# INSTALLATION MANUAL

DIGISHOX by bitubo

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

**Code: HD001DSC091**

**Model:** HARLEY DAVIDSON SOFTAIL FXFB FAT BOB / FXFBS FAT BOB 114

| Rev. 00 | Mod. ISTR. MONT. DS |
|---|---|
| Date: 20/09/18 | Pag. 33 / 64 |

**SERIAL N°:**

**(SEE PAGE 1)**

*TO BE MENTIONATED IN CASE OF CLAIM*

## *FIRST YOUR SAFETY !*


**The Sospension KIT is an important component of the motorcycle and this manual describes the correct way to assemble it.**

**NOTE: The Sospension KIT must be installed exclusively in a specialised workshop; if you have any doubts regarding these instructions, please contact a Bitubo engineer straight away.**


**Bitubo cannot be held responsible for any modifications to the Sospension KIT not described in this handbook or not authorised in writing. Moreover Bitubo cannot be held responsible for the incorrect installation of Sospension KIT.**

**Read this handbook carefully so that you can get the best performance and efficiency out of the Sospensions.**

***NOTE:*** **The warranty for the Sospension KIT will be invalidated by incorrect installation or modifications carried out without Bitubo's written authorisation.**

**Bitubo cannot be held responsible for any damages to the product or injuries to people if the instructions of this handbook are not followed to the letter or if the KIT is not fitted in a specialised workshop or by qualified personnel.**

**BITUBO RECOMMENDS** FUCHS Silkolene

*Pictures and notes reported are purely as an indications; Bitubo s.r.l. reserves the faculty to make any modification or changes.*

# ***INSTALLATION MANUAL INDEX:***

## Index

# PRESENTATION OF THE PRODUCT

The Bitubo DigiShox DS system is a cutting-edge product that incorporates high technology, high performance and simplicity of interaction for use on the track, road and off-road.
The innovation introduced by this Sospension KIT (front cartridges, rear shock absorber and control unit) consists in a very-quickly and efficient electronic management of the compression, extension and spring preload adjustments.
The Bitubo JBH cartridge, on the front, is equipped with hydraulic spring preload adjustment and electronic adjustment of compression and extension.
The Bitubo XXT shock absorber, at the rear, is equipped with electronic adjustment of compression and rebound ; the spring preload is hydraulic.
The electronic regulation takes place thanks to the use of micro-motors that allow a very high regulation speed.
The control unit is equipped with 9 settings preset by the House, not editable. You can add other 3 customized settings by the appropriate application, downloadable from the most known Appstore in your smartphone.

# 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 46.**

**Before mounting the shock absorber on the bike, take note of all values of sag, length, hydraulic adjustments and mounting position of the bike fork as standard configuration. Check that Bitubo base setting (length, spring preload and hydraulic adjustments) is according to the data written on the chart at page 57.**

**Once the shock gets installed, check that there are no interferences with the frame of the bike or moving parts.**

Considering that during the production steps the shock and the fork are lubricated, you could find out some trace of oil and grease on the suspension.

## *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*

- The Bitubo shock absorber 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.

# ***DigiShox COMPONENTS LIST***

The System is composed by the following components:

A. 1 Led Panel (Trident): Coloured leds dashboard.

B. 1 Selector: Handlebar selector.

C. 1 CPU (Neptuny): Adjustment unit control.

D. GPS sensor (E-Shark).

E. Wiring: Plug and play wiring.

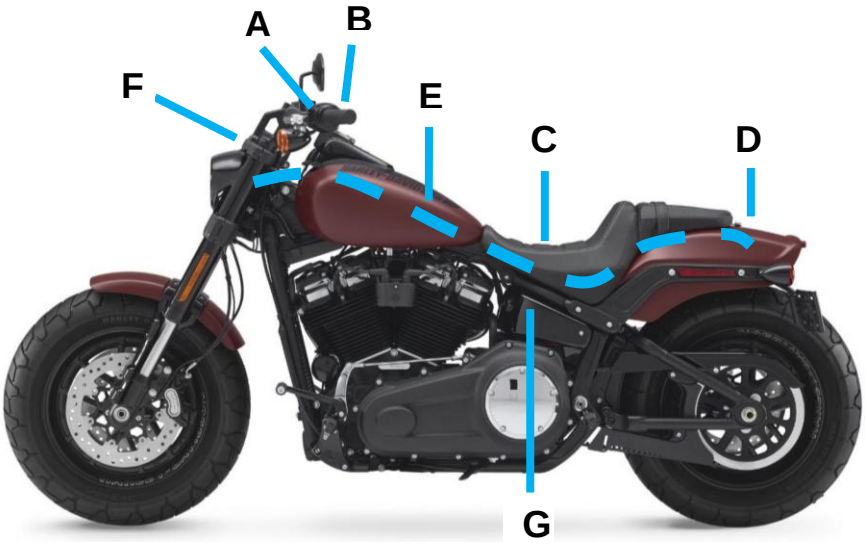
F. 1 KIT JBHG1: Fork cartridges with electronically controlled hydraulic adjustment; hydraulic spring preload.

G. 1 KIT XXTD2: Rear shock absorber with electronically controlled hydraulic adjustment; manuallly controlled hydraulic spring preload.

H. IOS / Android App for the customization of the adjusment.













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# ***WIRING and CONTROL UNITS***

## ***WARNING:***

*- Before the installation of the Bitubo Wiring it is advised to disconnect the vehicle battery.*

*- The Bitubo Wiring is equipped with identified connectors.*
*This system speeds up and simplifies the placing of the connectors in the vehicle.*

*- Do not allow that the Bitubo Wiring be crushed while the fuel tank mounting.*

*- The Bitubo wiring must be arranged so as not to be forced (pulled) or crushed during the steering movement.*

*- The Bitubo wiring must not interpose with the clutch control wire and the accelerator control wires.*

*- Pictures and notes reported are purely as an indications.*

Bitubo Wiring is composed by 3 parts:

a. MAIN WIRING
b. CONNECTION WIRING (LINEA CAN-BUS)
c. POWER SUPPLY WIRING


a


b


c

Bitubo wiring assembly:

1) Connect the MAIN WIRING to the POWER SUPPLY WIRING by the connectors identified with the name: “NEPTUNY-POWER”



2) Connect the MAIN WIRING to the CONNECTION WIRING by the connectors identified with the name: “CAN-BUS”





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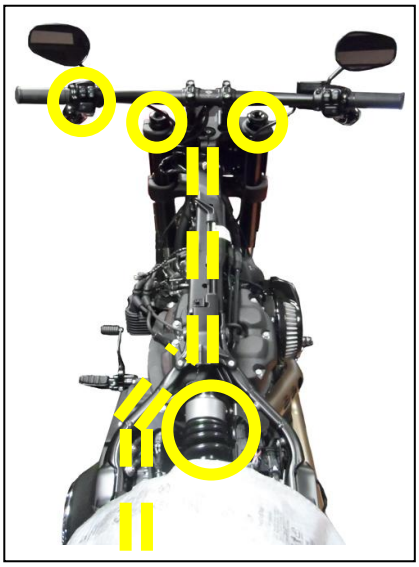
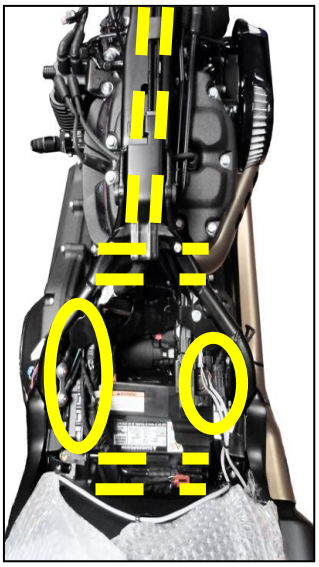
## INSTALLATION OF THE BITUBO WIRING ON THE VEHICLE:

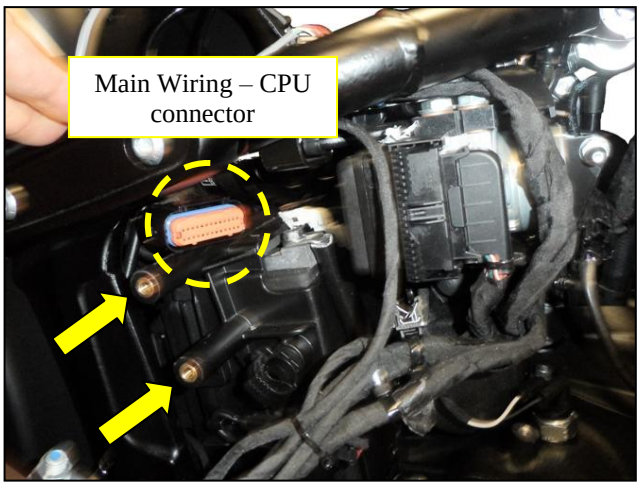
1) The Bitubo wiring must be arranged next to the main motorcycle wiring.

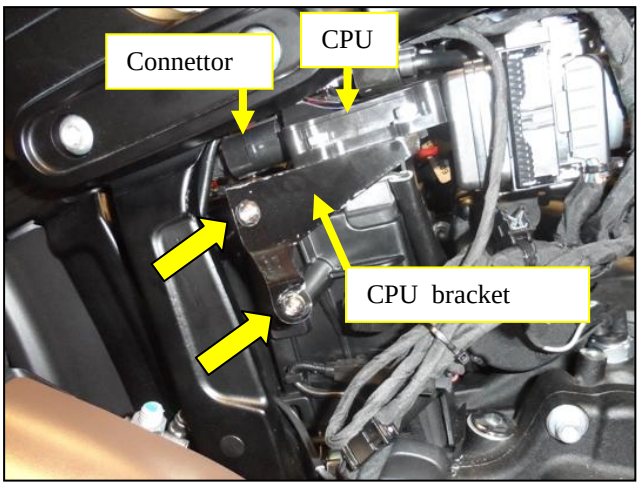




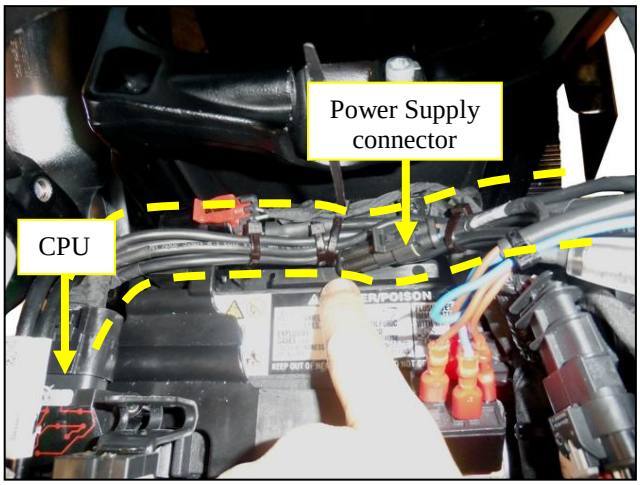
For a correct installation follow the notes here below:

- To difine the useful length and the correct position of the Bitubo Wiring connect the CPU (Neptuny) with its bracket to the Main Wiring. Secure the CPU to the Right fairig housing using the original screw; do not mount the fairing.




- Connect the Power Supply Wiring to the Main Wiring. Place the Bitubo Wiring under seat next to the OEM wiring until it reach yhe Left side of the vehicle.



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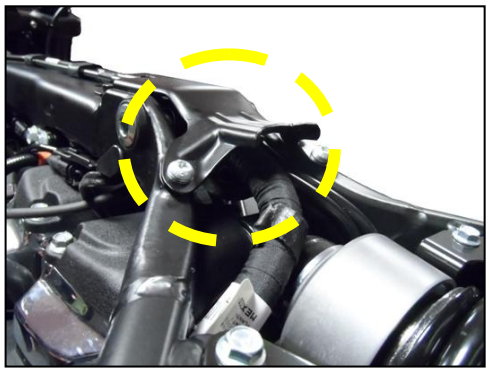
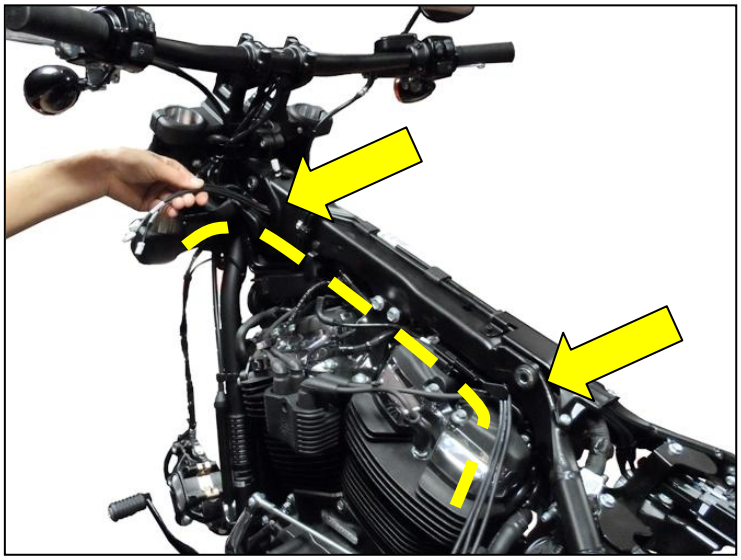
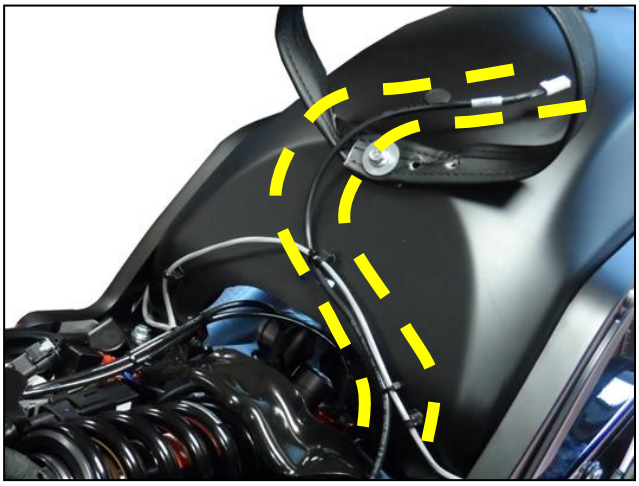
- Direct the wires with connectors identified with the following names towards the forecarriage of the vehicle:
    - COMPRESSION FRONT
    - REBOUND FRONT
    - TRIDENT

  To insert the wires in to the frame is suggested to use a faileads probe.





- Direct the wire with connector identified with the following name towards the rear area of the vehicle:
    - GPS



- Direct the wires with connectors identified with the following names to the Right side of the under seat storage of the vehicle:
    - COMPRESSION REAR
    - REBOUND REAR

  Direct the supply wires to the battery compartmen:
    a. 2 BLUE wires (Negative)
    b. 1 BROWN wire with FUSE (Positive)
    c. 1 BROWN wire without FUSE (Positive)



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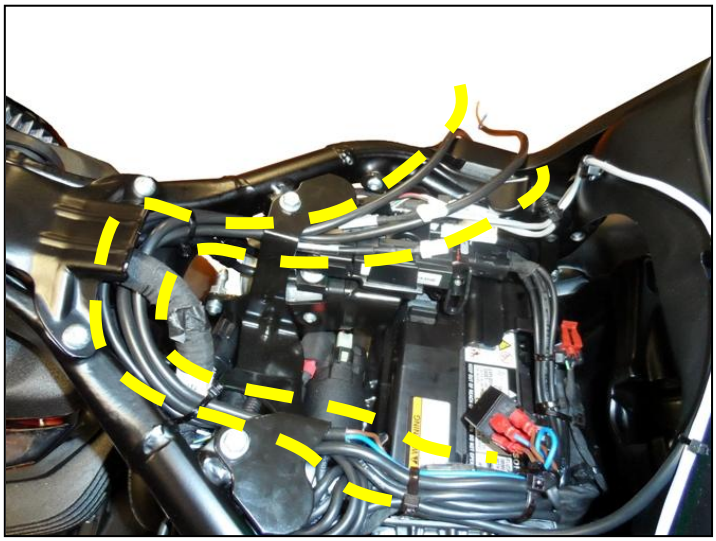
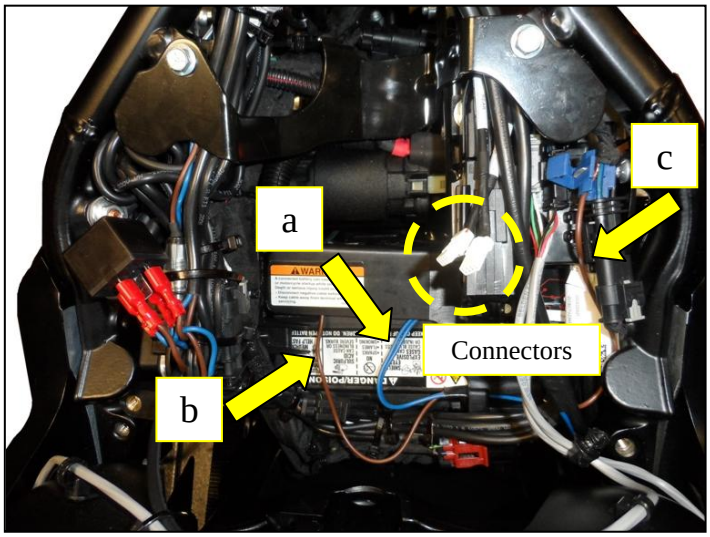
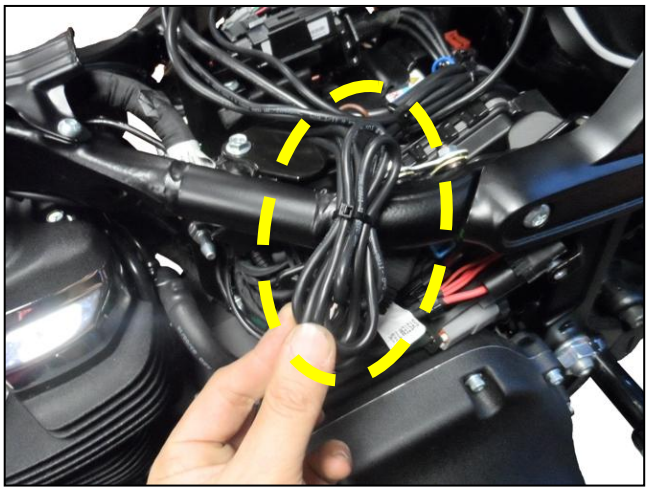
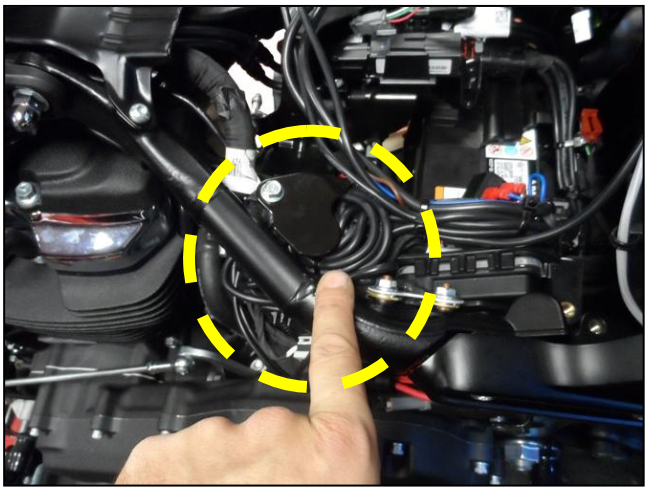


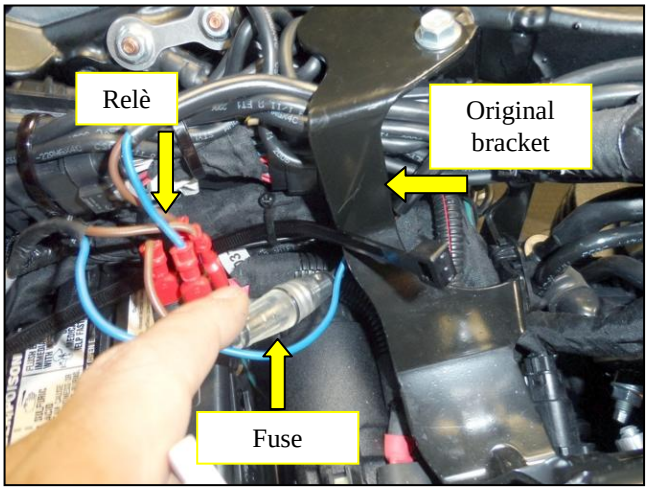


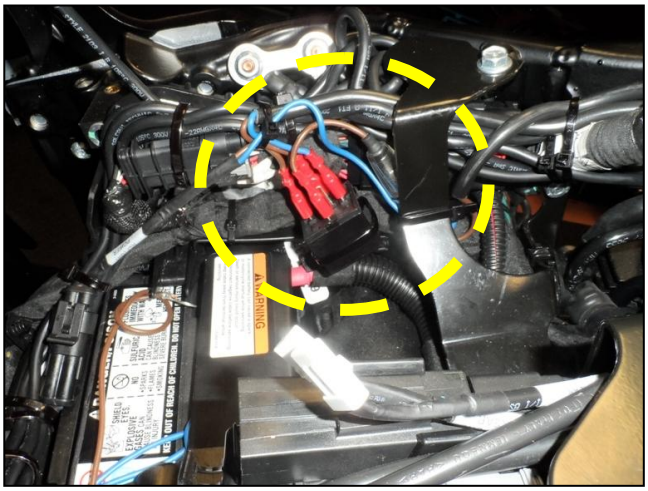

- Once the Bitubo Wiring length has been defined for every connection, arrange the surplus wiring in the Left fairing side. Place the wiring with care.





- Place and secure the Relè and the Fuse of the Power Supply Wiring in the Left side of the under seat storage near the original bracket.



- Check that the Bitubo Wiring and all its components have been correctly placed and secured.
  After that unconnect and remove the CPU with its bracket.
  This operetion in necessary to allow the rear shock mounting (pag. 61).



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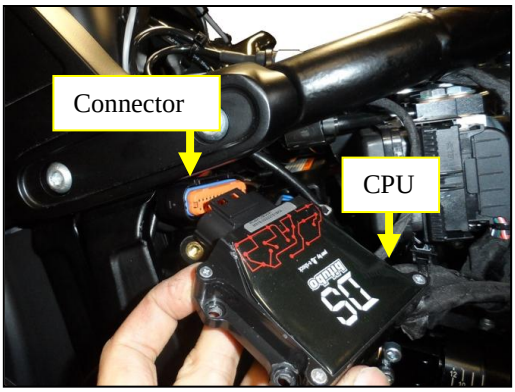
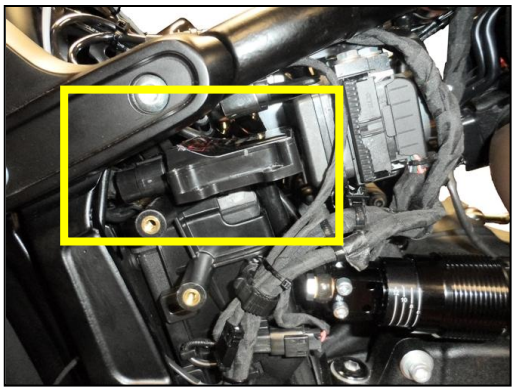
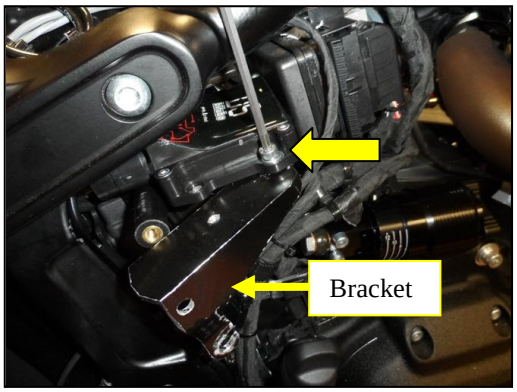
- After the rear shock mounting proceed with the CPU mounting:

  - Connect the CPU to the Bitubo Main Wiring and place it on the battery.

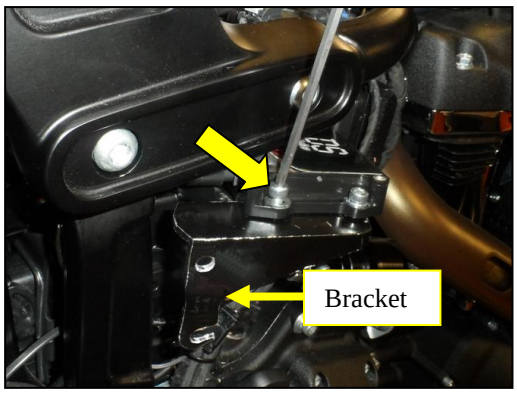


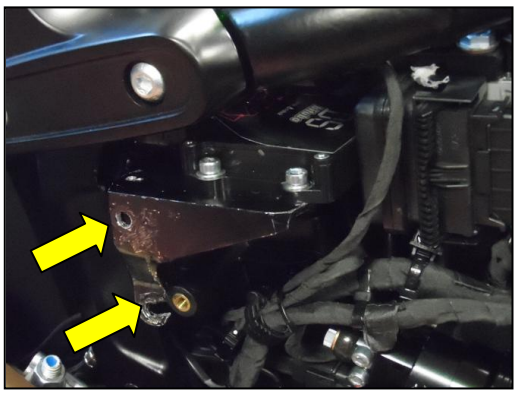
  - Place the Bitubo bracket near the CPU.
    Fix the CPU to the bracket using only the front hole. Use the screw and the washer supplied.

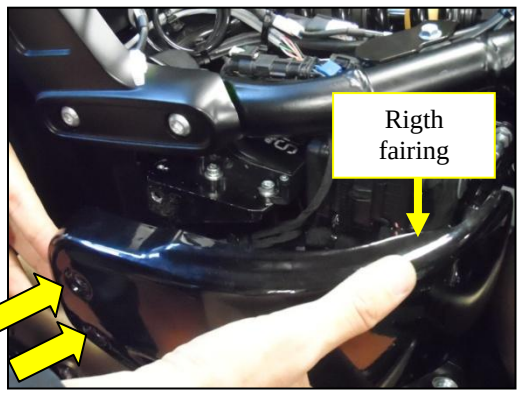



  - Place the Bitubo bracket to the fixing attachment of the Right fairing. Secure the bracket using the other screw and washer.




  - Check the position of the assembly and mount the fairing.





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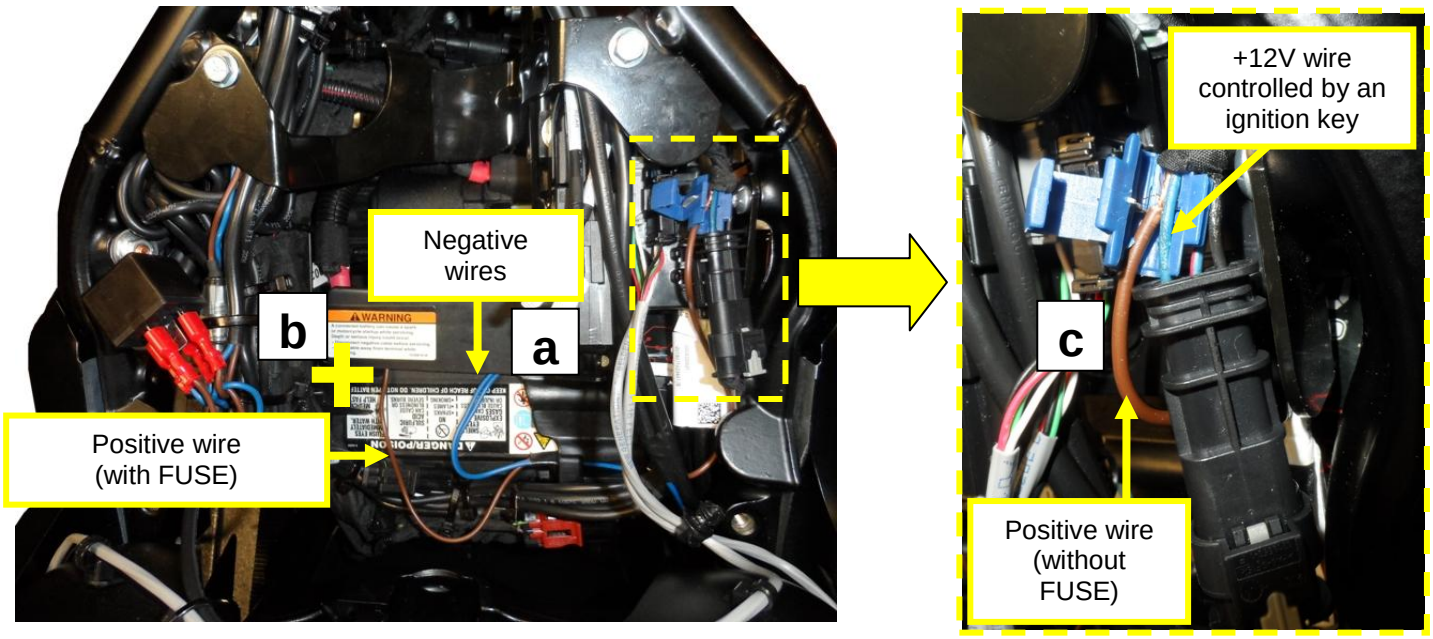
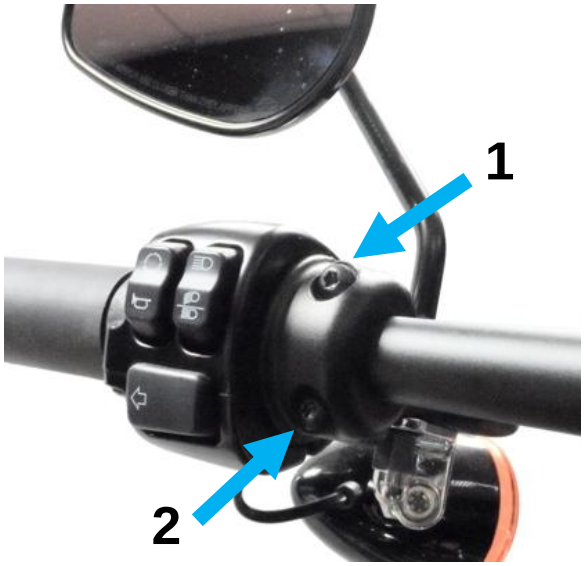
2) The system powered occur by BLUE wires (-) and BROWN wires (+):
   a. The 2 BLUE wires can be connected directly to the negative pole of the battery.
   b. The BROWN wire with the FUSE must be connected to the positive pole of the battery.
   c. The single BROWN wire must be connected via a current stub to a + 12v wire controlled by an ignition key near the battery compartment, or in any case a comfortable position to work on.




If the exposed cables length of the Power supply wiring in not enough, the wiring sheath can be removed for the required length.
The packing includes the quick splice connector and the fastons for the connection to the battery.

3) The assembly of Selector (SWITCH) and Led panel (TRIDENT) has to be placed and fixed on the Left light switch using the original screws and washers.




The original washers must be placed between the light switch and the Bitubo bracket

Direct the Wires of the assembly to the original wires collect on the frame. Connect the connector.



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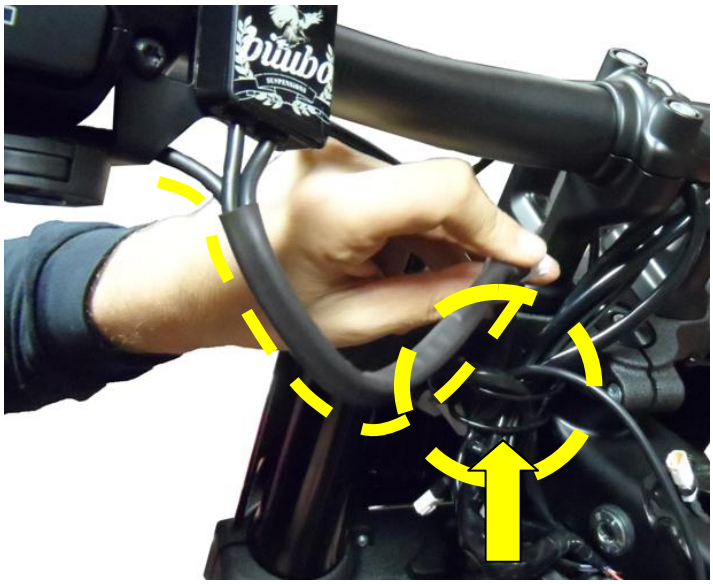
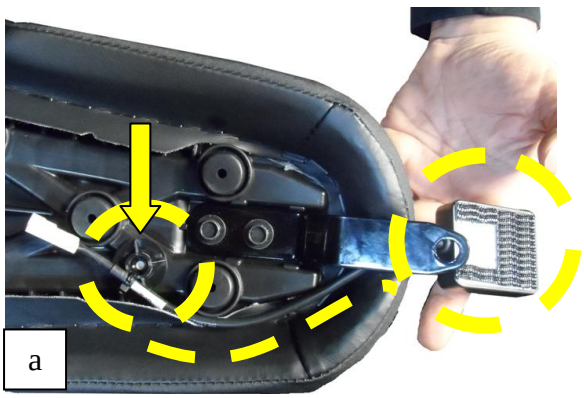


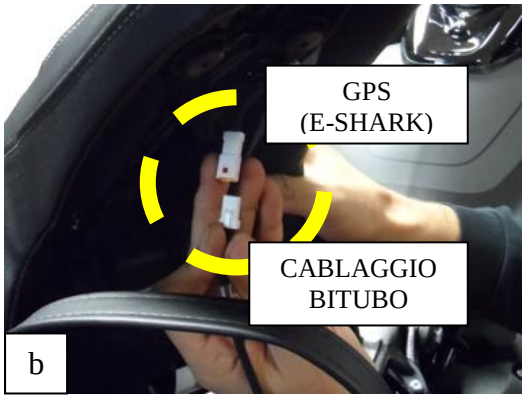
LED PANEL
(TRIDENT)

BITUBO
WAIRING

4) The GPS sensor (E-Shark) Bitubo has to be placed on the rear side of the vehicle.

a. Place the GPS sensor (E-Shark) near the iron bracket of the seat. Place and secure the sensor wire under the seat using the cable tie mount supplied.
b. Connect the GPS sensor (E-Shark) to the Bitubo Wiring.
c. Mount the seat on the vehicle.
d. Place the Bitubo bracket on the iron bracket of the vehicle.
e. Secure the Bitubo bracket an the seat using the original locking screw.
f. Secure the GPS sensor (E-Shark) on the Bitubo bracket just mounted.



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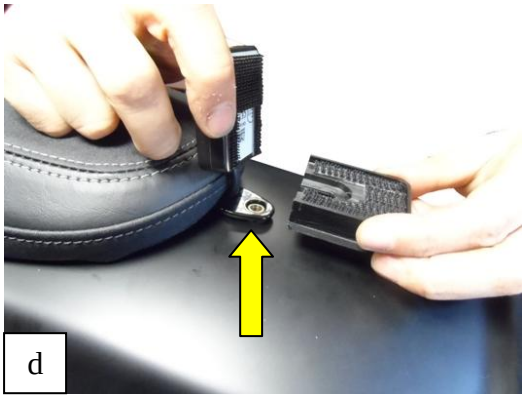
c


d


e


f

***For the position of the GPS sensor (E-Shark) refer to the scheme here below:***

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# ***FRONT FORK CARTRIDGES***

| 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* | *4* | *15* | *70* | *Orig.* | *0* |
| *REB.* | *GR50209* | *0,75* | *0,74* | *4* | *12* | *70* | | |




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# CARTRIDGES ADJUSTMENT

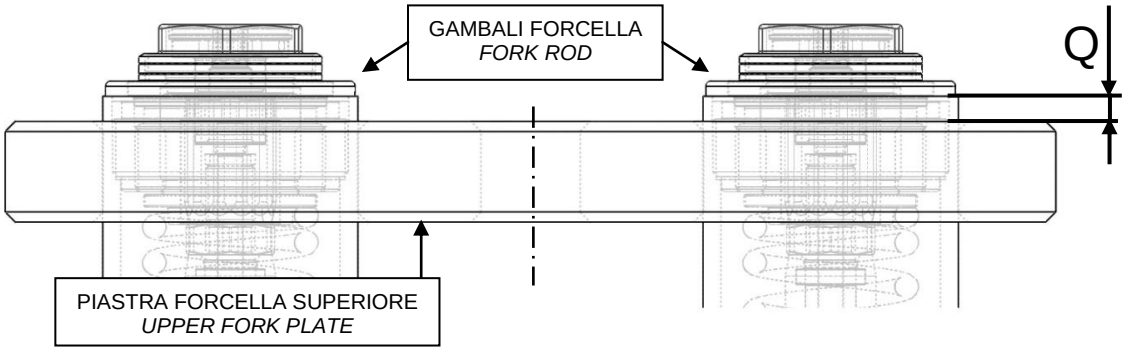
Spring pre-load and hydraulic compression and rebound regulations are found on the upper cap. The two cartridges perform separate hydraulic functions: the cartridge with the ***yellow identifier*** performs hydraulic compression while the cartridge with the **blue *identifier*** performs hydraulic rebound.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

The hydraulic adjustments of Compression and Rebound are electronically adjusted by **Bitubo Digishox** system.
For all the functionality, refer to the **"System User's Guide"**.

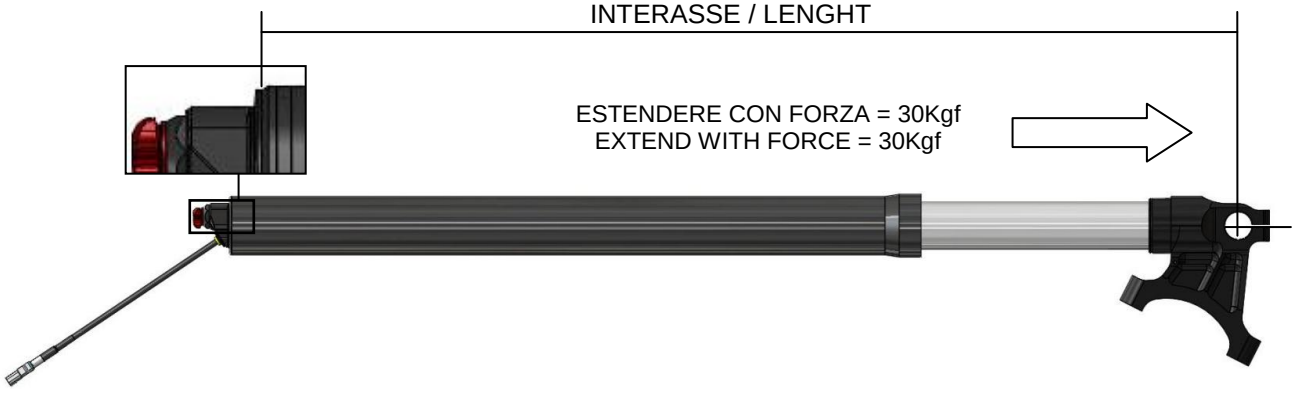
## FORK SLIPPING ADJUSTMENT

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 37.
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** quote was set to provide safe manageability and stability. A 2 or 3mm adjustment changes the vehicle's behaviour.
Changing the Q quote 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.



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# ***SPRING PRE-LOAD ADJUSTMENT***

The adjustment range is 12mm (12 clicks).
Each click (½ adjuster knob turn) corresponds to 1mm spring pre-load.

***1 complete turn (2 clicks) = 2mm***

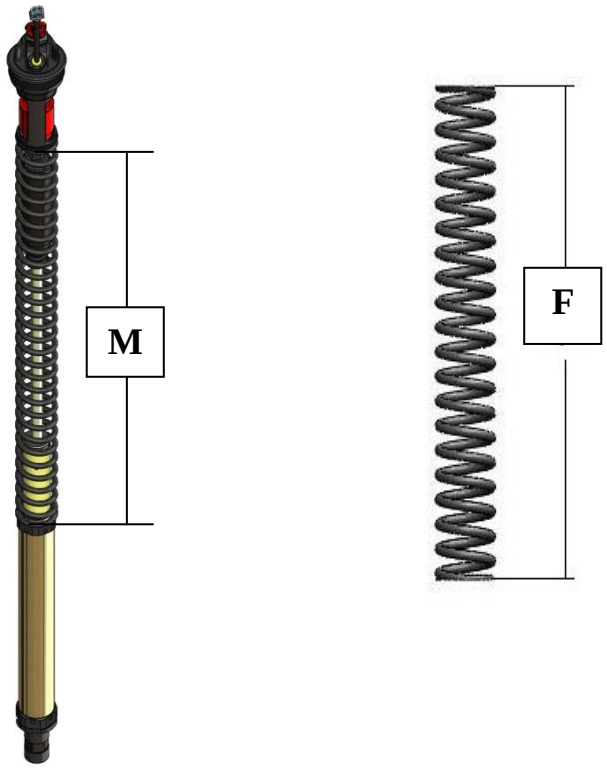
To increase the spring pre-load value rotate the adjuster knob clockwise. To decrease the pre-load value, rotate it counter-clockwise.

For better handling of the preload adjuster kno, you can use the tool (cod. 00416) included in the Cartridge Kit.


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 → **PRELOAD=F-M**



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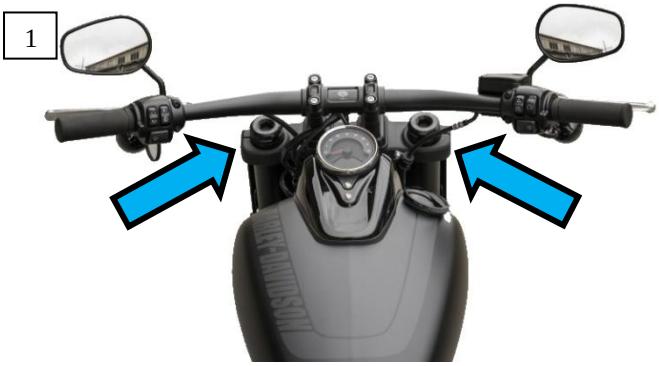
# ***MOUNTING INSTRUCTIONS***

***WARNING:***

- ***The upper cap of the cartridge is not tightened by Bitubo since it must be removed and subsequently tightened for assembly.***

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.

1

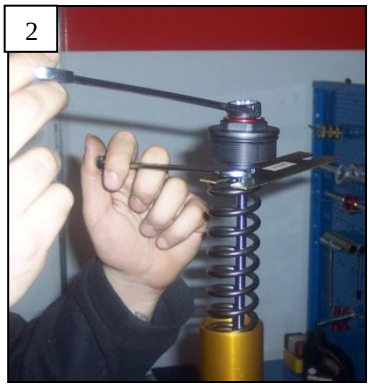


4- Remove the fork legs from the vehicle: to remove the fork legs and original parts, follow the vehicle manufacturer's instructions (User/Maintenance handbook - Garage Manual).

***OPERATIONS ON THE LEFT FORK LEG***

5- Secure the fork foot in a clamp 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 outer tube.
7- Slowly lower the outer tube and unscrew the cap from the rod inside the cartridge and remove it (see example in photo 2).

2



8- Remove the spacers 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 CARTRIDGES INSTALLATION PROCEDURE*

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

11- 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).

12- Remove the upper cap, the spacers (if used) and the spring from the ***JBH Bitubo*** cartridge: to make easier the operation hold the lock nut with the tool 00531, after that unscrew manually the upper cap.(photo 3).



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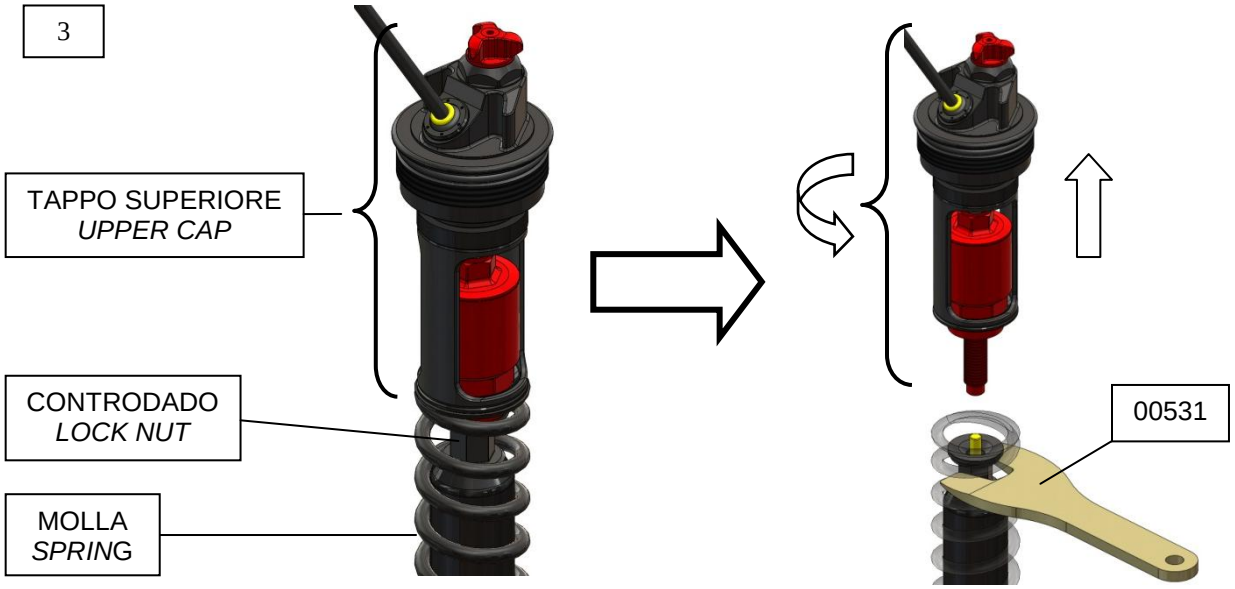
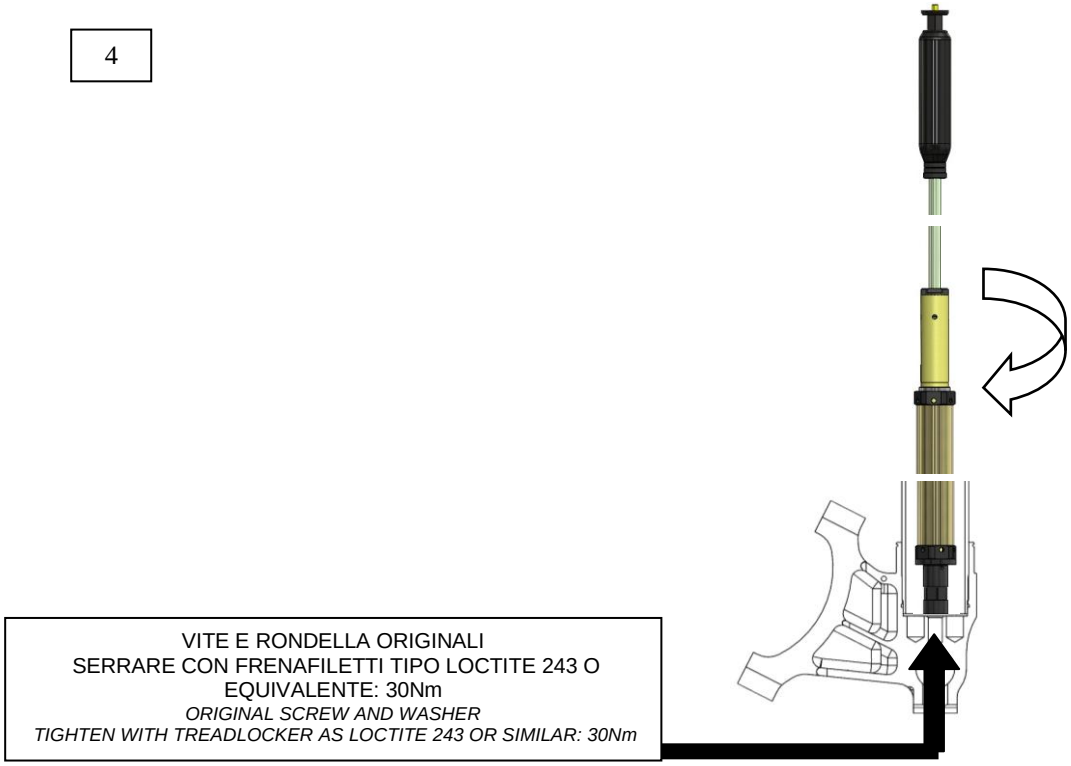
*In some cases the springs are not mounted in the cartridges but inserted in the shipment box.*

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




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

***WARNING: Insert the compression cartridge on the left and the rebound cartridge on the right.***




14- 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 00512. Pour ***Bitubo* 997630** oil to the level, from the inner tube edge, indicted in the "base setting" table on page 42. Perform some outer tube compression-extension movements to drain any air.



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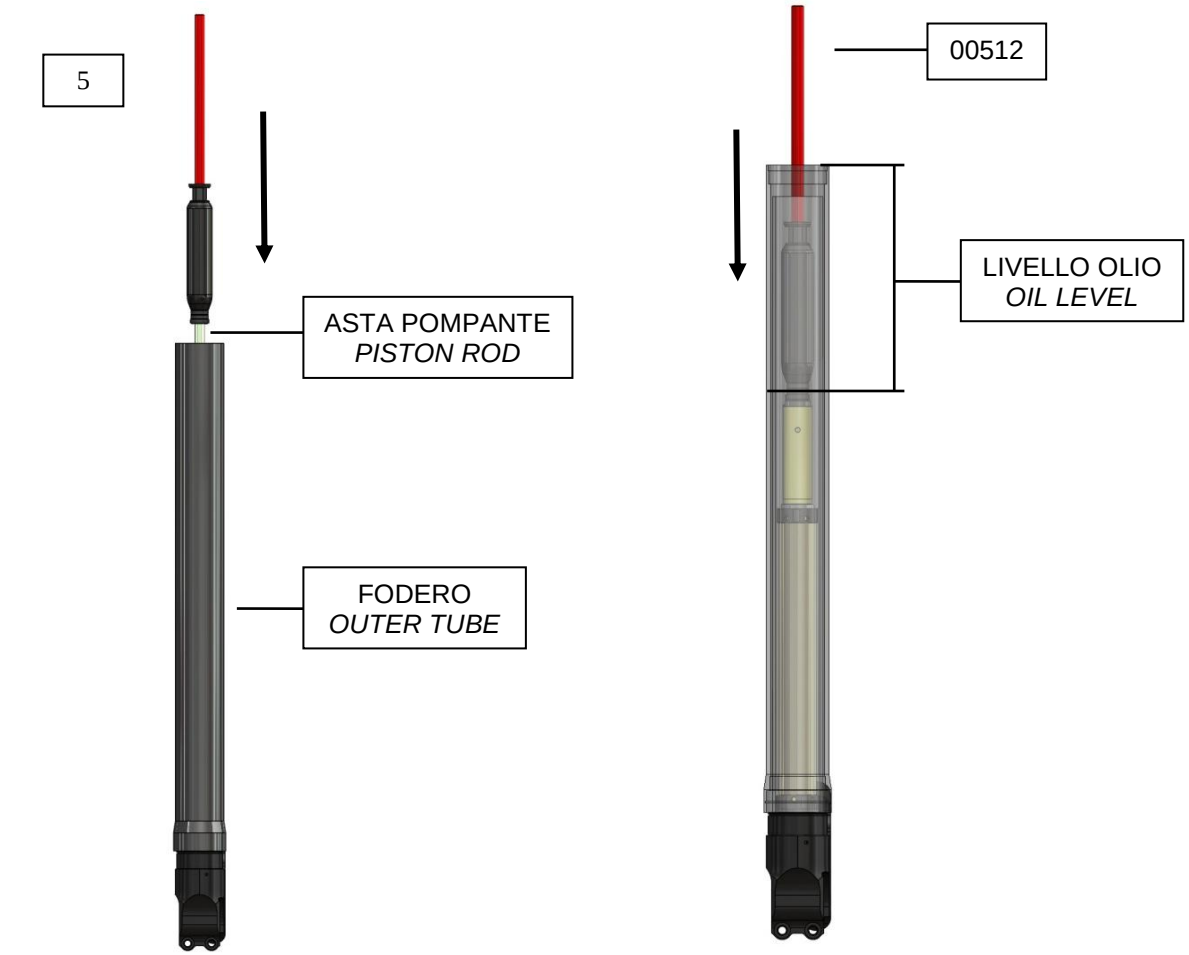
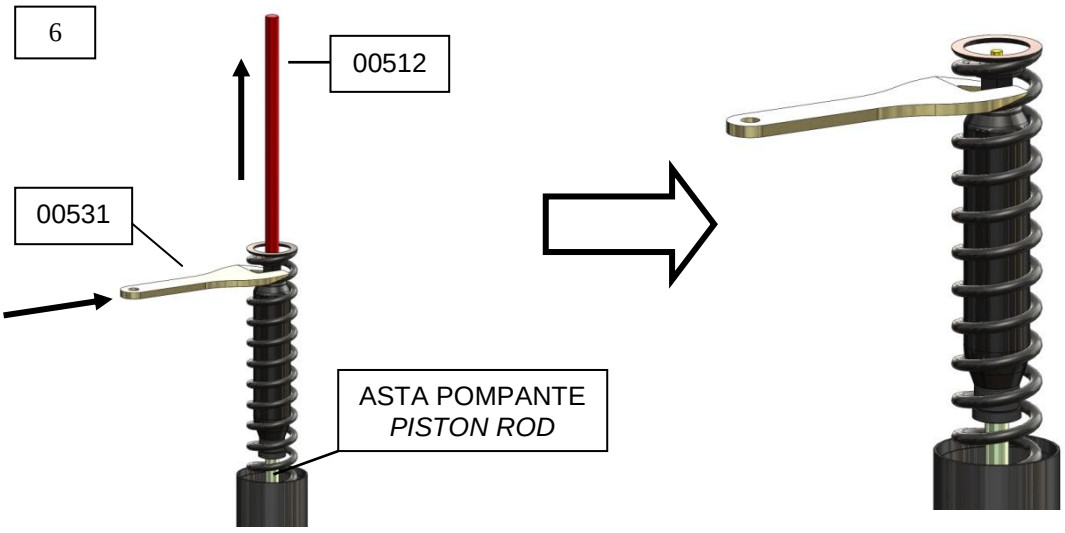



15- Perform some compression-extension movements of the outer tube and re-check the oil level repeating the operations of point 15.
16- Insert the spring, removed in point 12 (end with engraved constant elastic K towards the cap).
17- Hold and extend the piston rod with the tool 00512 so keep the lock nut with the tool 00531. After that removed the tool 00512.




18- Screw manually the upper cap on the lock nut until il reaches limit stop.



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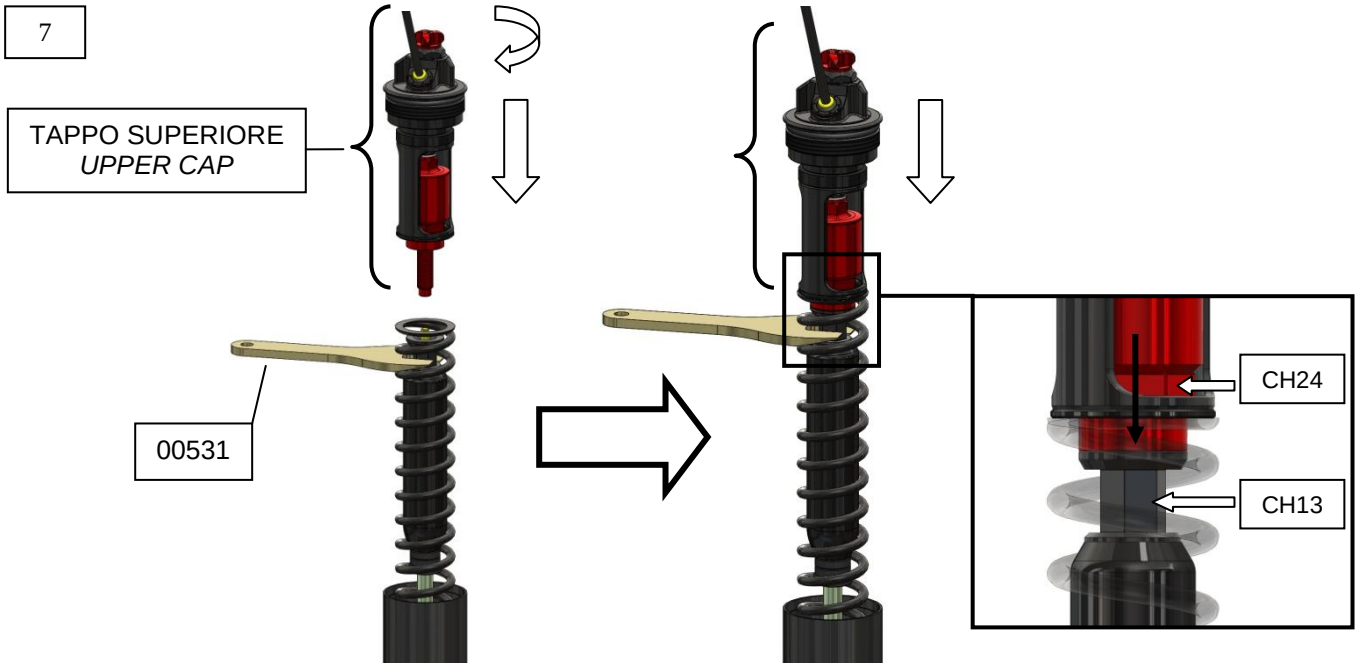
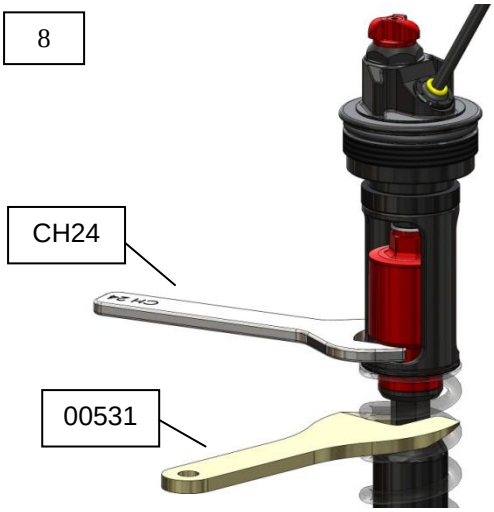



19- Tighten the lock nut to the upper cap. Tighten to 9 Nm.




***OPERATIONS ON THE LEFT FORK LEG***

20- 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).
21- Unscrew the upper fork leg original cap. Slowly lower the outer tube e and unscrew the cap from the rod inside the cartridge and remove it
22- 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*

23- Secure the fork foot in a clamp, with the rod vertical.
24- Secure the key 00243 plus bushing 00324 (Ø41mm fork rods) or 00323 (Ø43mm fork rods) on the fork rod.



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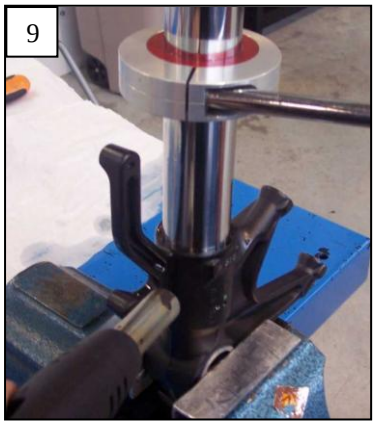
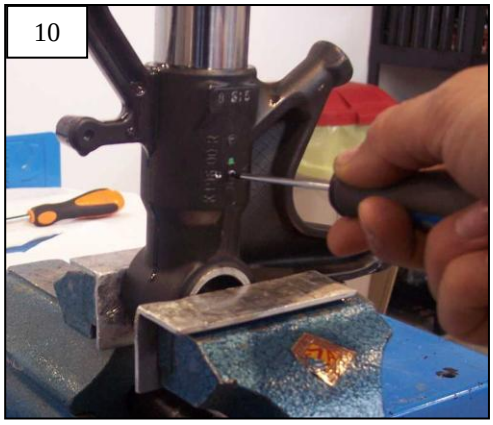
25- With the heat gun, heat the rod coupling zone on the foot (photo 9) and, in some cases, with a Torx wrench, unscrew the safety nut on the foot (photo 10) and then unscrew the tube from the fork bottom (**WARNING!** Heat the part to high temperature so that the original glue melts) and extract the original spacer is present (photo 11).

9



10



11

12

26- 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)

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

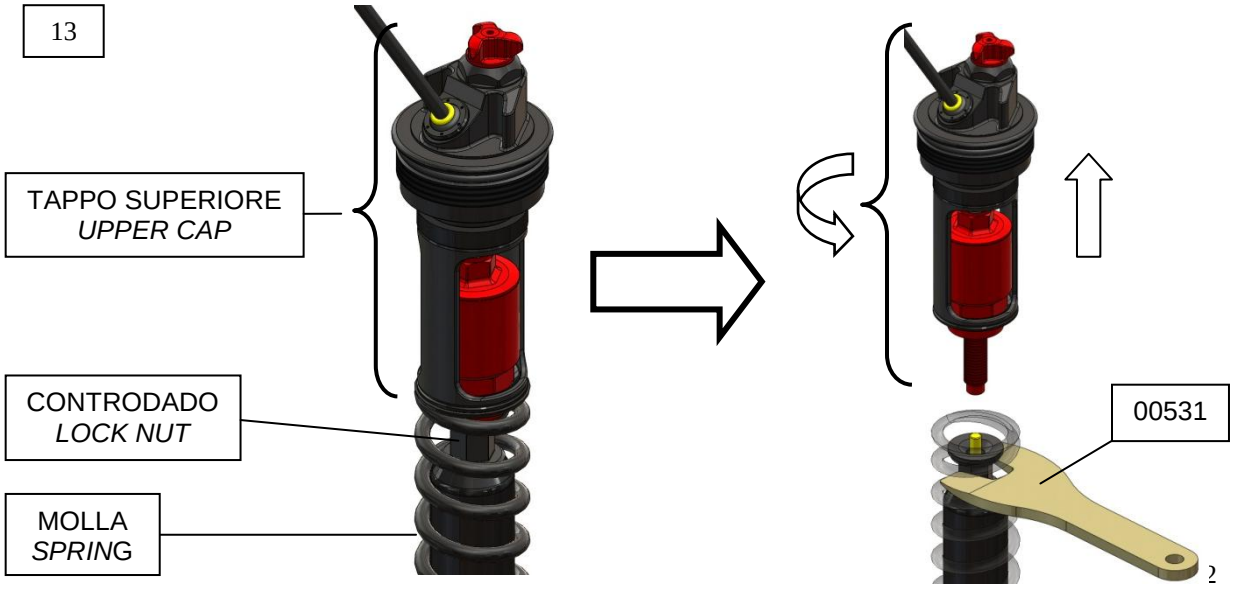
28- Re-insert the original O-ring in the foot.

29- Remove the upper cap, the spacers (if used) and the spring from the ***JBH Bitubo*** cartridge: to make easier the operation hold the lock nut with the tool 00531, after that unscrew manually the upper cap.

*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.***

13



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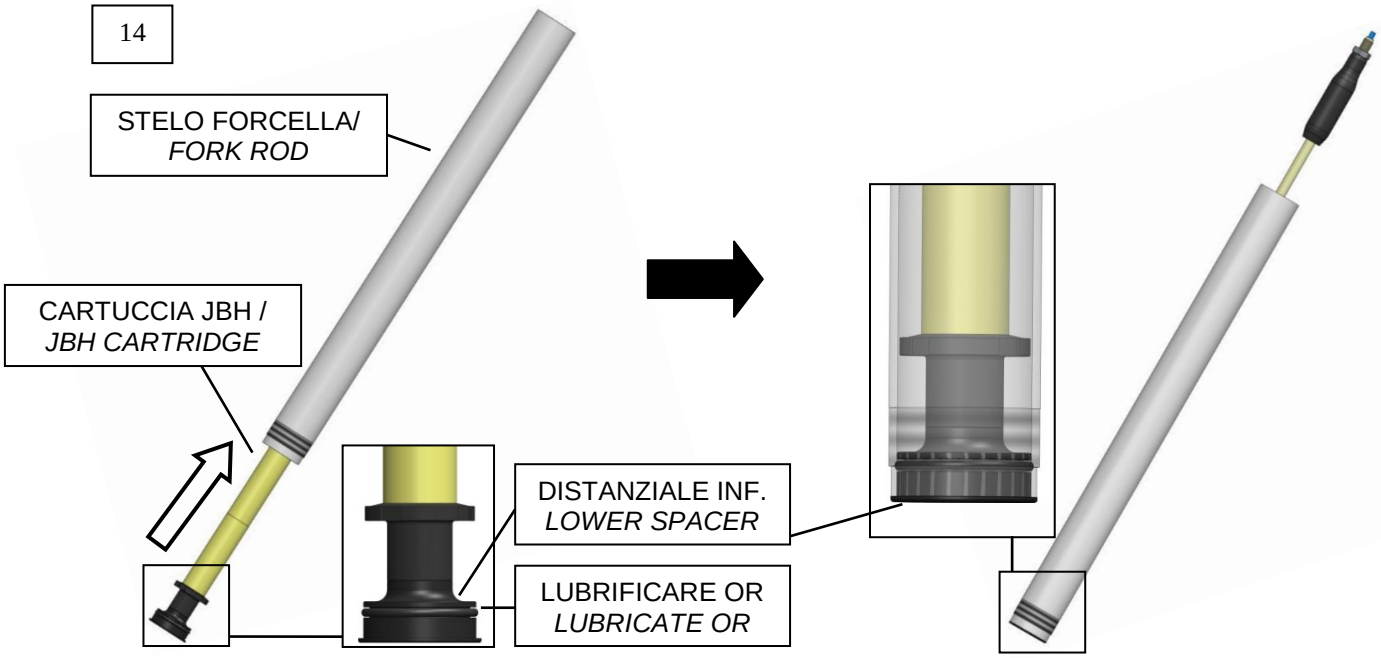
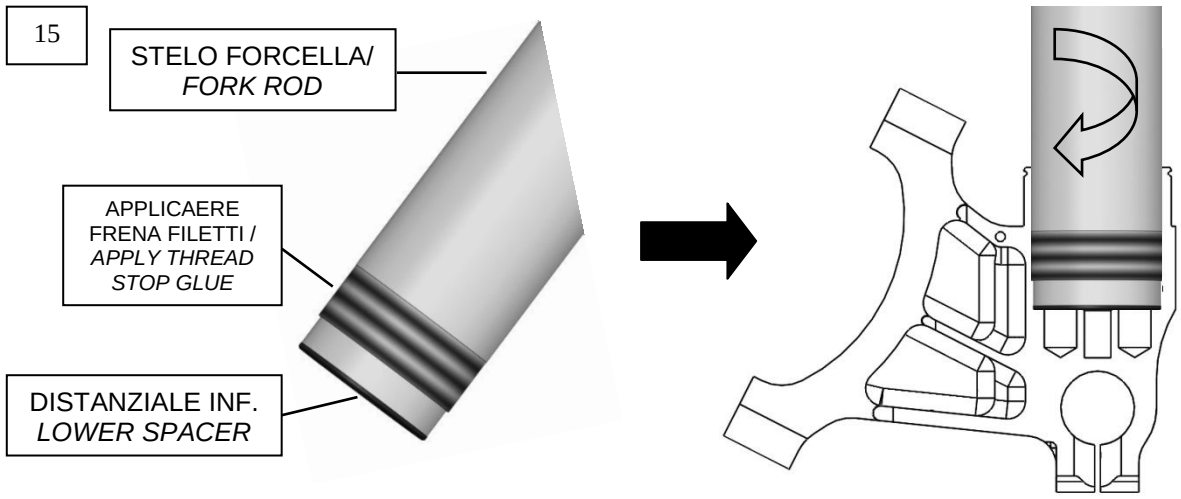
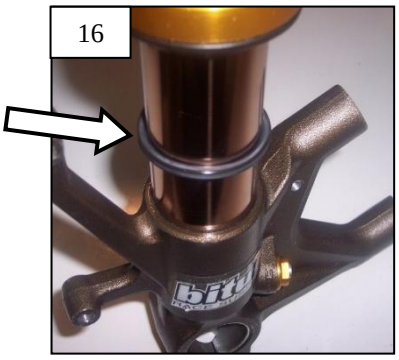
30- Lubricate the OR of the lower cartridge spacer. Insert the **REBOUND** cartridge inside the fork rod until it stops on the lower cartridge spacer.




31- 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).




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




33- 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).



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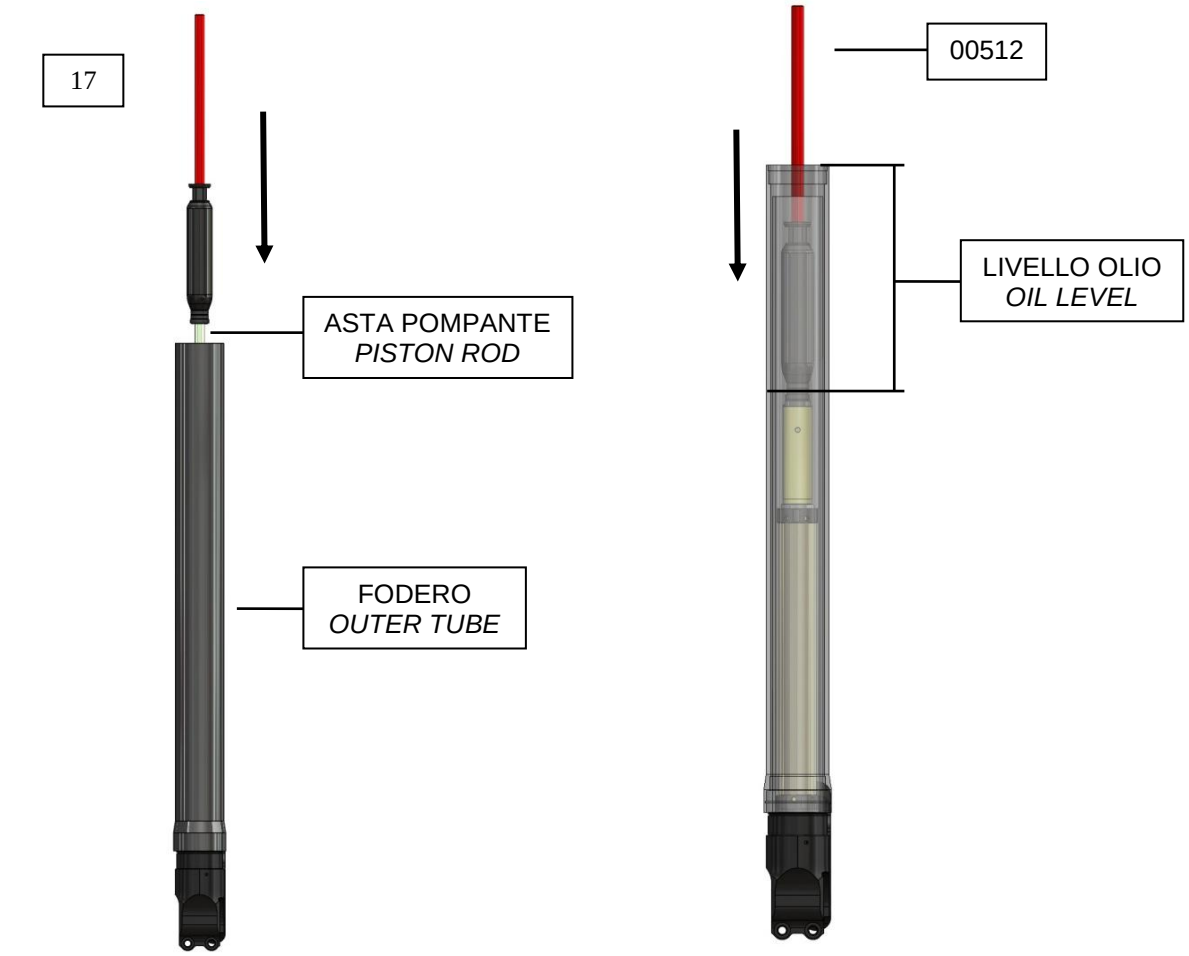
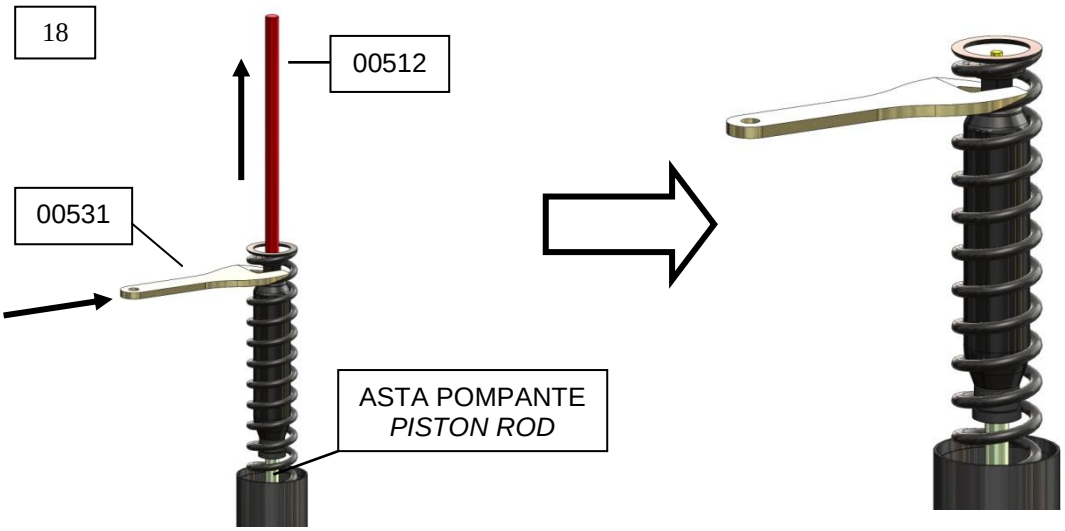
34- Bright both the outer tube and piston rod to the maximum compression position for correct oil level: compress the piston rod strictly using tool code 00512. Pour ***Bitubo* 997630** oil to the level, from the inner tube edge, indicted in the "base setting" table on page 42. Perform some outer tube compression-extension movements to drain any air.




35- Perform some compression-extension movements of the outer tube and re-check the oil level repeating the operations of point 17.
36- Insert the spring, removed in point 29 (end with engraved constant elastic K towards the cap).
37- Hold and extend the piston rod with the tool 00512 so keep the lock nut with the tool 00531. After that removed the tool 00512.




38- Screw manually the upper cap on the lock nut until il reaches limit stop.



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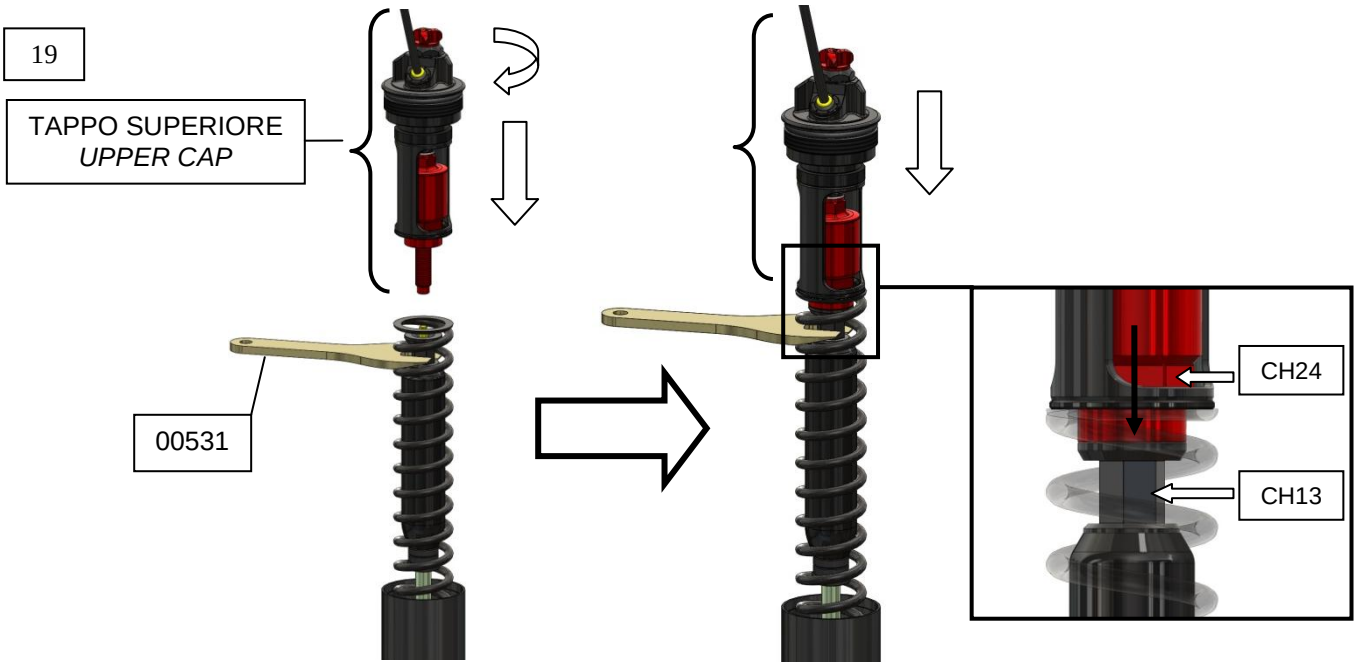
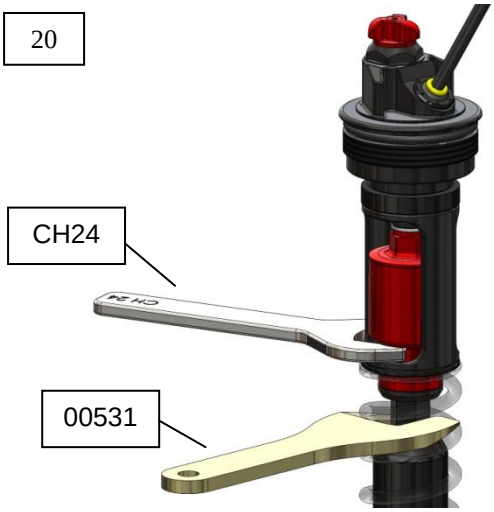
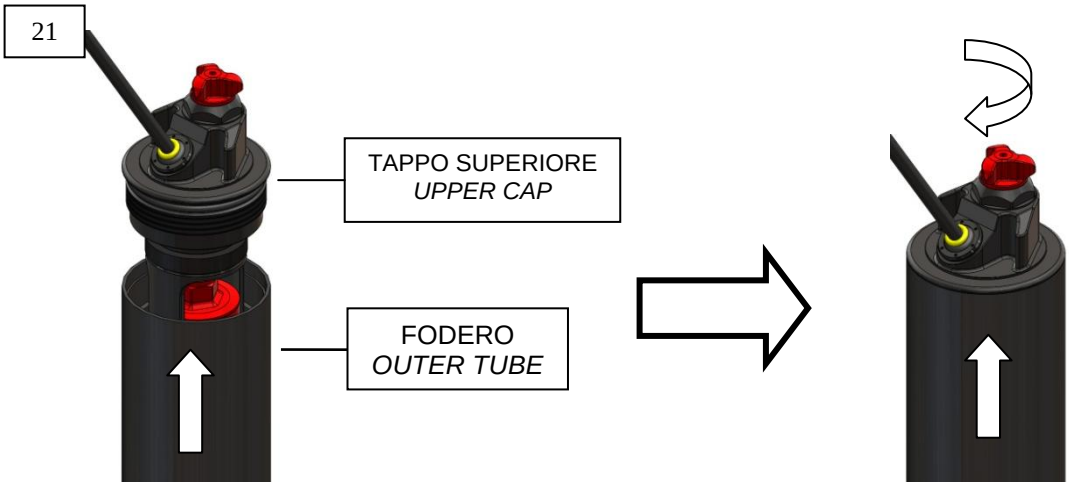



39- Tighten the lock nut to the upper cap. Tighten to 9 Nm.




40- Bring the outer tube towards the upper cap. Screw the upper cap without tighten.




41- Reassemble the fork legs on the bike following the instructions in the vehicle manufacturer's Garage manual. Restore sliding **Q** indicated in the table on page 43 and tighten the screws of the lower plate.

42- tighten the upper caps to the torque of 15Nm using the tool 00398. After that tighten the screws of the upper plate.



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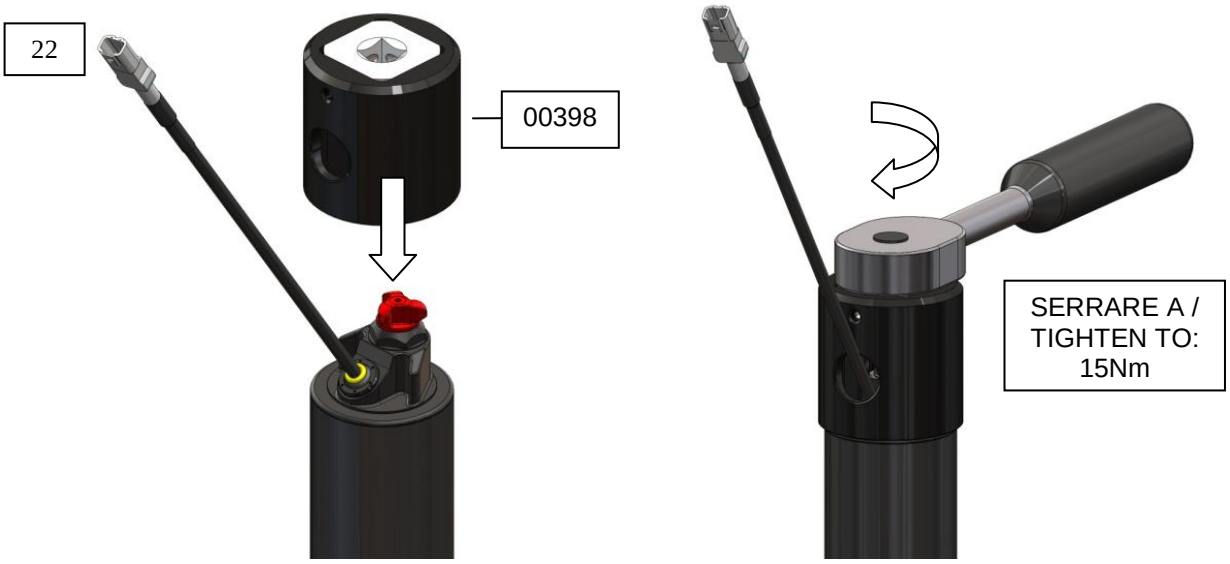


43- Connect the cartridges connectors to the Bitubo wiring:

a. COMPRESSION cartridge connector to the Bitubo wiring connector identified as “COMPRESSION FRONT”.

b. REBOUND cartridge connector to the Bitubo wiring connector identified as “REBOUND FRONT”.


44- Once the fork legs have been mounted and the upper cap have been placed in the correct way compared to the upper plate could occur the misalignment of the reflectors mounted on the outer tube compared ti the fork leg.


Is suggested to take note about the mounting measures of the reflectors and remove them; they are secured by double-sided adhesive tape. For the disssembly operations is suggested to use a thin steel wire. Take care to do not damage the outer tube.
Secure the reflectors in the correct position using double-sided adhesive tape.



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# ***REAR SHOCK ABSORBER***

| *Schema comp. / Comp. Scheme / Druck-stufen Schema / Compression regime* | *Schema est. / Rebound. Scheme / Zugstufen Schema / Extension regime* | *Rigidezza molla / Spring rate / Federrate / Ressort [kg/mm]* | *Rigidezza molla interna / Top Out Spring rate / Innenfederrate [kg/mm]* | *Precarico molla / Spring Preload / Vor-spannung / Precontrainte du ressort [mm]* | *Estensione/ Rebound/ Zugstuf / Extension [clicks]* | *Compressione/ Compression/ Druckstufe/ Compression [clicks]* | *Interasse / Length / Länge / Entraxe [mm]* |
|---|---|---|---|---|---|---|---|
| ***GR7211*** | ***GR7214*** | ***11,5*** | ***15,0*** | ***20,0*** | ***15*** | ***12*** | ***333,0*** |




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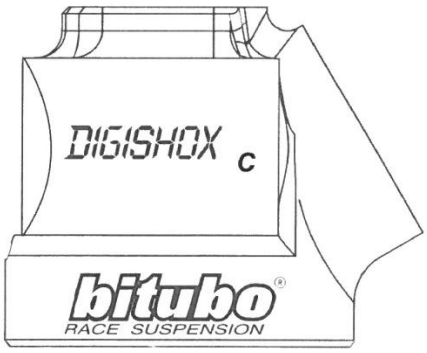
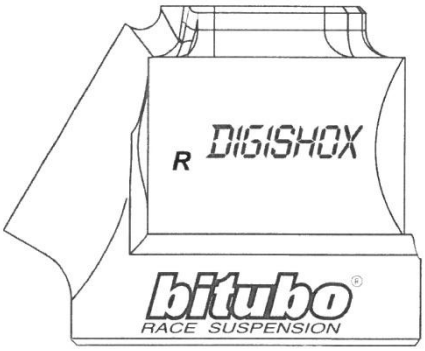
# ***REAR SHOCK ABSORBER SDJUSTMENT***

The hydraulic adjustments of Compression and Rebound are electronically adjusted by **Bitubo Digishox** system.
For all the functionality, refer to the **"System User's Guide"**.


***C - COMPRESSION***




***R - REBOUND***




## ***SPRING PRELOAD ADJUSTMENT***

The adjustment range is **12mm**.

The hydraulic spring preload is electronically adjusted by **Bitubo Digishox** system.
For all the functionality, refer to the **"System User's Guide"**.

The preload defines the height of the bike from the ground as well as the dynamic set-up on a bend, therefore also the angle values of the fork, the front, etc. which characterize the behaviour of the vehicle.


**WARNING:** this kind of damper is provided by an internal top out spring. Verify the measures at completely extended suspension, not only by lifting the bike from the ground, but forcing the suspension in extension too, in order to compress totally the top out spring.



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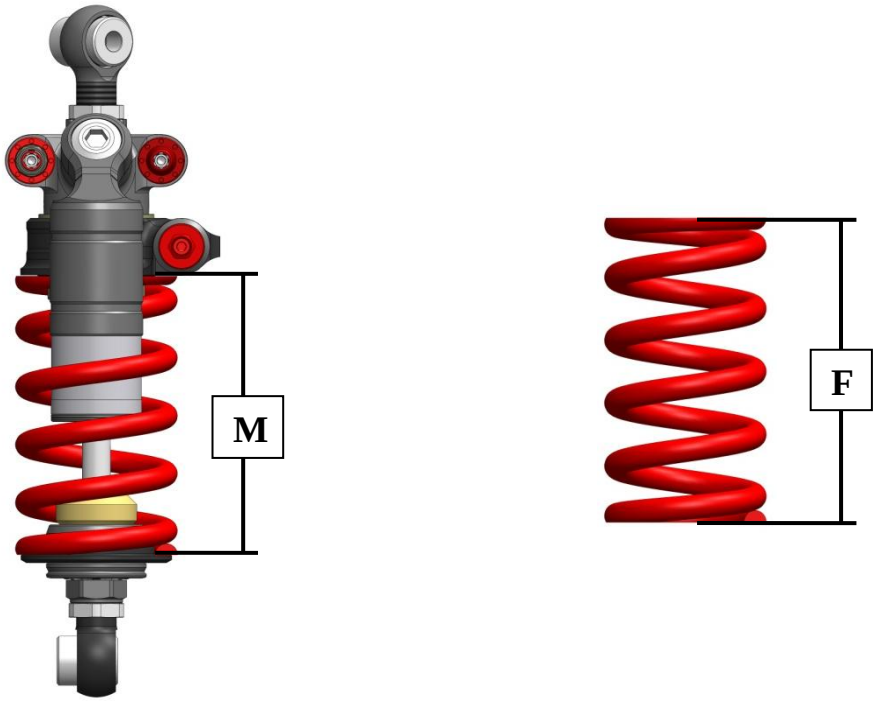
The spring preload is the pressure to the spring when it is installed on the shock. → **PRELOAD=F-M**

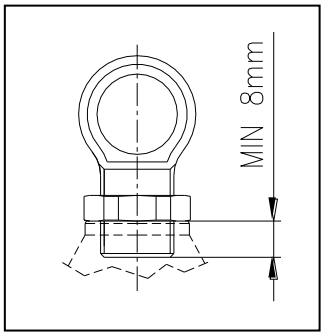


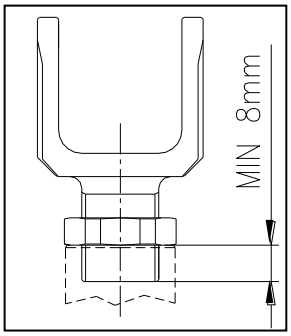

## ***LENGTH ADJUSTMENT***


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

**The length has to be adjusted only on the lower attachment** (unless different information reported on the specific instruction) because the upper attachment adjustment change the position of the shock absorber refer to the vehicle frame and it could get interference with the other parts.


**WARNING:** adjust the lower attachment being sure that inside the boss you keep at least 8 mm thread.


According to the lower head layout (with holes – left figures; with nut – right figures), insert the Ø8mm tool, supplied inside the package, inside one of the holes or 27mm key in the nut.
After positioning the bike on a special stand so to avoid any weight on the rear swing arm, loosen the lock nut with 27mm key as for the picture.

If the shock absorber is removed from the bike:
- Unscrew the lower head for **increasing** the length
- Screw the lower head for **decreasing** the length



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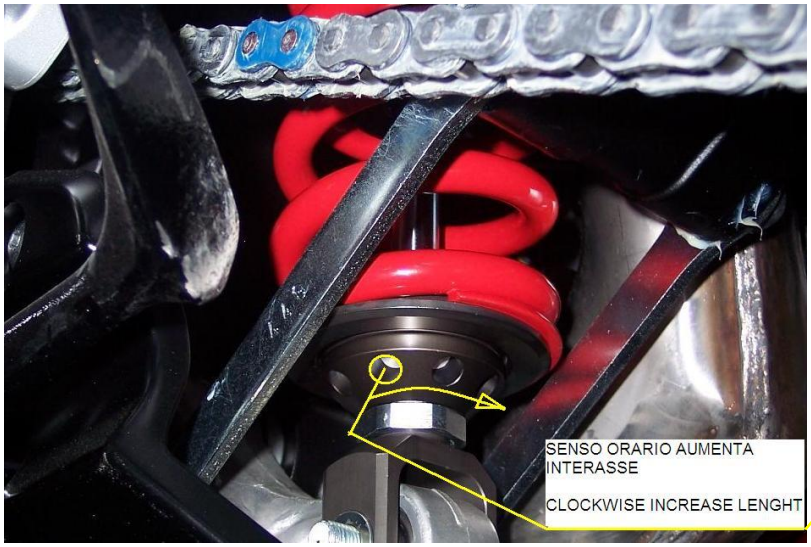
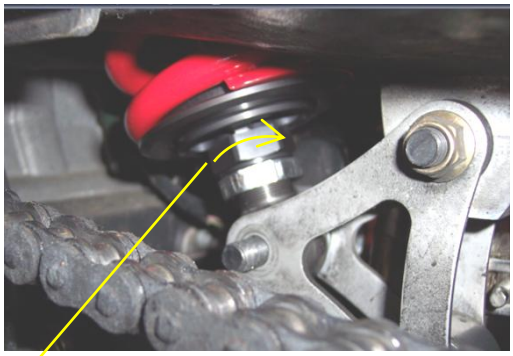
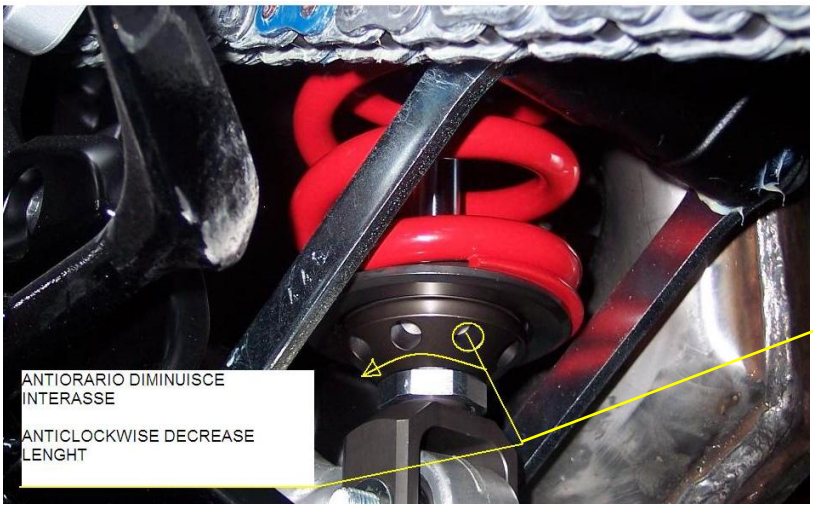
If the shock absorber is mounted in the bike:

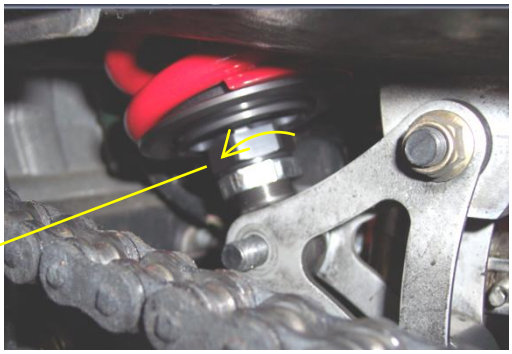
- Turn clockwise the lower attachment for **increasing** the length



- turn anticlockwise the lower attachment for **decreasing** the length



**Note:** One complete turn of the length adjuster modifies the shock absorber length for 1mm



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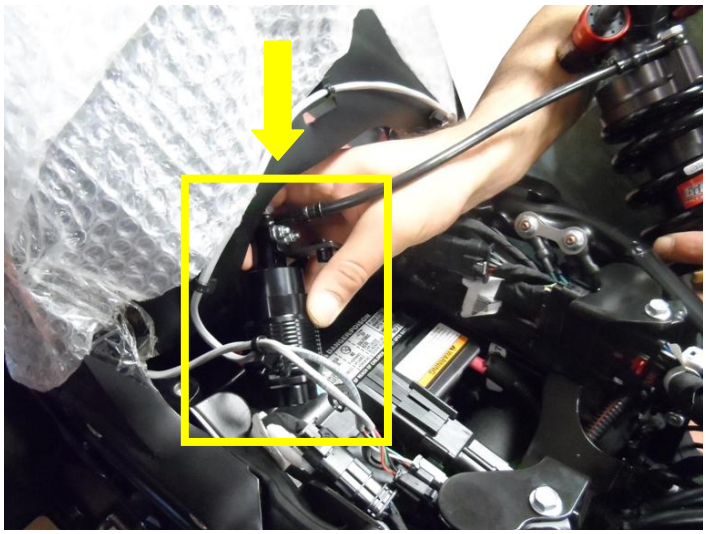
# *ASSEMBLING INSTRUCTIONS*

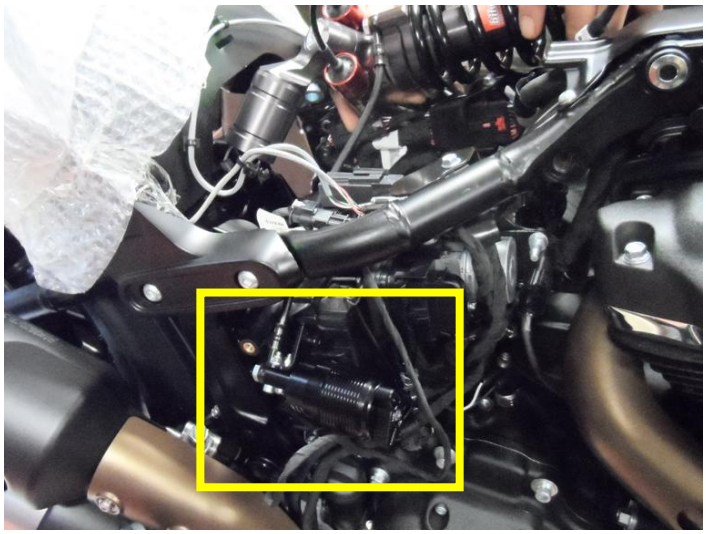
***ATTENTION:*** for all assembling and disassembling operations, and the torque settings of the retaining pins, follow the Manufacturer's instructions carefully (Use/Service manual - Workshop Manual).

1) Place the bike on a suitable support and lift the back wheel off the ground without any load on the suspension.

2) Remove the original shock absorber. For disassembling, refer to the vehicle Manufacturer's instructions (Use/Service manual – Workshop manual).

3) Place the Bitubo shock in its housing. Insert the preload adj. knob between the frame and the original brackets bringing it next to the position of the OEM preload adj. knob. If it is necessary loosen the brackets screws to make easier these operations.



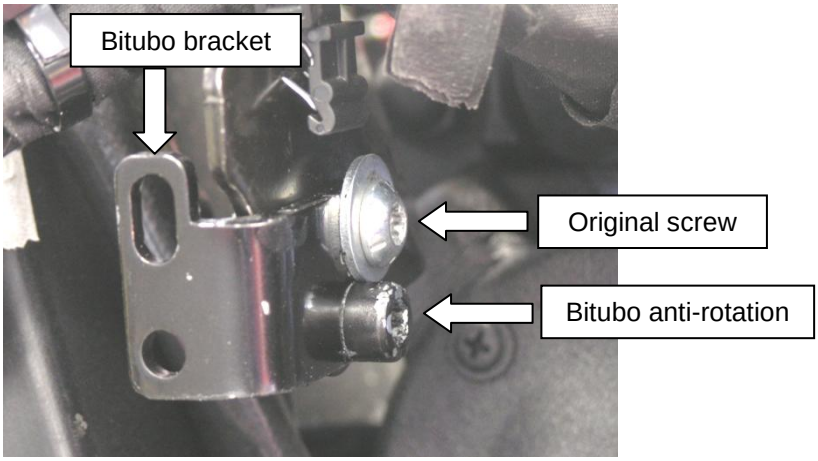


4) Screw in the upper attachment. For the moment do not tighten it.

5) Screw in the lower attachment. For the moment do not tighten it.

6) Place the Bitubo knob support bracket in the same position of the original. Fix it to the frame with the original screw.

*ATTENTION:* The screw already tight to the bracket is used as anti-rotation system. Do not unscrew that screw.




7) Secure the hydr. preload adj. knob of the shock to the Bitubo bracket. Check that the knob is centred in its housing of the fairing.



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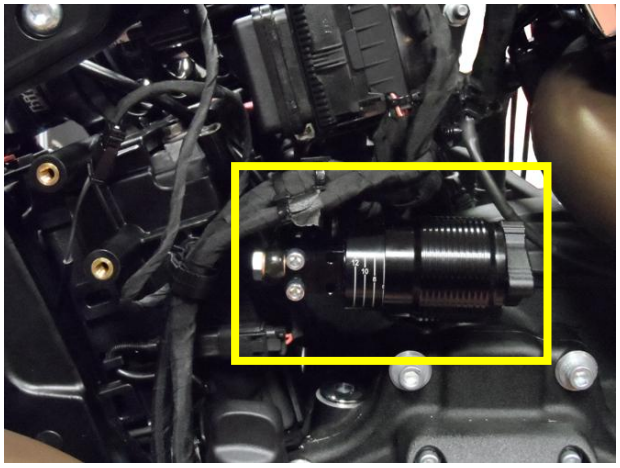
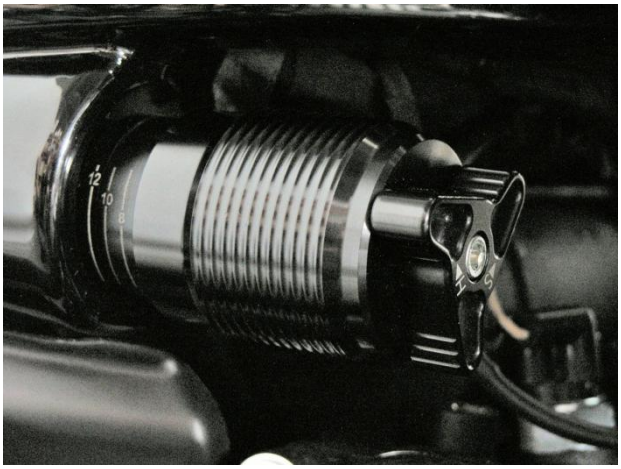
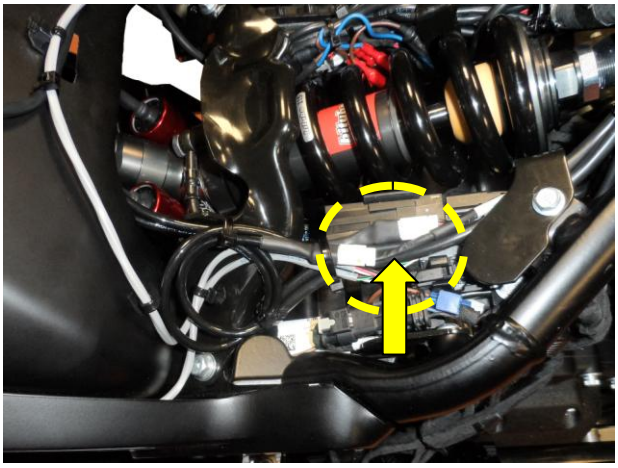




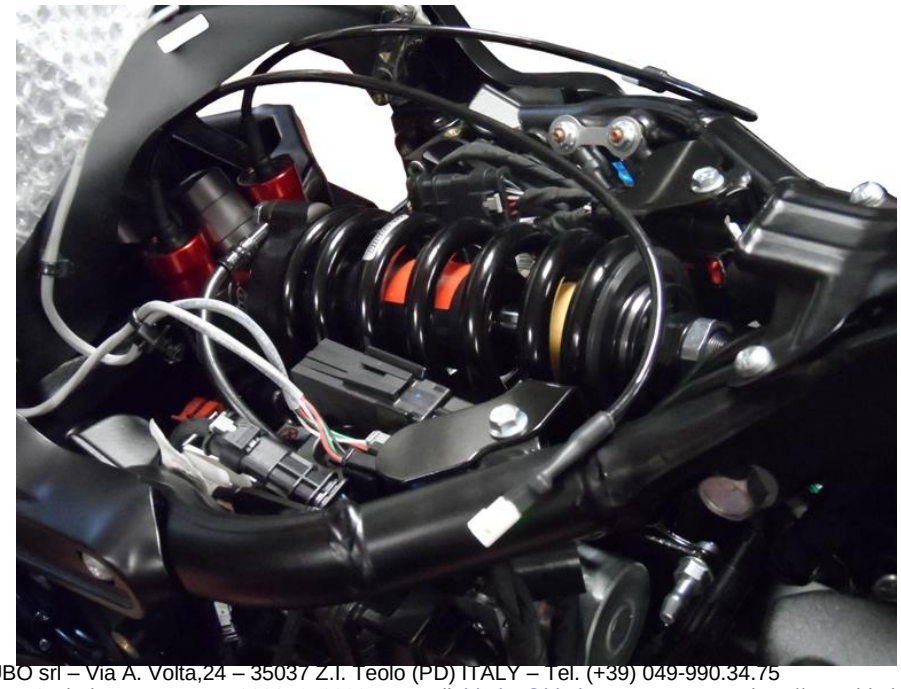
8) Put down the vehicle and test the rear suspension. Check that there isn't any contact between the moving parts.

9) Tighten the upper and the lower attachment.

10) Connect the electronic adjustment wires of the shock to the Bitubo Wiring.




11) Refit all the original components following the Manufacturer's instructions (Use/Service manual - Workshop Manual).





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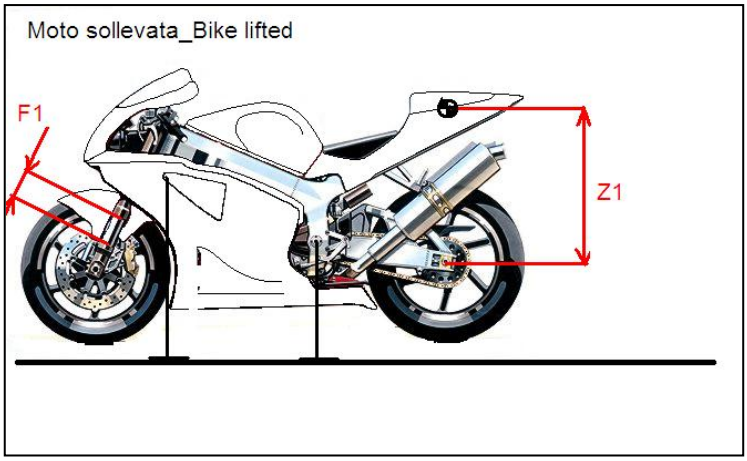
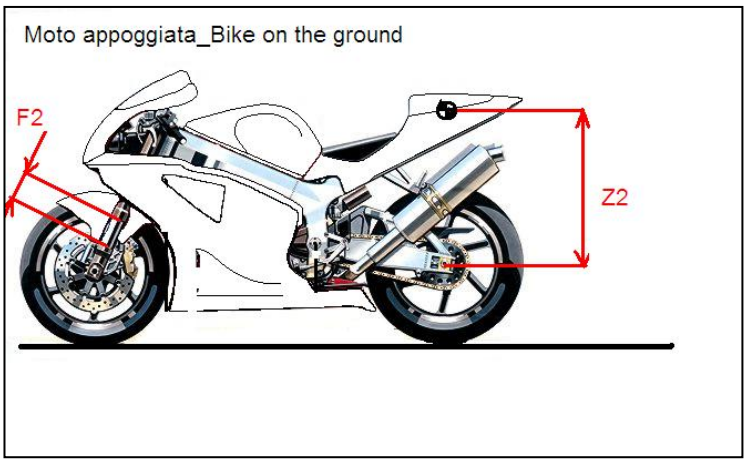
# ***ADJUSTMENT AND MEASUREMENT OF SAG***




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.

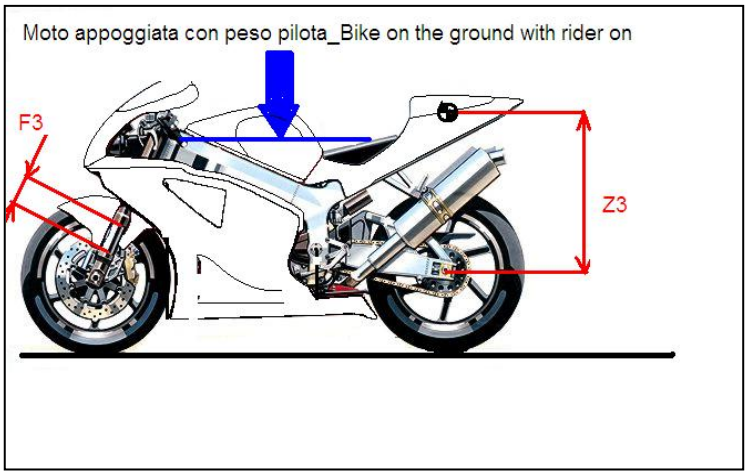



3) Measure the distance between the two points Z1 and F1.

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 2**5mm 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 it clockwise (screwing); on the other hand, in order to increase the static sag, you shall decrease the spring preload anti-clockwise (unscrewing the adjustment).



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# ***MAINTENANCE***


## ***FRONT FORK***

- 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.

## ***REAR SHOCK ABSORBER***

- Cleaning and lubricating your shock prevents its early wear and tear and increases its performances longer.
- On clearing the bike, pay attention not to turn the water jet at high pressure directly to the body and head of the shock absorber.
- Keep clean the shock absorber from dust, ground and any other impurities using a non-aggressive detergent.
- After cleaning vaporize on the shock some cleaner like WD40 or similar and then dry with compressed air jet.
- Bitubo recommends to check yearly, or after 10000Km, the correct work of the shock absorber:
    - inspection the joints of upper and/or lower attachments, clean with a proper cleaner and lubricant the moving parts.
    - inspection the shock and check if there are any components leaking oil.
    - check the internal gas pressure.
- Bitubo recommends the service every 2 years or 20.000 km.
- Bitubo recommends to check periodically the efficiency of the shock absorber performing some compression and extension movement set the hydraulic adjustments from “fully-open” to ”fully-closed”. The positive result is the damping change.

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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