

bitubo[®]
RACE SUSPENSION



QUALITY SYSTEM CERTIFICATED
UNI EN ISO 9001:2008
50 100 9149

ISTRUZIONI MONTAGGIO E REGOLAZIONE
CARTUCCIA JBH
MOUNTING & SETTING MANUAL
JBH CARTRIDGE

Revisione - Revision:

Data - Date:

00

21/05/2018

NUMERO MATRICOLA - SERIAL NUMBER

NUMERO ABE - ABE NUMBER

CODICE BITUBO - BITUBO CODE

HD008JBH02V1WO

Gambale forcella Fork leg	Setting	Cost. Molla Spring rate [kg/mm]	Cost. Molla interna Top out Spring rate [kg/mm]	Precarico Preload [mm]	Regolazione Smorzamento Damping Adjuster [clicks]	Livello olio Oil level [mm]	Sfilamento forcella Fork strip out Q [mm]	Differenza interasse dall'originale Length difference From the original [mm]
COMP.	GR50208	0,75	0,74	5	15	70	Orig.	0
REB.	GR50209	0,75	0,74	5	12	70		



BITUBO utilizza e raccomanda – uses and recommends



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PRECAUTIONS AND SAFETY



Before removing the motorbike fork, take note of the sag values and fork assembly position compared to the steering plates, in the currently used configuration

To identify the adjustment position, see photo on page 1

The cartridge is lubricated during the production phases, thus finding oil or grease on some parts is to be considered normal.

A set-up table is enclosed at the end of these instructions, used to note fork adjustment changes. Our *Bitubo Service Centres*, are ready to help you find the best *Set-Up* for your ride. (Service Centre list in the "Service" section at www.bitubo.com).

WARRANTY:

Bitubo cannot be held liable for product installation operations other than those described herein. Furthermore, Bitubo cannot be held liable for any modifications to the product not described in this manual or not authorised in writing.

Read this manual carefully to obtain the best performance.

The product warranty will be invalidated by incorrect installation or modifications carried out without Bitubo's written authorisation.

WARNINGS

- Bitubo cannot be held liable for any damages to the product or injuries to people if the instructions of this manual are not followed to the letter or if the product is not assembled in a specialised workshop or by qualified personnel.
- The cartridge is designed to be exclusively used on road and off-road use could irreversibly jeopardise operations and, consequently, vehicle control.
- The fork cartridge contains pressurised nitrogen gas
- If no specific mounting instructions are supplied, observe the procedures described in the Technical Manuals of the motorbike Constructor.
- Please keep this manual in a safe place since it contains information on the initial set-up in addition to the serial number to be used for warranty service.

"JBH-V" series CARTRIDGE REGULATION

Customarily, the hydraulic regulation click count - with reference to the recommended setting indicated in the table - starts from the "fully closed" position (regulation fully screwed in), considered **position "0"**.



WARNING: Do not force the regulation when the "0" position is reached, it could damage the regulation and jeopardise good shock absorber operations.

WARNING: Spring pre-load and hydraulic compression and rebound regulations are found on the upper cap. The two cartridges perform separate hydraulic functions: the cartridge with the yellow hydraulic adjuster **knob** performs hydraulic compression while the cartridge with the blue hydraulic adjuster **knob** performs hydraulic rebound.

Thus is it normal that hydraulic rebound force is not felt when the fork leg on which the compression cartridge is installed is compressed and vice versa for the rebound fork leg.

HOW TO ADJUST THE FORK CARTRIDGE

COMPRESSION



WARNING: a CH4 Allen key is required to manoeuvre the **adjuster knob**; be careful not to force the adjustment limit stops
Customarily and consistent with our XXF mono shock absorber, the cartridge with hydraulic compression (identified by the **yellow adjuster knob**) is **installed on the left motorbike fork leg.**

Switching this position does not infer any change in fork operations but may confuse the technicians who use our products.

The adjustment working range runs from position "0" (fully closed) to 20 clicks; To increase damping, manually turn the **adjuster knob** clockwise. To decrease damping, turn it counter-clockwise.

REBOUND



WARNING: a CH4 Allen key is required to manoeuvre the **adjuster knob**; be careful not to force the adjustment limit stops
Customarily and consistent with our XXF mono shock absorber, the cartridge with hydraulic rebound (identified by the **blue adjuster knob**) is **installed on the right motorbike fork leg.**

Switching this position does not infer any change in fork operations but may confuse the technicians who use our products.

The adjustment working range runs from position "0" (fully closed) to 20 clicks; To increase damping, manually turn the **adjuster knob** clockwise. To decrease damping, turn it counter-clockwise.

FORK SLIPPING ADJUSTMENT

The Bitubo cartridges are of the same length (at maximum extension) as the original cartridges, since equipped with internal spring.

Bitubo also supplies cartridges with lengths other than the original.

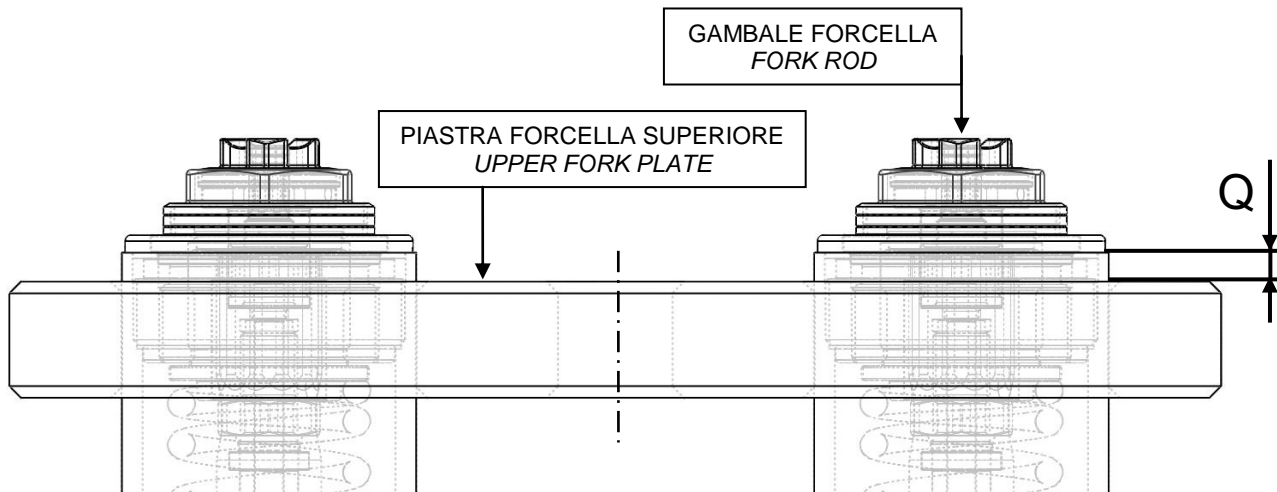
In these cases, the "distance difference from the original" value is indicated in the "base setting" table on page 1.

Thus, restore the correct front axle height (see drawing below):

the **Q** quota is indicated in the "base setting" table on page 1:

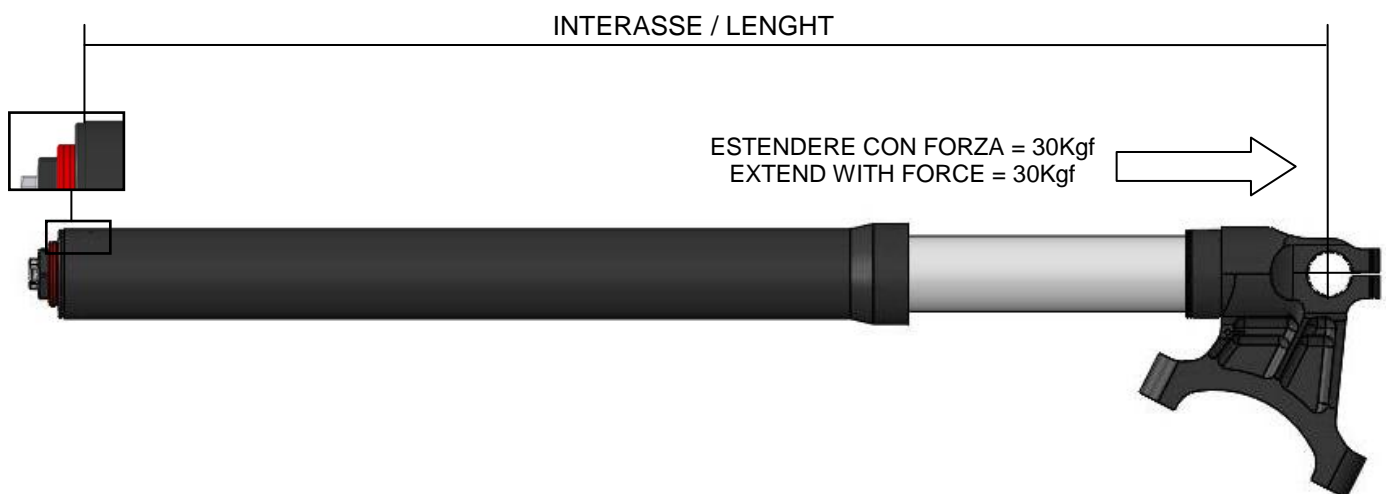
Q = orig. → the measurement is like the original assembly (refer to the vehicle technical manual).

Q = value (example: +/- 5mm) → change the original fork slipping by the indicated value.



WARNING: The riding quotas are the result of long tests by the manufacturer, and the **Q** quota was set to provide safe manageability and stability. A 2 or 3mm adjustment high changes the vehicle's behaviour.

Changing the **Q** quota changes some riding quotas recommended by the vehicle manufacturer and can reduce vehicle stability, both when riding and parking (on the central or lateral stand), jeopardising riding behaviour and safety.



SPRING PRE-LOAD ADJUSTMENT

The adjustment range is 15mm (30 clicks).
Each click (½ adjuster knob turn) corresponds to 0.5mm spring pre-load.

1 complete turn (2 clicks) = 1mm

To increase the spring pre-load value rotate the adjuster knob, with the help of a CH17 key, clockwise. To decrease the pre-load value, rotate it counter-clockwise.



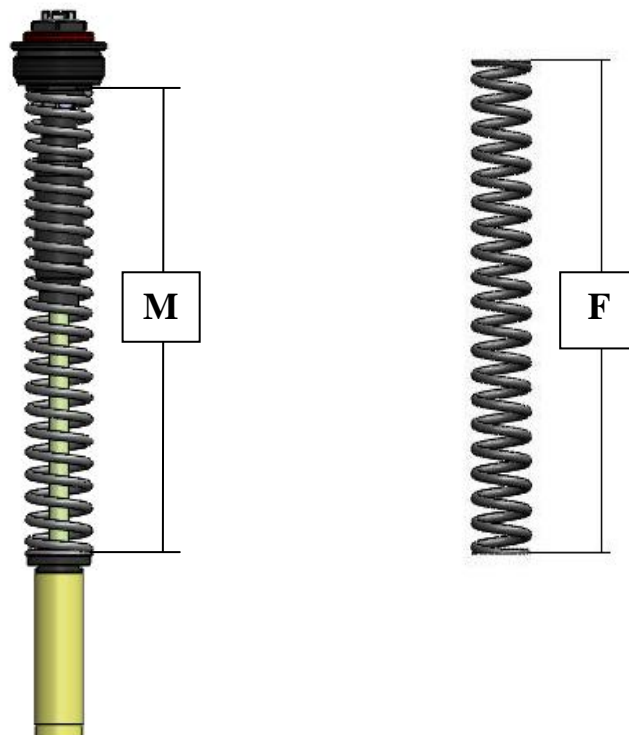
The pre-load values are as important as the fork slipping quota. Pre-load set the bike height off the ground and the dynamic trim in curves thus the fork angle, front axle values, etc., that characterise vehicle behaviour. **Generally, the optimal pre-load values range from 3 to 8mm.** To optimise the pre-load adjustment, see paragraph "SAG ADJUSTMENT AND MEASUREMENTS".



WARNING: this type of fork cartridge is equipped with an internal spring. Thus, check the fully extended suspension measurements not only lifting the bike off the ground, but forcing the suspension, extending them, to fully compress the internal counter-spring.

Spring pre-load is the crushing it suffers when installed on the cartridge.

PRE-LOAD=F-M



MOUNTING INSTRUCTIONS

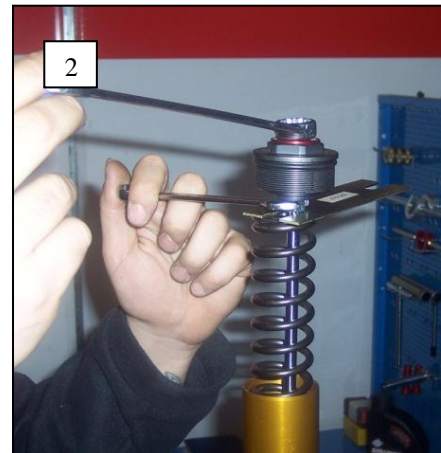
WARNING:

- **The upper cap of the cartridge is not tightened by Bitubo since it must be removed and subsequently tightened for assembly.**
- **The upper cap is supplied without pre-load (0 mm). After installing and tightening the upper cap on the cartridge rod, apply the PRE-LOAD indicated in the table on page 1.**

- 1- Safely position the vehicle making sure the front wheel is off the ground, use a suitable tool to work on the fork free of restrictions.
- 2- Find the **Q** quote indicated in the table in paragraph "**FORK SLIPPING ADJUSTMENT**" on page 5 and refer to the indicated technical recommendations.
- 3- Loosen the upper steering plate screws that secure the fork legs (indicated with the arrows in illustrative example photo 1) and loosen the upper original fork caps 1 turn.
- 4- Remove the fork legs from the vehicle: to remove the fork legs and original parts, follow the vehicle manufacturer's instructions (User/Maintenance handbook - Garage Manual).

OPERATIONS ON THE RIGHT FORK LEG

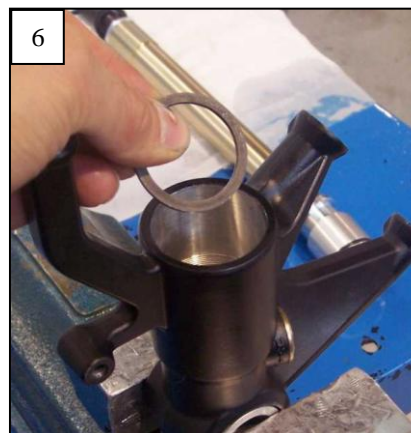
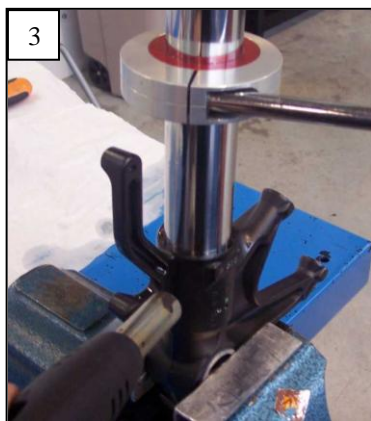
- 5- Secure the fork foot in a clamp, as per photo 4, being careful not to damage it (we recommend using a clamp with soft aluminium or plastic jaws).
- 6- Unscrew the upper fork leg original cap, loosened to point 3 of the sleeve.
- 7- Slowly lower the outer tube and unscrew the cap from the rod inside the cartridge and remove it (see example in photo 2).



- 8- Remove the spacers, if applicable, and the original spring.
- 9- Remove the original cartridge complete with all its components and separate the outer tube from the stem; given the variety of forks, refer to the vehicle manufacturer's instructions (User/Maintenance handbook - Garage manual).

JBH CARTRIDGE INSTALLATION PROCEDURE

- 10- Secure the fork foot in a clamp, with the rod vertical.
- 11- Secure the key 00243 plus bushing 00324 (Ø41mm fork rods) or 00323 (Ø43mm fork rods) on the fork rod.
- 12- With the heat gun, heat the rod coupling zone on the foot (photo 3) and, in some cases, with a Torx wrench, unscrew the safety nut on the foot (photo 4) and then unscrew the tube from the fork bottom (**WARNING!** Heat the part to high temperature so that the original glue melts) and extract the original spacer is present (photo 5).



13- With a suitable tool, slide off the original O-ring inside the foot, remove the original steel washer if applicable (it will not be used). (photo 6)

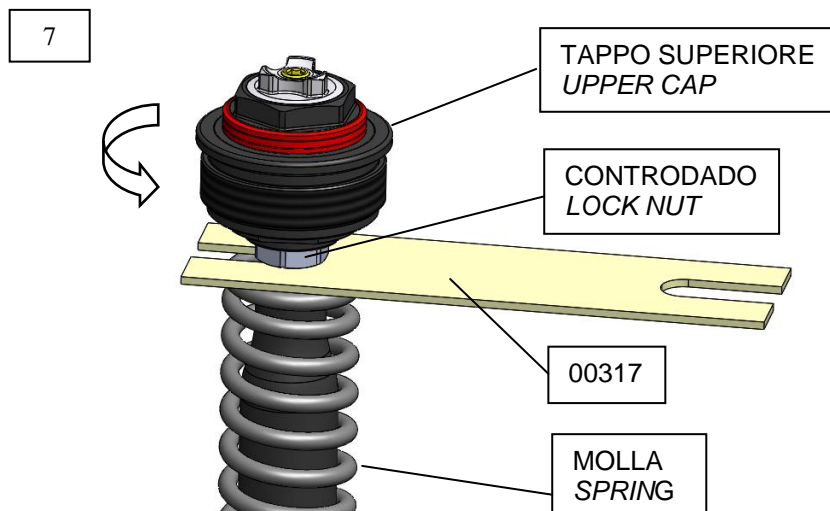
14- Accurately clean all original parts and remove all glue residue.

15- Re-insert the original O-ring in the foot.

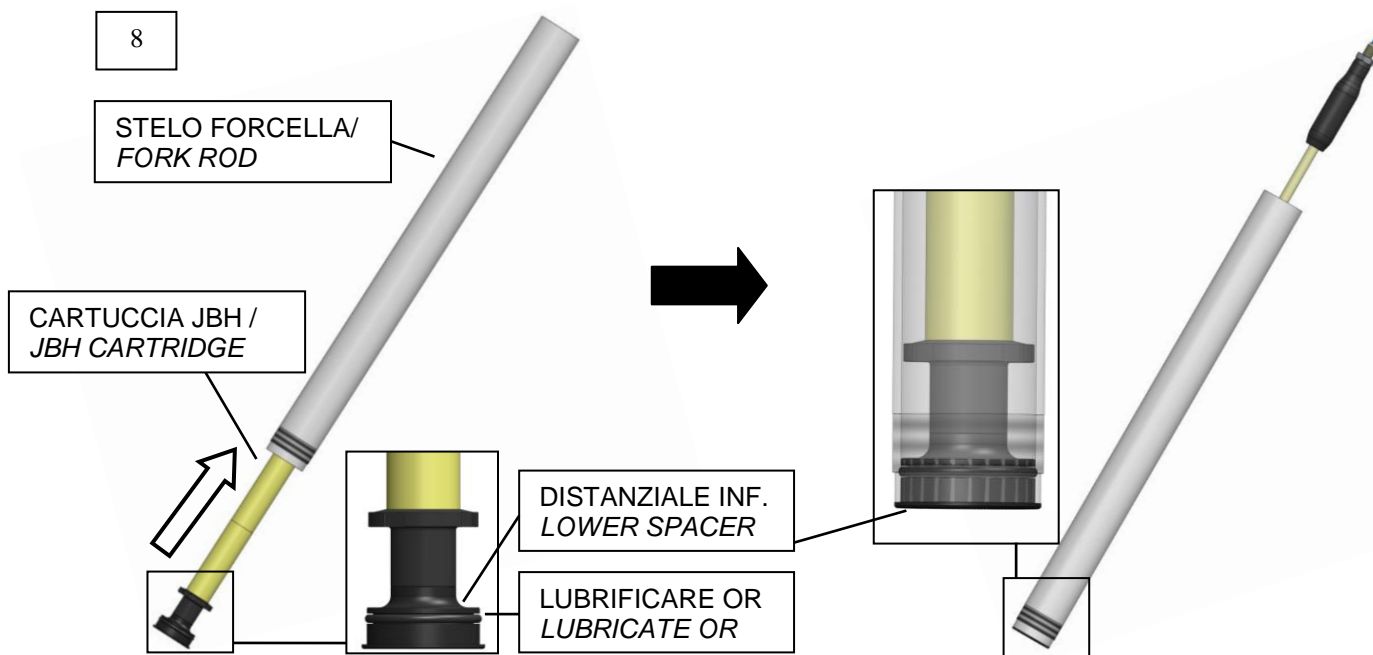
16- Remove the upper cap and spring from the **JBH Bitubo** cartridge: to facilitate this operation, hold the spring down and insert tool code 00317 between it and the counter-nut, then manually unscrew the upper cap since it is not tightened by Bitubo to facilitate this operation.

In some cases the springs are not mounted in the cartridges but inserted in the shipment box

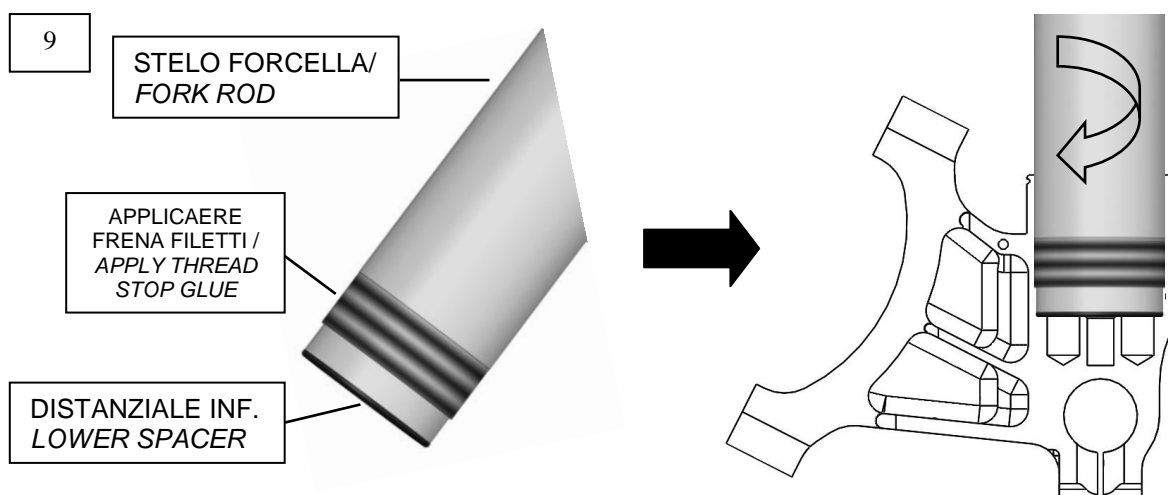
WARNING: once the upper cap is removed, do not touch the adjuster knobs.



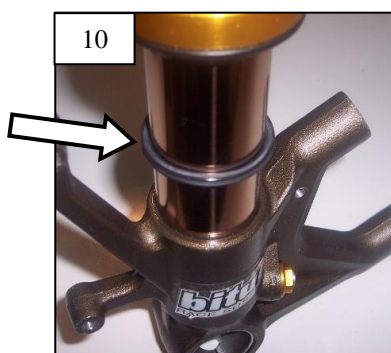
17- Lubricate the OR of the lower cartridge spacer. Insert the **REBOUND** cartridge inside the fork rod until it stops on the lower cartridge spacer.



18- Spread the stem thread with average resistance thread stop glue (example Loctite 243 or equivalent), screw the fork rod on the foot, fully tighten using the 00243 key + bushing 00324 (Ø41mm fork rods) or 00323 (Ø43mm fork rods).



19- It's suggested to place on the stem of one of the two fork legs a fork stroke reference ring.

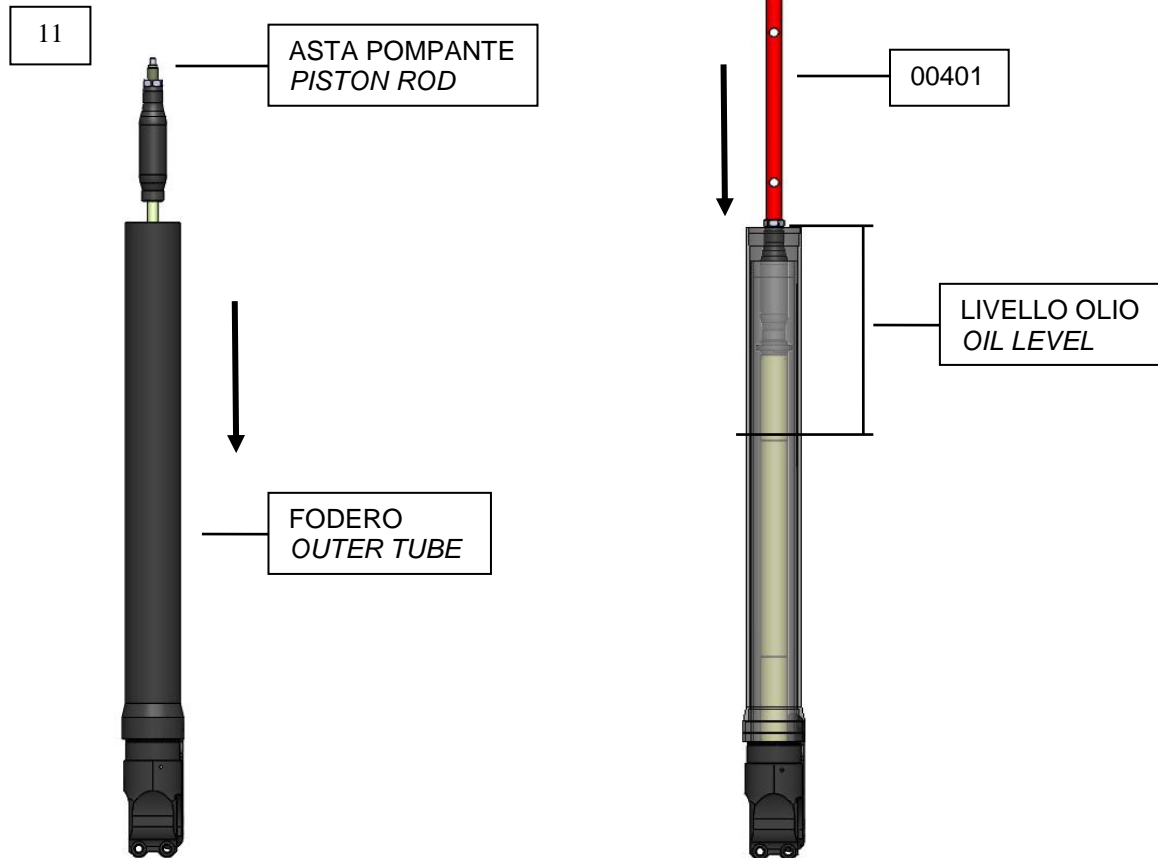


20- To re-insert the outer tube in the rod, given the variety of forks, refer to the vehicle manufacturer's instructions (User/Maintenance handbook - Garage manual).

N.B.: For better sliding, we recommend you check rod-sleeve bushing play: upper bushings from 0.10 to 0.15 mm, lower from 0.08 to 0.12 mm. Otherwise the bushings must be adjusted or replaced. In alternative, see the **Bitubo** catalogue to check whether the **"KITS" sliding kit** made up of bushings with tolerances already optimised by the *Bitubo Race Department* and high sliding oil guards can be applied.

When assembled, adequately grease with the specific Bitubo grease, code 997608.

- 21- Bright both the outer tube and piston rod to the maximum compression position for correct oil level: compress the piston rod strictly using tool code 00401. Pour **Bitubo 997630** oil to the level, from the outer tube edge, indicated in the "base setting" table on page 1. Perform some outer tube compression-extension movements to drain any air.



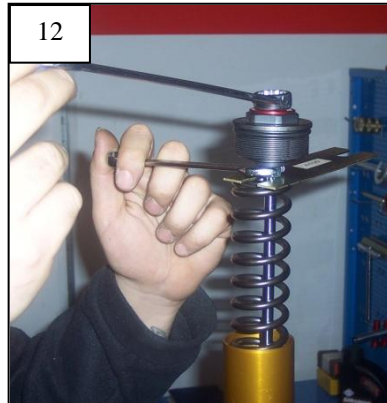
- 22- Always check the level with the outer tube and the piston rod in maximum compression position and add oil as needed.
- 23- Insert the spring, removed in point 16 (end with engraved constant elastic K towards the cap).
- 24- Using tool code 00317 (if necessary use the tool 00401 to extend the piston rod), repeat the operations in point 16 and manually tighten the cap to limit stop on the piston rod;

Warning: make sure it reaches limit stop

- 25- Near the lock-nut to the cap and tighten it against it at 9.0 Nm torque.
- 26- Check the total number of clicks of the hydraulic adjustments on the cap; they must not be more than 23 clicks from "fully closed". If you find a larger number of Clicks, repeat the procedure from step 24 of this manual
- 27- Bring the fork outer tube towards the cartridge cap, tighten the cap, manually holding the outer tube until fully screwed (full tightening is not necessary at this time).

OPERATIONS ON THE LEFT FORK LEG

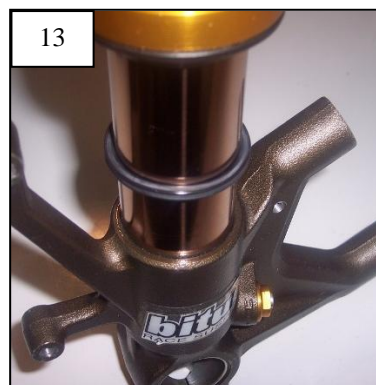
- 28- Secure the fork foot in a clamp, being careful not to damage it (we recommend using a clamp with soft aluminium or plastic jaws).
- 29- Unscrew the upper fork leg original cap, loosened to point 3 of the sleeve.
- 30- Slowly lower the outer tube and unscrew the cap from the rod inside the cartridge and remove it (see example in photo14).



- 31- Remove the spacers, if applicable, and the original spring.
- 32- Remove the original cartridge complete with all its components and separate the outer tube from the fork rod; given the variety of forks, refer to the vehicle manufacturer's instructions (User/Maintenance handbook - Garage manual).

JBH CARTRIDGE INSTALLATION PROCEDURE

- 33- We suggest inserting a fork excursion reference ring on the fork leg rod (photo 15).



- 34- To re-insert the outer tube in the stem, given the variety of forks, refer to the vehicle manufacturer's instructions (User/Maintenance handbook - Garage manual).

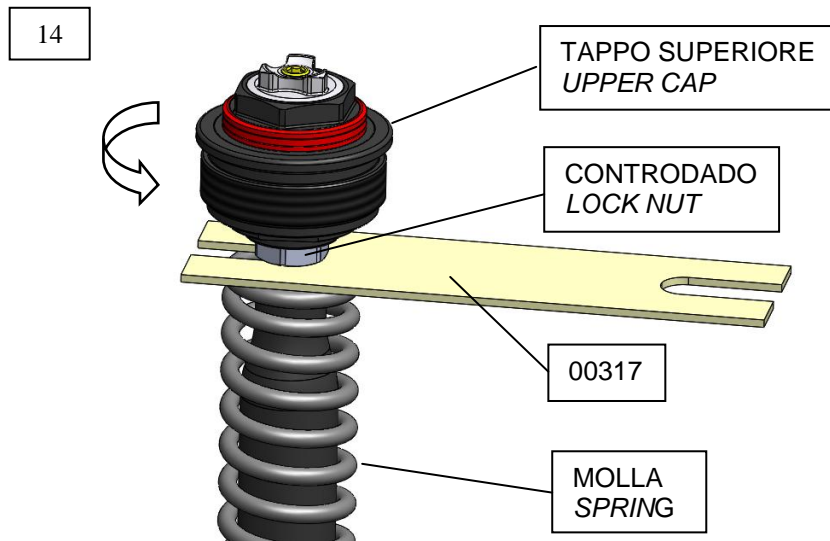
N.B.: For better sliding, we recommend you check rod-sleeve bushing play: upper bushings from 0.10 to 0.15 mm, lower from 0.08 to 0.12 mm. Otherwise the bushings must be adjusted or replaced. In alternative, see the **Bitubo** catalogue to check whether the **"KITS" sliding kit** made up of bushings with tolerances already optimised by the *Bitubo Race Department* and high sliding oil guards can be applied.

When assembled, adequately grease with the specific Bitubo grease, code 997608.

- 35- Remove the upper cap and spring from the **JBH Bitubo** cartridge: to facilitate this operation, hold the spring down and insert tool code 00317 between it and the lock-nut, then manually unscrew the upper cap since it is not tightened by Bitubo to facilitate this operation (photo 16).

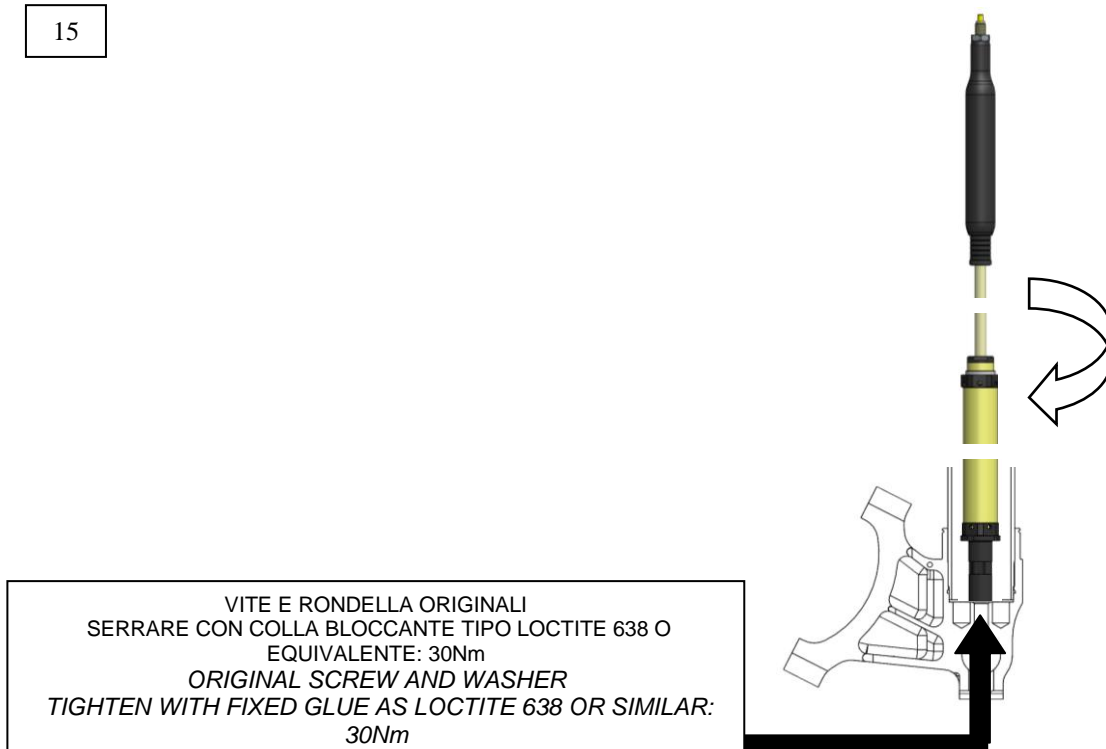
In some cases the springs are not mounted in the cartridges but inserted in the shipment box.

WARNING: once the upper cap is removed, do not touch the adjuster knobs.

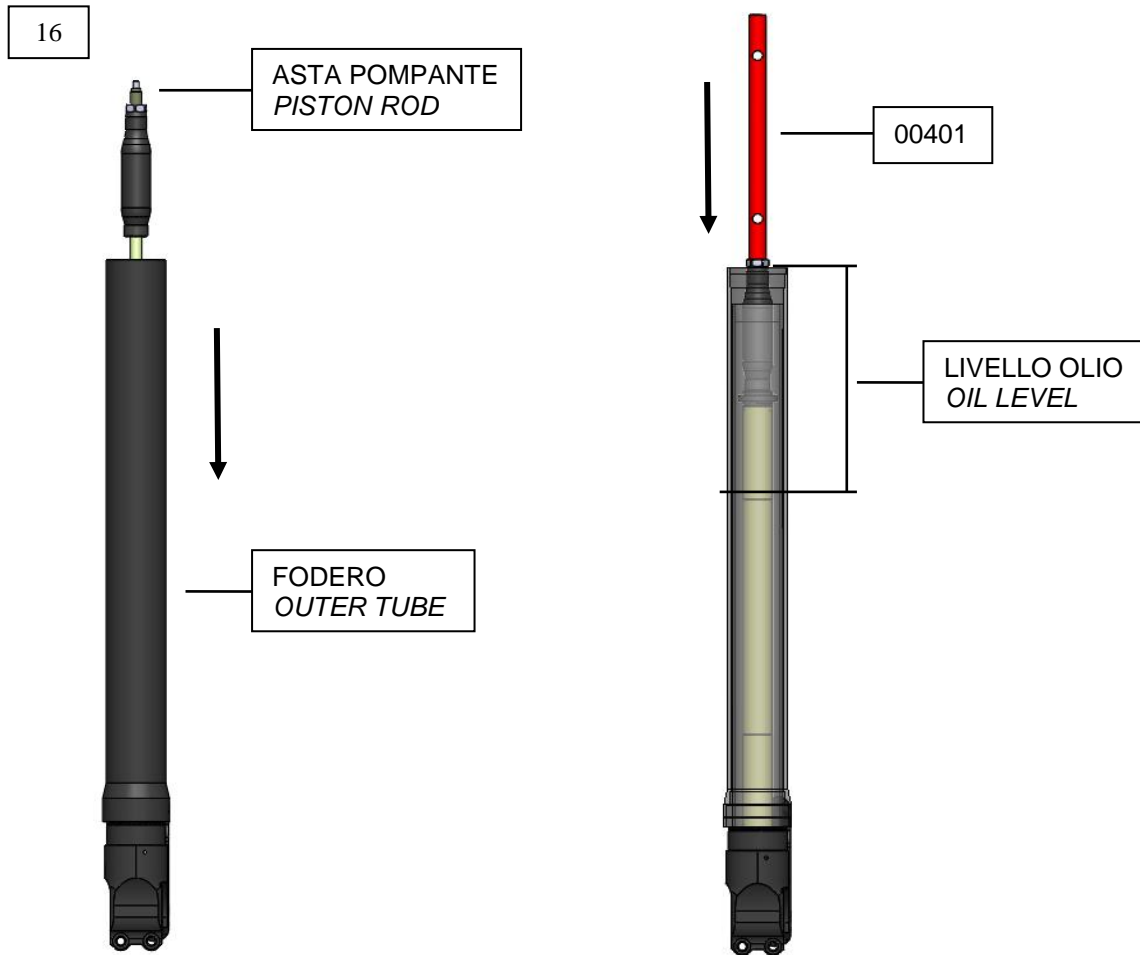


36- Insert the **COMPRESSION** cartridge in the fork and secure it with the original Allen screw and washer supplied. To facilitate the operation is recommended to use a low intensity impact wrench.

15



37- Bright both the outer tube and piston rod to the maximum compression position for correct oil level: compress the piston rod strictly using tool code 00401. Pour **Bitubo 997630** oil to the level, from the outer tube edge, indicated in the "base setting" table on page 1. Perform some outer tube compression-extension movements to drain any air.



38- Always check the level with the sleeve and pump rod in maximum compression position and add oil as needed.

39- Insert the spring, removed in point 34 (end with engraved constant elastic K towards the cap).

40- Using tool code 00317 (if necessary use the tool 00401 to extend the piston rod), repeat the operations in point 34 and manually tighten the cap to limit stop on the pump rod;

Warning: make sure it reaches limit stop

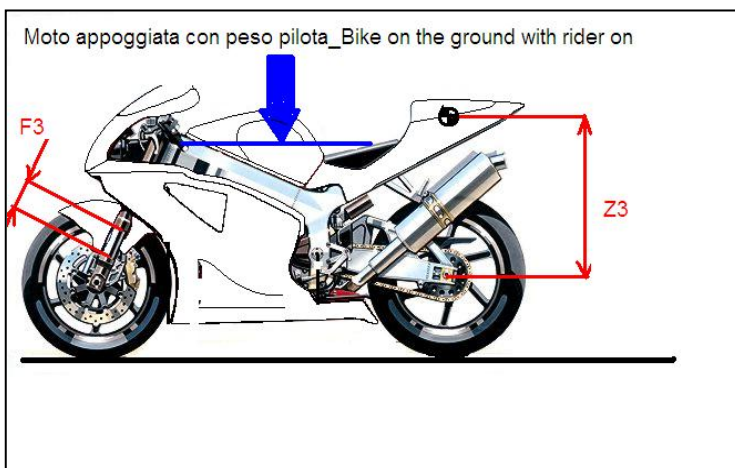
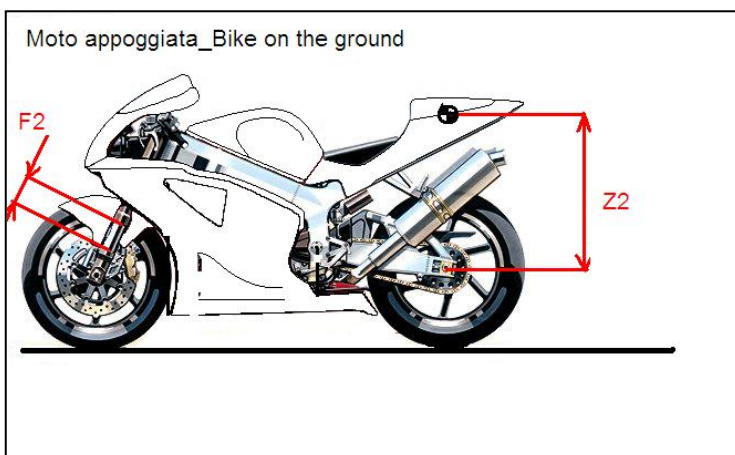
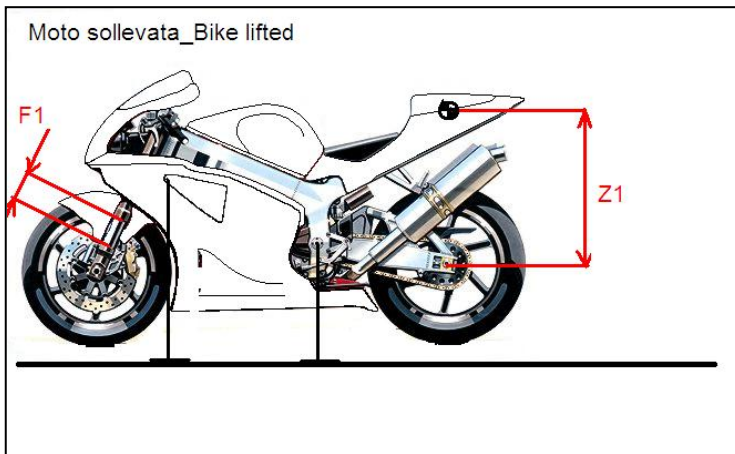
41- Near the lock-nut to the cap and tighten it against it at 9.0 Nm torque.

42- Check the total number of clicks of the hydraulic adjustments on the cap; they must not be more than 23 clicks from "fully closed". If you find a larger number of Clicks, repeat the procedure from step 39 of this manual.

43- Bring the fork outer tube towards the cartridge cap, tighten the cap, manually holding the outer tube until fully screwed (full tightening is not necessary at this time).

44- Reassemble the fork legs on the bike, following the instructions in the vehicle manufacturer's Garage manual and restore sliding **Q** indicated in the table on page 1; once the lower fork plate screws that secure the fork legs are tightened and before tightening the relevant upper plate screws (indicated with the arrows in photo 1), tighten the upper caps to 15Nm.

ADJUSTMENT AND MEASUREMENT OF SAG



- 1) Lift the bike (fork free from loading and lifted tyre from the ground) and press the spring retainer forcing the full extension of the kinematic mechanism of the rear suspension. Follow the same procedure also on the fore-carriage.
- 2) Individuate two reference points on the vertical axe of the tyre pin: one on the centre, the other one fixed on the little frame under the seat of the bike. Both points shall be precise and well defined in order to make this operation again more and more times. Follow the same procedure on the fore-carriage.
- 3) Measure the distance between the two points Z1 and F1.
- 4) Place the bike to the ground with both tyres, press slowly the suspension twice and leave it then be extended freely.
- 5) Measure the new distance between the two points Z2 and F2.
- 6) **Z2-Z1 (static sag)** shall be included between **5mm and 15mm** for road replica bikes, between **10mm and 20mm** for road and naked bikes, between **15 and 25mm** for enduro tourism bikes; **F2-F1 (static sag)** shall be included between **25mm and 32mm** for road and naked bikes; between **30mm and 40mm** for enduro tourism bikes.
- 7) Make all measurements again having the rider on the bike in position of riding.
- 8) **Z3-Z1 (rider sag)** shall be included between **25mm and 30mm** for road replica and naked bikes. For enduro and tourism bikes the value shall be included between **30mm and 40mm**. **F3-F1 (rider sag)** shall be included between **35mm and 40mm** for road race replica and naked bikes. For enduro tourism bikes the value should be included between **40mm and 50mm**.

In order to decrease the value of static sag, you shall increase the spring preload adjusting; on the other hand, in order to increase the static sag, you shall decrease the spring preload.

In order to measure the maximum stroke travelled by the fork during the motorbike use (for example a racetrack session), a stroke indicator ring. Before starting each practice session, move manually the ring closed to the dust seal, positioned on the fork outer tube; please check that the stroke indicator ring is clean by dust and debris, in particular on the upper side, in order not to damage the oil seal performances. At the end of the practice session it is possible to measure the stroke ring indicator position and to know the maximum stroke travelled by the fork. This data are very useful to evaluate the motorbike setup.

The JBH cartridge ensure high vehicle drivability guaranteeing higher support in curves, faster manageability in direction changes, high grip in acceleration and braking in addition to ensuring safety in the various use conditions. To fully exploit the efficiency, we recommend you also improve the rear suspension, installing our Racing XXF or Sport CLU shock absorbers.

The JBH fork cartridge reaches its maximum performance installing our **Kit S**, that increases fork sliding, essential for a high performance fork.

Information at our Bitubo service centres or at www.bitubo.com.

FORK MAINTENANCE



- Fork cleaning and maintenance prevents premature wear and increases performance over time.
- When cleaning the vehicle, be careful not to aim pressurised water jets directly on the fork rod oil guards or upper fork leg caps (upper steering plate).
- Clean the fork and upper caps using non aggressive detergent.
- We recommend checking correct cartridge operations every 10000 Km or at least once a year.
- Every 24 months or 20,000 km of use, we advise you to have the cartridge overhauled at a BITUBO Authorised Service Centre.
- We recommend you periodically check cartridge efficiency checking the damping forces with hydraulic regulations fully open and fully closed. A change in damping is a positive result.
- For best purchased product performance, BITUBO recommends you use its lubricants.

Maintenance and overhaul frequency suggested by Bitubo at Bitubo service centres (service centre list in the "service" section at www.bitubo.com)

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RACE SUSPENSION

Set-up data BIKE N°										Rider / Pilote	
Date		Country/ Pays			Bike / Moto			Team / Equipe			
Track/ Circuit		Temperature Temperature			Weather Météo			Rider kg / Pilote kg			
		STD	1	2	3	4	5	6	7	8	9
Shock absorber	Matricola Serial No. N de serie										
	Schema Scheme Schéma										
	K molla/Spring rate / Ressort										
	Prearico Preload Précontrainte										
	Estensione Rebound/Détente										
	Comp. High/Rapide										
	Comp. Low/Lente										
	Interasse/ Length Entraxe										
	Pressione Pressure Préssion										
Front Fork	Matricola Serial No. N de serie										
	Schema Scheme/Schéma										
	Sfilamento Slipping Longueur										
	Pressione Pressure Préssion										
	Estensione Rebound Détente										
	Compression Compréssion										
	K molla/Spring rate / Ressort										
	Prearic/ Preload Précontrainte										
	Livello olio Oil level Niveau huile										
Note/Notes											