53), which is provided with the hub, on to the freewheel body to 50 N.m (36.9 lb.ft).

8.1.2 - DISASSEMBLY

- Remove the locking (A - Fig. 54) using the Campagnolo tool UT-BB080 (B - Fig. 54) with a 24 mm hexagonal wrench (C - Fig. 54) and the Campagnolo chain whip UT-CS060 (Fig. 54).
- Insert the plastic sprocket carrier on the side of the freewheel body, align the spline patterns on the body with those on the carrier and slide the sprockets onto it.



- Slide the sprocket carrier, with the sprockets, off the freewheel body.

8.2 - 10S SPROCKETS STARTING FROM 11 AND 12 OF SHIMANO INC. (ON FW BODY FOR 10S SPROCKETS STARTING FROM 11 AND 12 OF SHIMANO INC.)

8.2.1 - ASSEMBLY

- Fit the sprockets on the FW body and check that:
 - the surface with the name of the groupset of each sprocket is facing the outside of the FW body.
 - the broadest grooving of the sprocket (A - Fig. 55) is aligned with the broadest of the FW body (B - Fig. 55).
- Using a torque wrench (D - Fig. 53) equipped with the Campagnolo tool UT-BB080 (B - Fig. 53), tighten the locking (C - Fig. 53), which is provided with the hub, on to the freewheel body to 50 N.m (36.9 lb.ft).

Note

The locking provided with the hub is not compatible with Shimano® 11T sprockets that require their special locking Campagnolo® CS-801.

Note

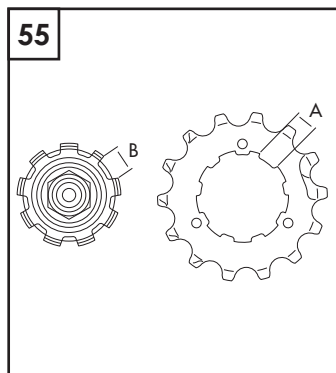
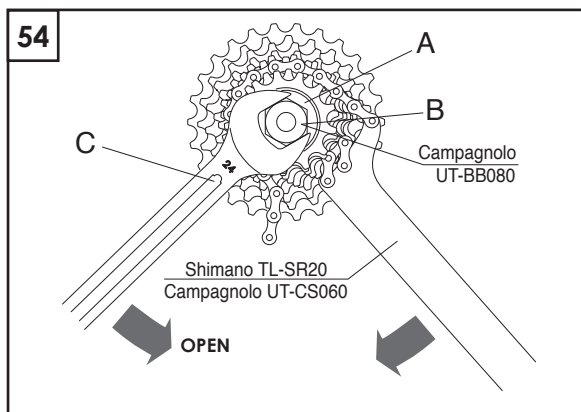
Tools supplied by other manufacturers for components similar to Campagnolo® components, including but not limited to Shimano Inc., may not be compatible with Campagnolo® components. Likewise, tools supplied by Campagnolo S.r.l. may not be compatible with components supplied by other manufacturers. Always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

! WARNING!

Failure to insure compatibility between tools and components could result in improper operation or failure of the component, an accident, personal injury or death.

8.2.2 - DISASSEMBLY

- Remove the locking (A - Fig. 54) using the Campagnolo tool (B - Fig. 54 - Campagnolo code UT-BB080) with a 24 mm hexagonal wrench (C - Fig. 54) and the Shimano chain whip TL-SR20 (Fig. 54).
- Take the sprockets off the FW body.



9. BRAKES

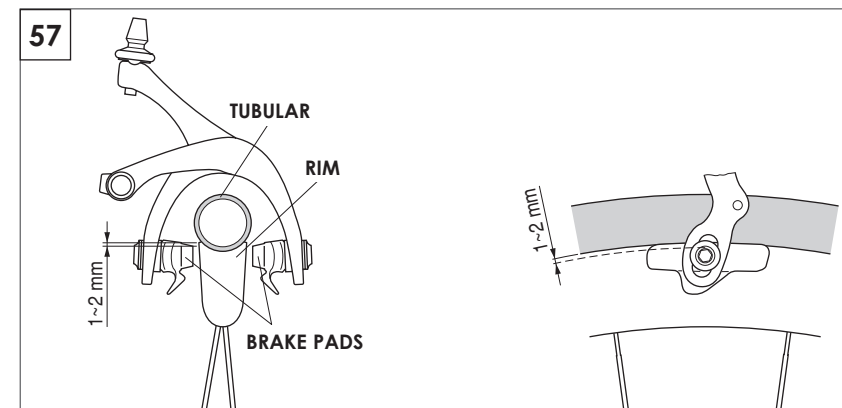
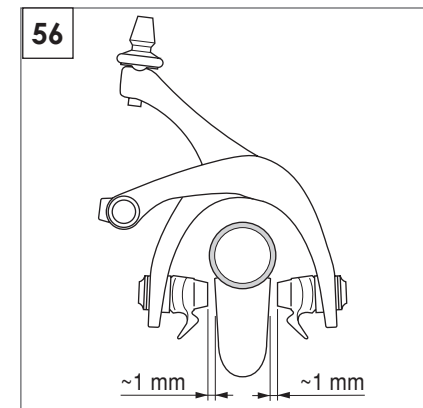
! WARNING!

Use only the special brake pads part number BR-RE701 (for Campagnolo® brakes) and part number BR-701X (for Dura-Ace brakes) with the composite BORA™ ULTRA™ tubular rims. Use of these pads with any other type of rim could result in insufficient and/or irregular braking performance, thereby causing an accident, personal injury or death. Use of any other brake pads-rim combination could also seriously damage the rim. Always check that the brake pad is compatible with the rim by checking the specifications on the brake pad package.

9.1 - CAMPAGNOLO® BRAKES

Also consult the section "Brakes" of the "Owner's Manual - Part 1.

- Slide out the brake pads from the pad holders and replace them with those supplied in the wheel package.
- Adjust the brake pads so that they are perfectly aligned with the wheel braking surface, about 1 mm from the surface of the rim (Fig. 56) so that they are positioned at about 1~2 mm from the top edge of the rim (Fig. 57) (refer to the brake pad instruction sheet).
- Before every ride:
 - make sure that the brakes function correctly.
 - make sure that the cables and brake pads are in good condition.
 - make sure that the brake pads are perfectly aligned with the wheel braking surface, about 1 mm from the surface of the rim (Fig. 57) so that they are positioned at about 1~2 mm from the top edge of the rim (Fig. 56) (refer to the brake pad instruction sheet).



- To maintain the brake pads in efficient working order and to avoid wear on the sides of the rims, you should remove with a file any residue of sand, debris or foreign objects which may become embedded in the brake pads, especially during use in the rain.
- 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. 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.

9.2 - BRAKES OF OTHER MANUFACTURER

Please consult the instruction sheet supplied by the manufacturer.

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.