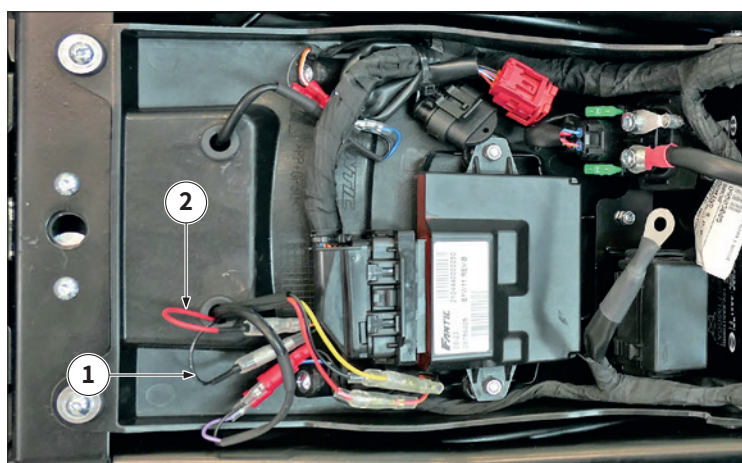




12.1 SEAT

Lift and remove the seat "1".

i Proceed in the reverse order for reassembly.

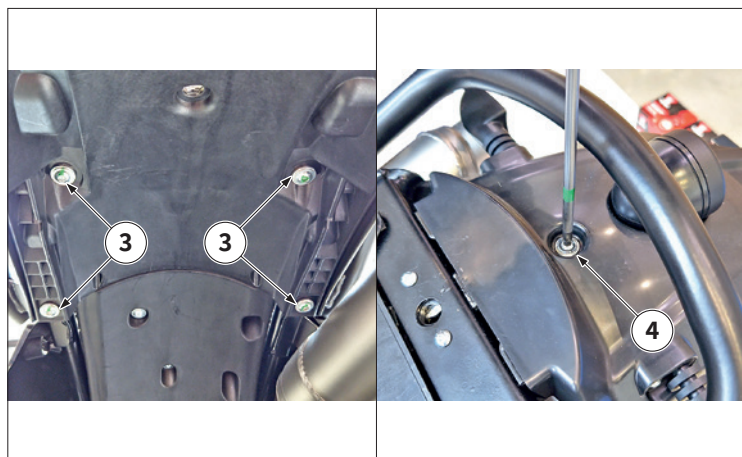


12.2 LICENSE PLATE HOLDER

Preliminary operations:

– Remove the seat (as described on page 102).

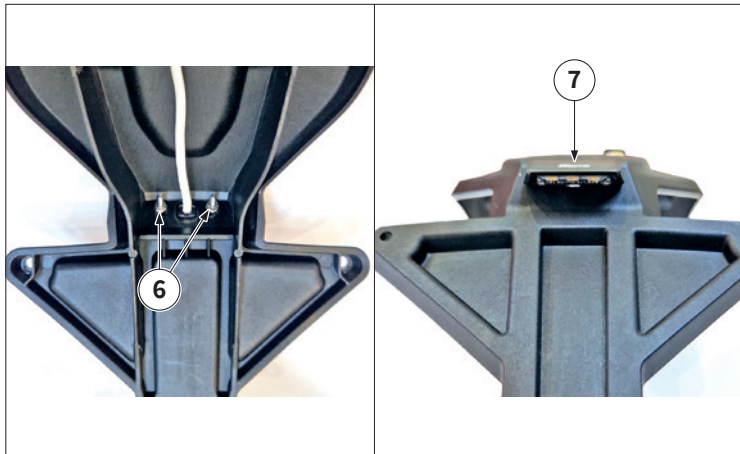
Disconnect the licence plate light harness (black wires "1" and red wires "2") from the vehicle wiring.



Remove the screws "3" and screw "4".



Remove the licence plate holder "5".



Remove the nuts "6", then remove the licence plate light "7".

i Proceed in the reverse order for reassembly.



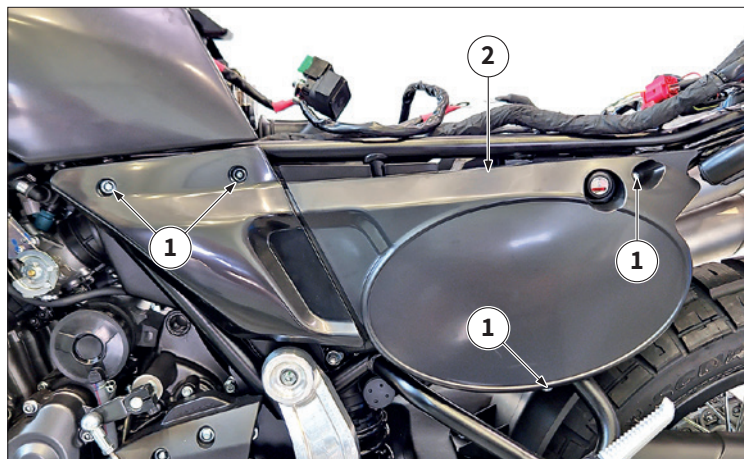
12.3 TAIL PIECE AND HANDLEBAR

Preliminary operations:

- Remove the seat (as described on page 102);
- Remove the licence plate holder (as described on page 102);
- Remove the rear light (as described on page 144);
- Remove the rear turn signals (as described on page 144).

Remove the screws "1", then remove the tail piece together with the handle.

i Proceed in the reverse order for reassembly.



12.4 SIDE PANELS

12.4.1 Left side panel

Preliminary operations:

- Remove the seat (as described on page 102).

Remove screws "1", then remove the left side panel "2".

i Proceed in the reverse order for reassembly.



12.4.2 Right side panel.

Preliminary operations:

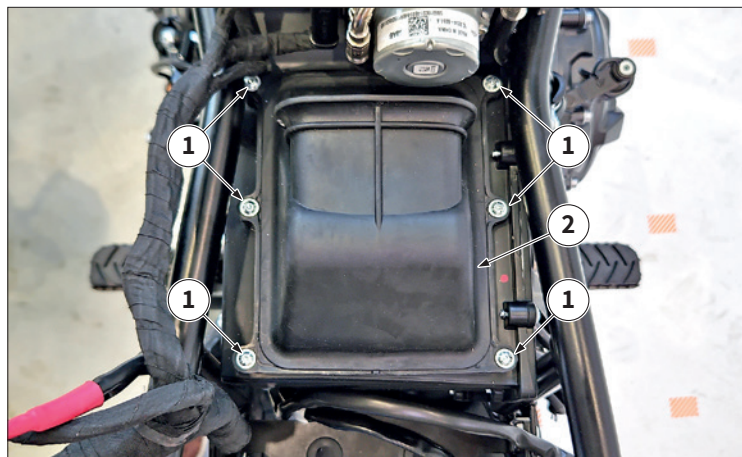
- Remove the seat (as described on page 102).

Remove the screws "1".



Remove screw "2", then remove the right side panel.

i Proceed in the reverse order for reassembly.

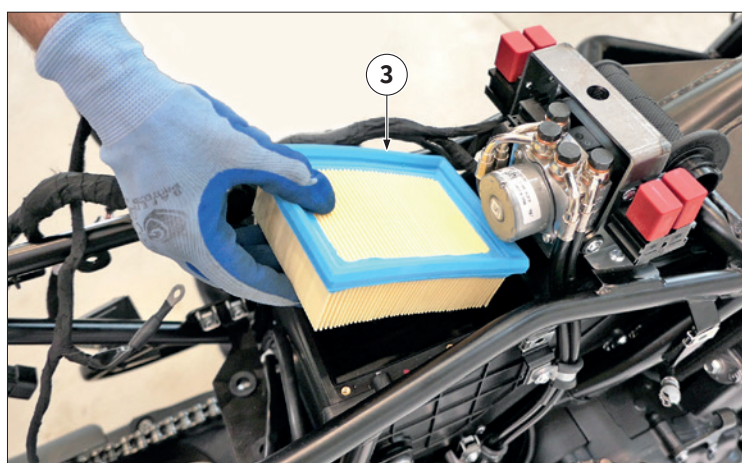


12.5 AIR FILTER

Preliminary operations:

- Remove the seat (as described on page 102).

Loosen screws "1" to remove the filter cover "2".

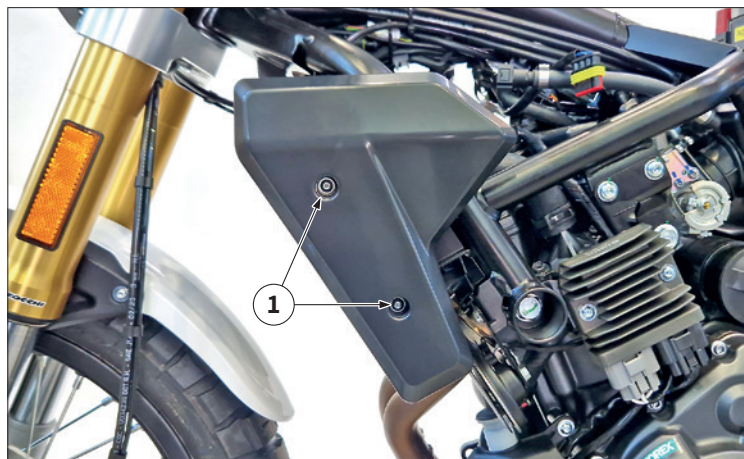


Remove the air filter "3".

i Proceed in the reverse order for reassembly.

12.5.1 Air filter cleaning

Clean the air filter with a jet of compressed air directed from the inside towards the outside of the filter. Externally clean the air filter, the inside of the filter casing and the intake ducts with a clean cloth.



12.6 FAIRINGS AND CONVEYORS

12.6.1 Left conveyor

Remove screws "1", then remove the left conveyor.

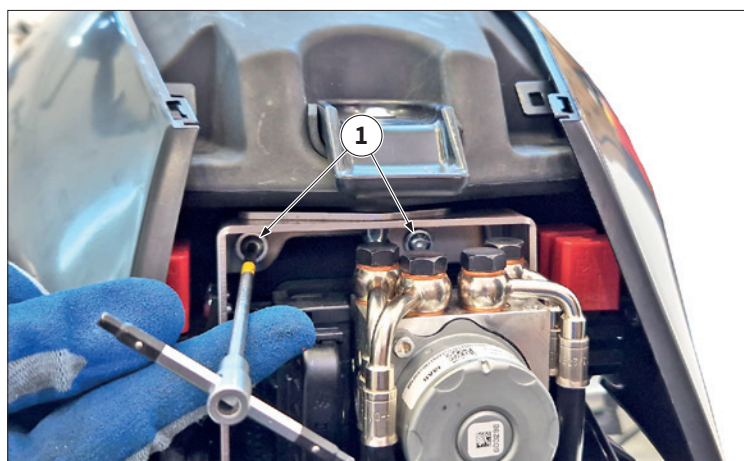
i Proceed in the reverse order for reassembly.



12.6.2 Right conveyor

Remove the screws "1", then remove the right conveyor.

i Proceed in the reverse order for reassembly.



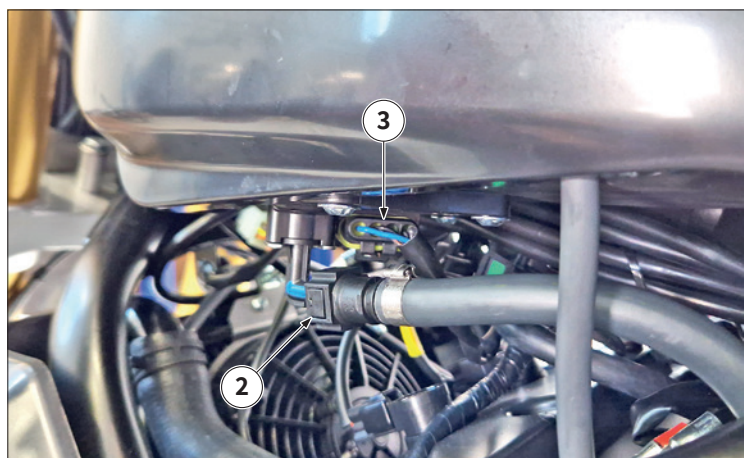
12.7 FUEL TANK

12.7.1 Complete tank

Preliminary operations:

- Remove the seat (as described on page 102).

Remove the screws "1".

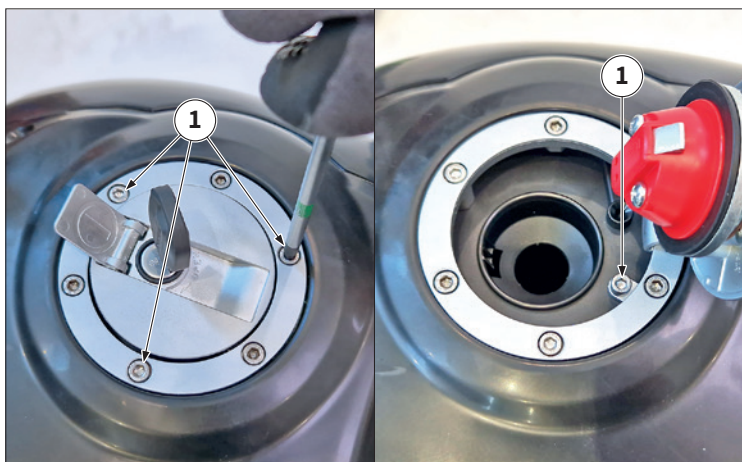


Raise the tank slightly and then remove the vent tubes, disconnect the fuel pump "2" and connector "3".



Remove the complete tank.

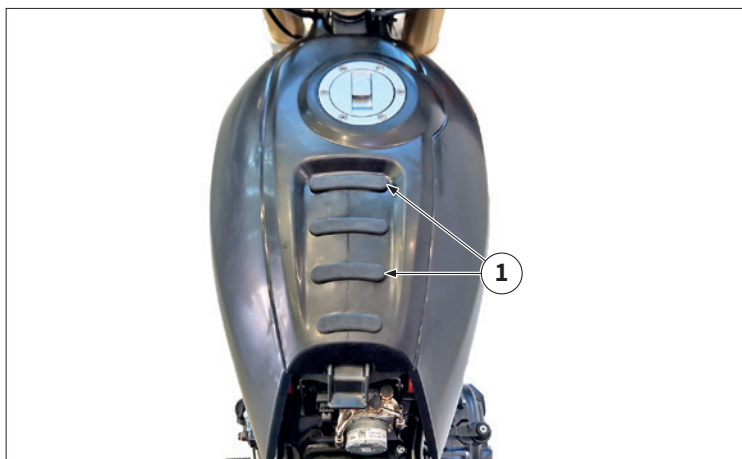
i Proceed in the reverse order for reassembly.



12.7.2 Fuel cap.

Remove the screws "1", then remove the fuel cap.

i Proceed in the reverse order for reassembly.

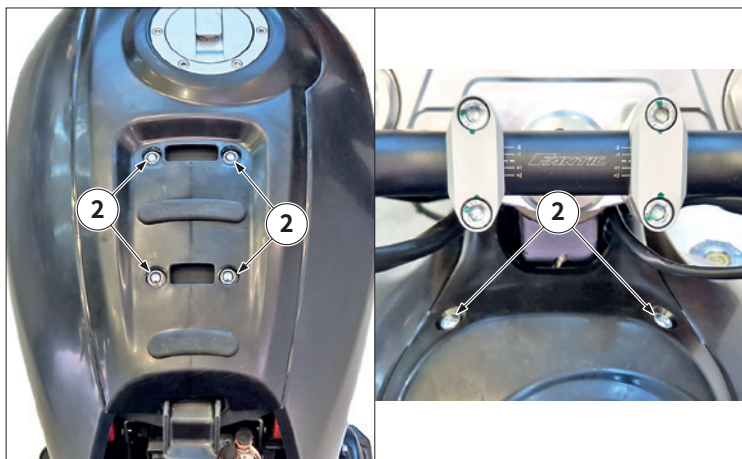


12.7.3 Upper tank cover

Preliminary operations:

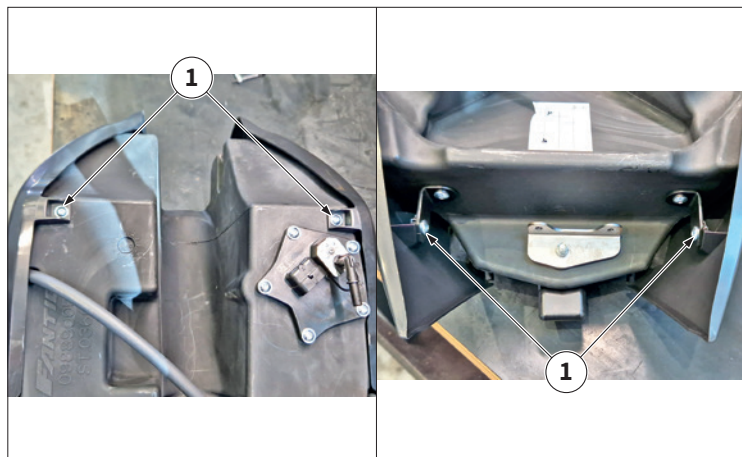
– Remove the fuel cap (as described on page 107).

Remove rubber guards "1".



Remove screws "2", then remove the tank cover.

i Proceed in the reverse order for reassembly.



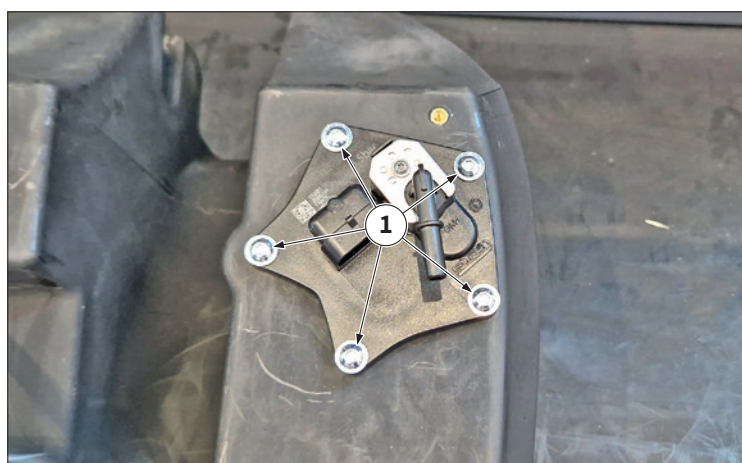
12.7.4 Tank side covers

Preliminary operations:

- Remove the complete tank (as described on page 106).

Remove the four screws "1" and separate the covers from the fuel tank.

i Proceed in the reverse order for reassembly.



12.7.5 Fuel Pump

Preliminary operations:

- Remove the complete tank (as described on page 106).

Empty the tank and remove screws "1", then remove the fuel pump.

i Proceed in the reverse order for reassembly.

i The fuel pump is supplied with level indicator.

! Do not remove or separate the fuel gauge or its bracket from the pump.

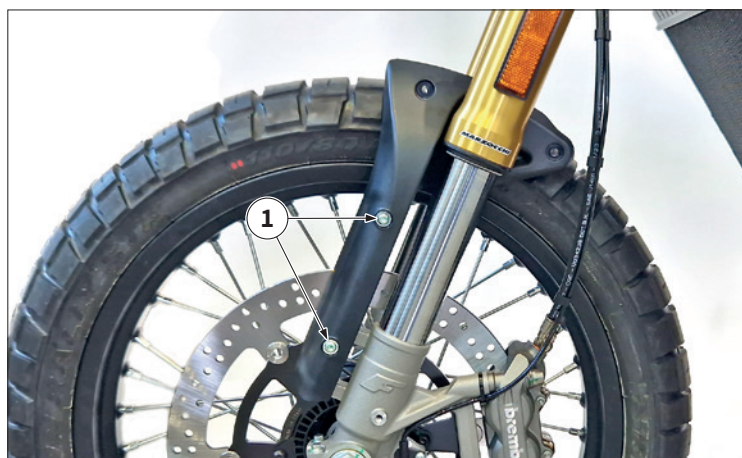


12.8 FRONT MUDGUARD AND FORK PROTECTORS

12.8.1 Front mudguard

Remove screws "1" and the front mudguard.

i Proceed in the reverse order for reassembly.



12.8.2 Fork protectors

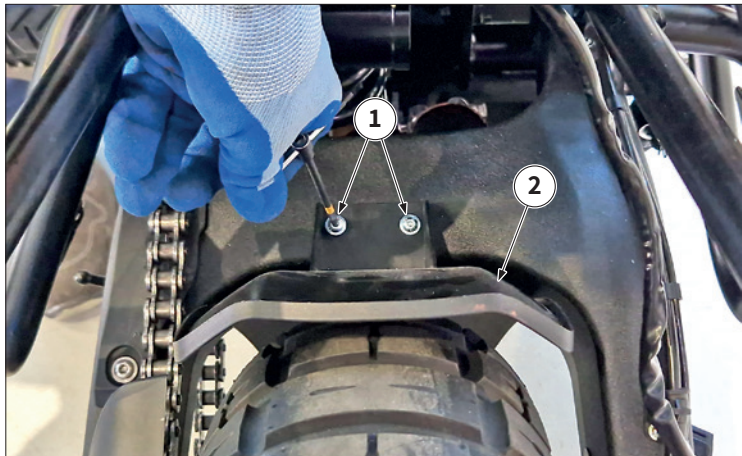
Preliminary operations:

- Remove the front mudguard (as described on page 108).

Remove screws "1", then the left fork protectors.

Repeat the procedure to remove the right fork protectors.

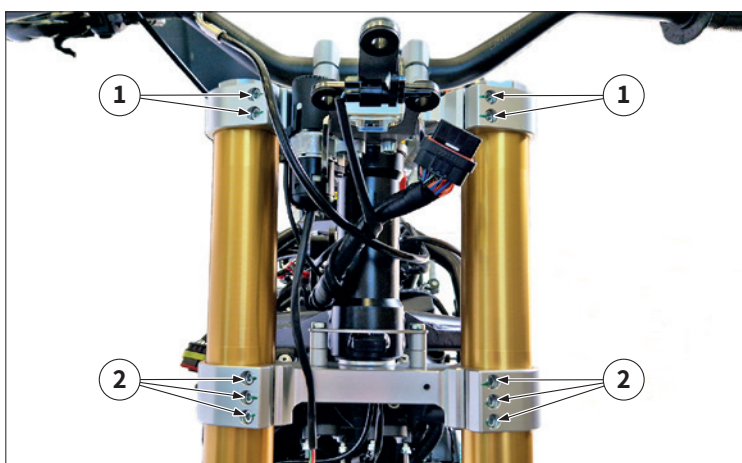
i Proceed in the reverse order for reassembly.



12.9 REAR MUDGUARD

Remove screws "1" and rear mudguard "2".

i Proceed in the reverse order for reassembly.



12.10 SUSPENSIONS

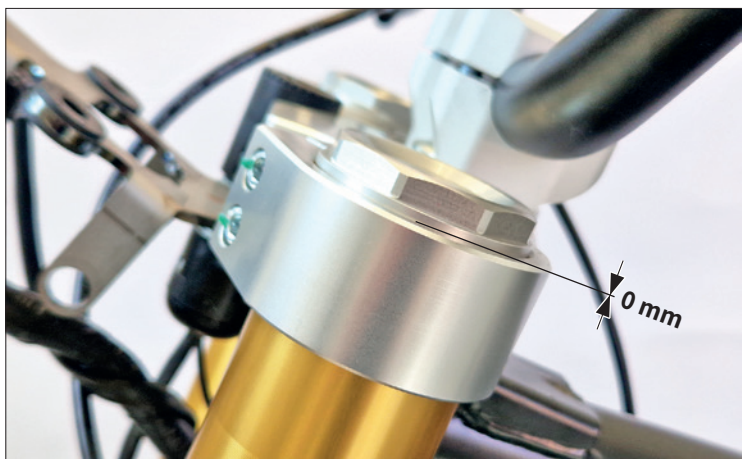
12.10.1 Fork legs

Preliminary operations:

- Remove the fork protectors (as described on page 108);
- Remove the front wheel; (as described on page 123)
- Remove the front brake calliper (as described on page 127).

Remove screws "1" and screws "2", then remove the fork legs.

i Proceed in the reverse order for reassembly.



i When reassembling, make sure that the upper gold part of the fork legs is aligned with the plate (0 mm).

i To adjust the fork legs, remount only the last screw.

12.10.2 Fork legs overhaul

Preliminary operations

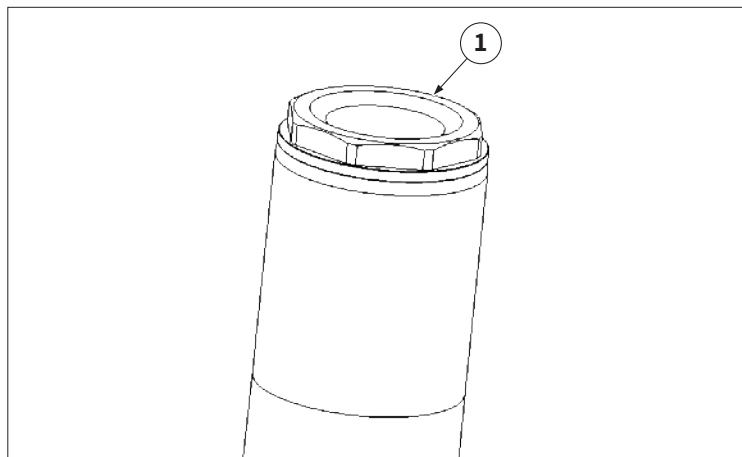
- Remove the fork leg to be overhauled (as described on page 109).

i The fork configuration of this vehicle has a compression pump (hydraulic cartridge) on the left leg and an extension pump on the right leg.

i The pumps (hydraulic cartridges) of the fork cannot be overhauled, but are identical in shape and size.

i The overhaul procedure described here concerns the removal and reassembly procedures for only one of the stems. All topics discussed apply to both fork stems.

 It is advisable to have a suitably sized bench vice, equipped with grips made of suitable material to preserve the integrity of the components.

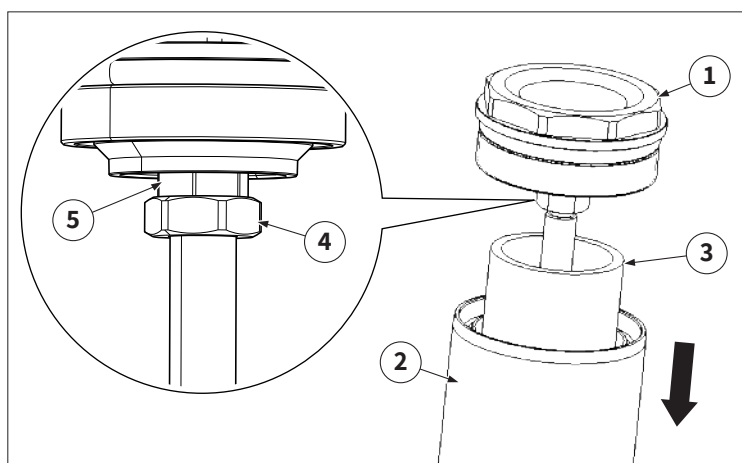


i Clamp the leg to the bench vice, inserting the fork leg.

! Secure the leg in an upright position to prevent oil spillage.

Unscrew cap "1" with an octagonal cap spanner.

✗ Octagonal spanner R5294.

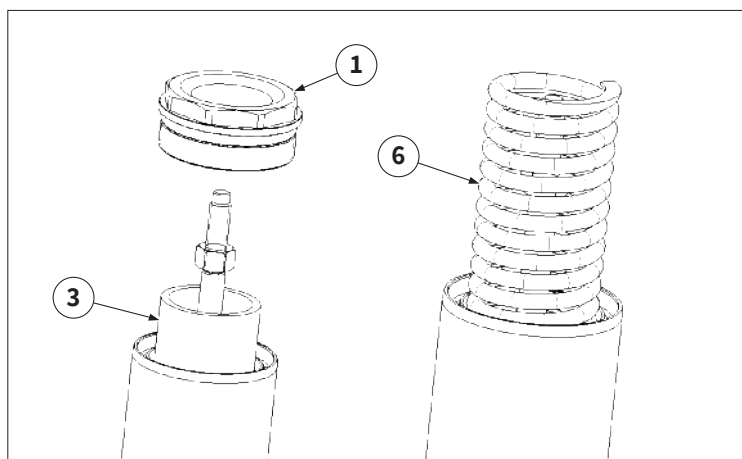


Lower the fork cover "2".

Then lower the bottom tube "3", compressing the spring, as shown in the figure, to gain access to the locknut "4" located on the stem.

Remove the locknut "4".

Unlock the cap "1" operating on the locknut "4" and hexagonal column "5" of the cap.

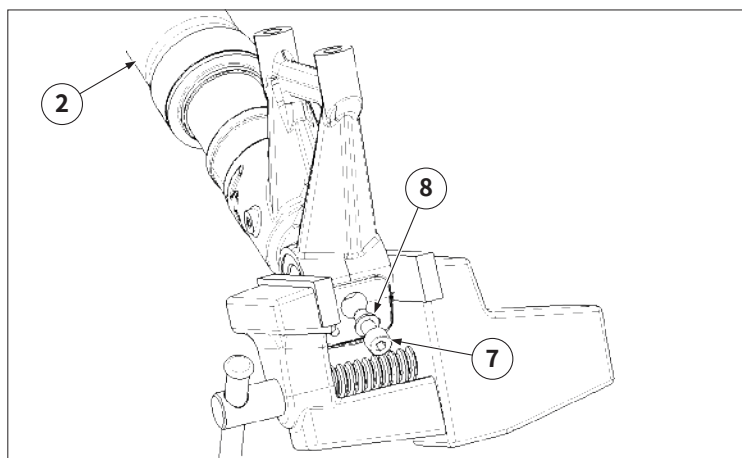


Manually unscrew the cap "1" and remove it.

Remove the plastic spacer "3".

Remove the spring "6".

♻️ Pour the leg oil into a suitable, dry and clean container.

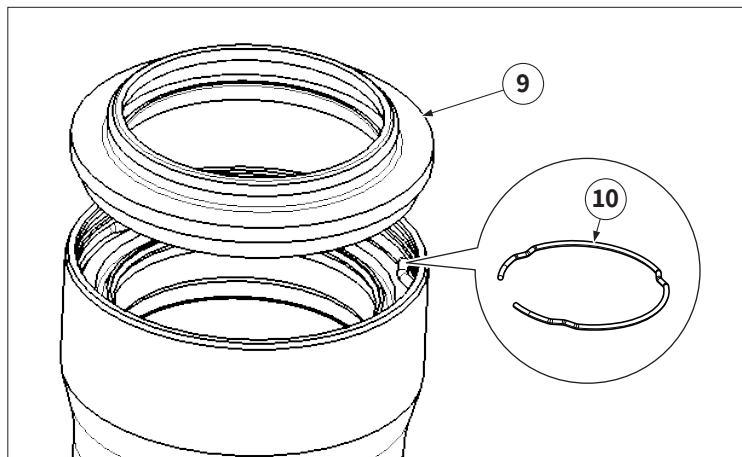


! Tighten the leg clamp to the bench vice, as shown in the figure, using the protective grips and appropriate precautions.

Remove the screw "7", taking care to also remove the sealing washer "8" from its housing.

Extract the pump and spring housing.

Remove the fork cover "2" from the stem.

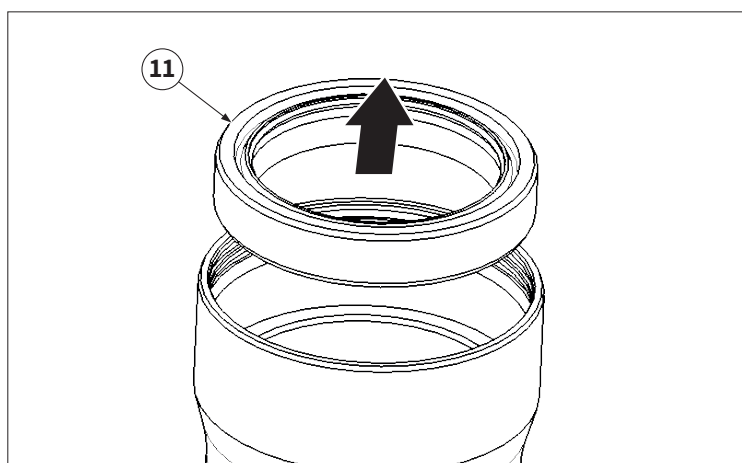


✂ Flathead screwdriver.

Use a flat-blade screwdriver to remove the dust scraper "9" from its housing.

⚠ To remove the dust scraper, it is necessary to pry into the gap between the dust scraper and the fork cover. Take care not to damage components.

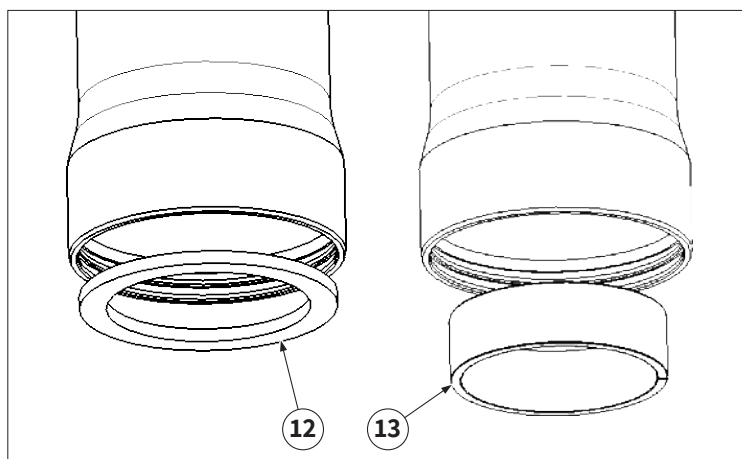
Using the same screwdriver, remove the retaining ring "10" from the housing.



✂ Seal ring extractor

Using a suitable extractor, remove the seal ring "11" from its housing.

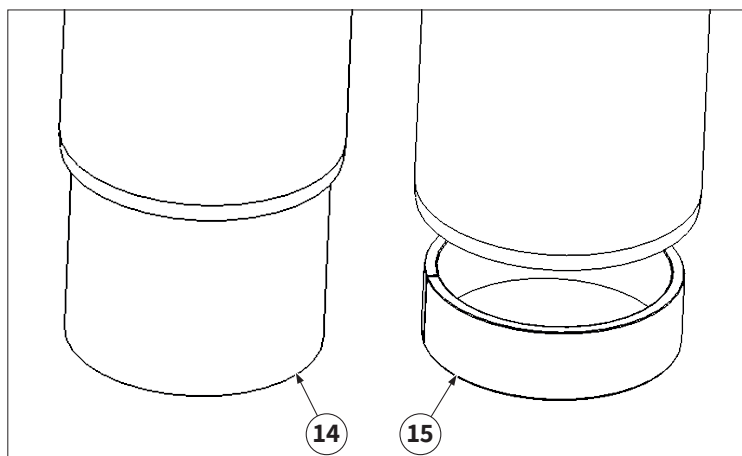
⚠ Use a flat-blade screwdriver to pry off the ring if necessary, taking care not to damage the housing.



Overturn the fork cover remove the spacer "12".

Shake the fork cover so that the lower bushing "13" is extracted.

⚠ Take care not to damage the fork cover while shaking it.



Overturn the fork cover again to remove spacer tube "14".

Shake the fork cover so that the upper bushing "15" is extracted.

⚠ Take care not to damage the fork cover while shaking it.

Clean the stem carefully.

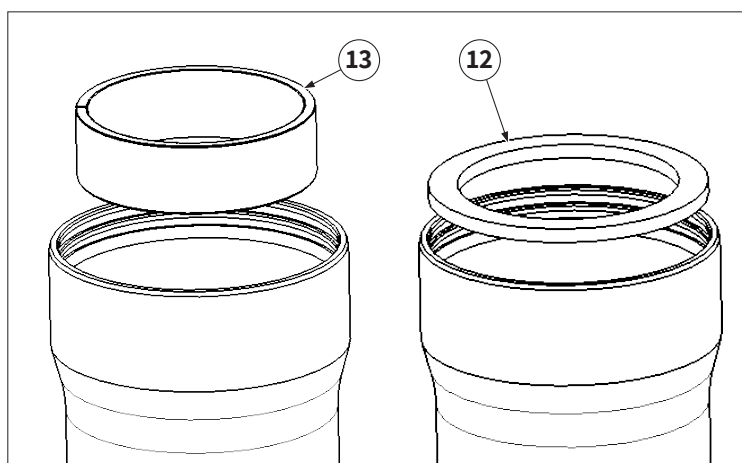
⚠ Check that there are no signs of damage on the working surface of the stem, otherwise proceed with replacement.

Carefully clean the inside of the fork cover.

⚠ Check that there are no signs of damage on the working surface of the fork cover and in the housing of the sealing ring.

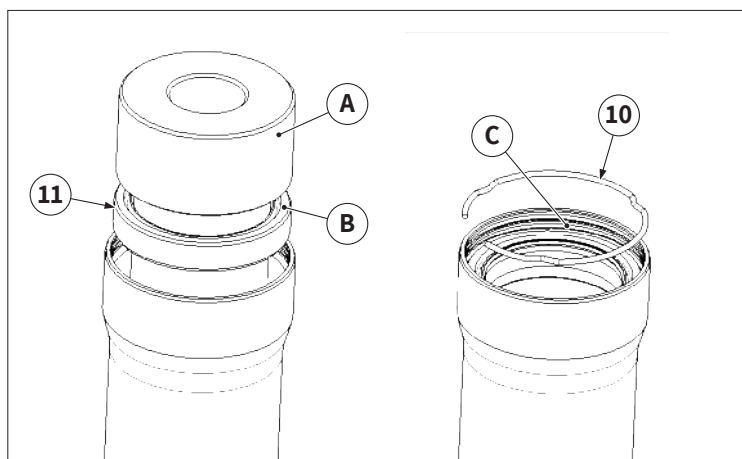
During assembly, in addition to components that show obvious damage or signs of wear, the following components must necessarily be replaced:

- Upper bushings;
- Lower bushings;
- Sealing rings;
- Dust scraper;
- Sealing washers;
- Hydraulic oil for forks.



Insert the lower bushing "13" into its housing.

Insert the spacer "12" into its housing above bushing "13".



Lubricate the outer surface of the sealing ring "11".

♻ Use fork oil.

✂ Insertion tool for bearings and seal rings.

⚠ Pay attention to the direction of the sealing ring "11", so that the imprinted inscriptions are on the "B" side, as shown in the figure.

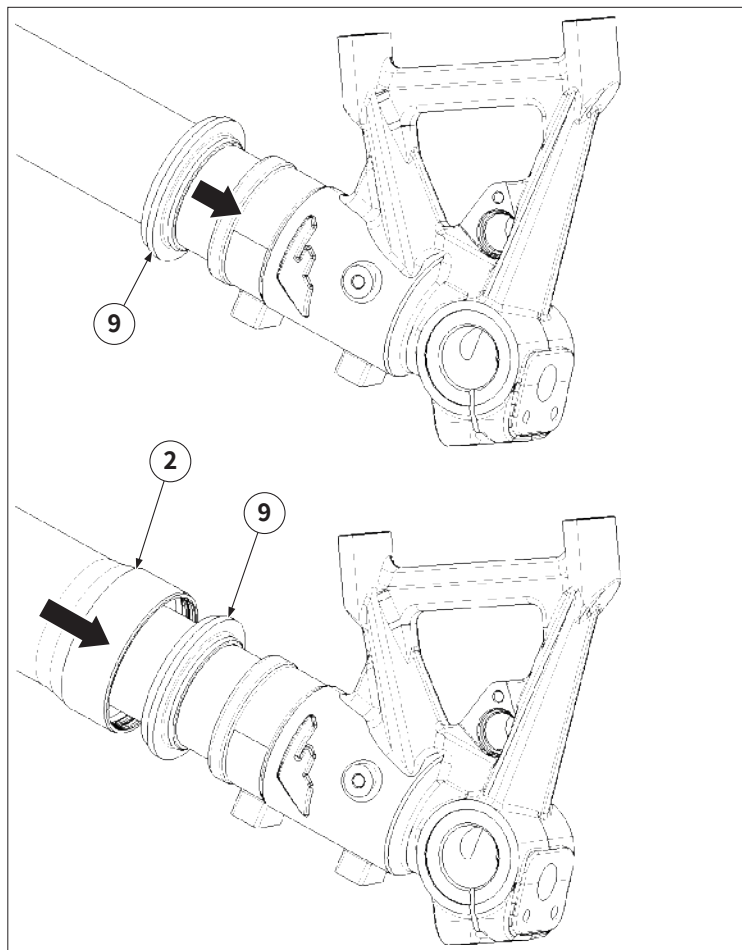
Using a suitable bearing insertion tool "A" and with the aid of a hammer, insert and tap sealing ring "11" into its housing, until it is properly seated.

✂ Flathead screwdriver.

Using a suitable screwdriver, insert retaining ring "10" into its housing "C" (second groove inside the fork cover).

⚠ Take care not to damage surrounding surfaces.

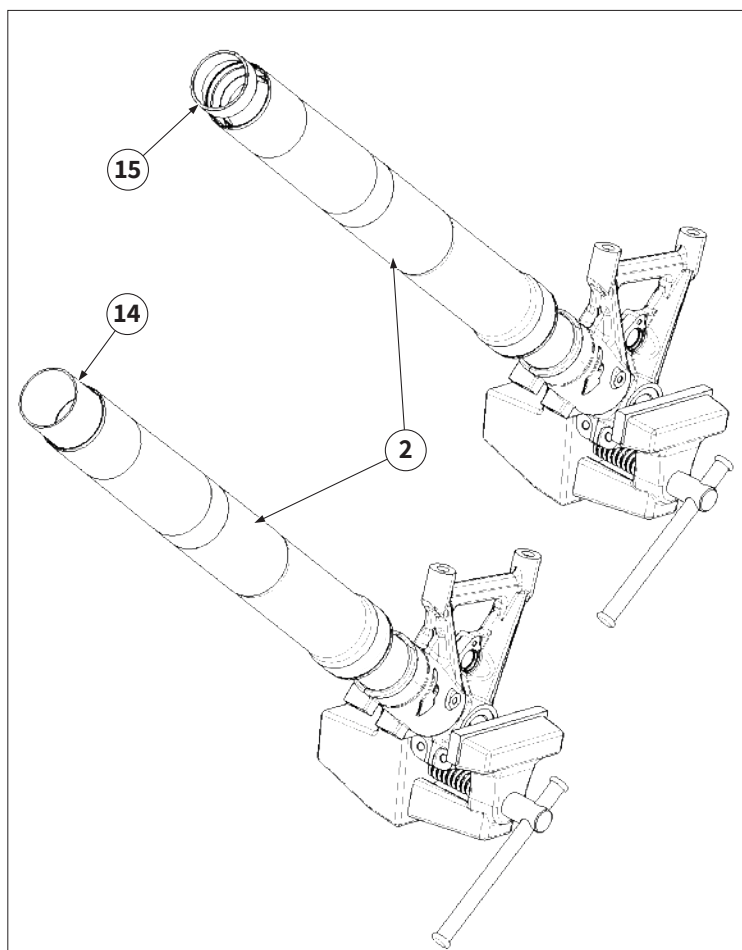
⚠ Ensure correct positioning of the retaining ring.



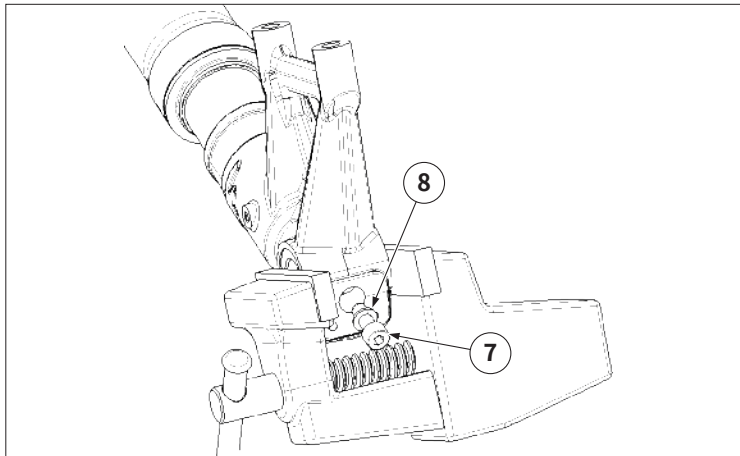
Insert the dust scraper "9" on the stem as shown in the figure.
 Insert the fork cover "2" on the stem.

⚠ Take care not to damage the sealing ring.

Insert the dust scraper "9" into its housing on the fork cover.



Insert the upper bushing "15" inside the fork cover "2".
 Insert the spacer tube "14" inside fork cover "2" by pushing the previously assembled upper bushing "14" fully down.



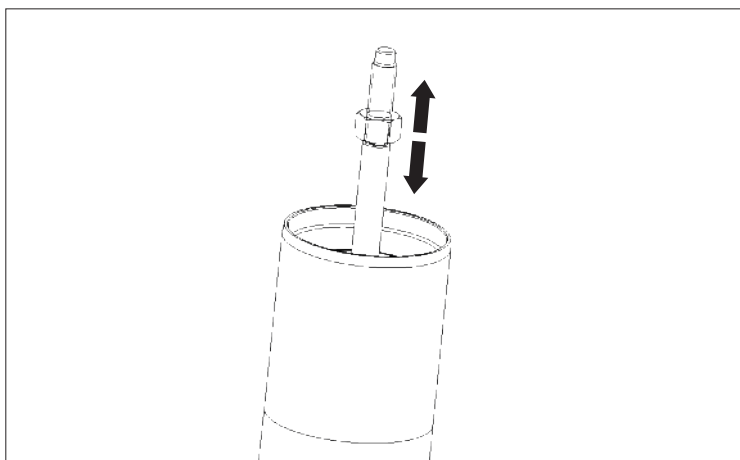
Insert the pump into the stem.

⚠ Ensure that the lower part of the stem is correctly inserted into the housing on the bottom of the leg clamp.

Insert the screw "7" and the new washer "8".

Tighten the pump to the prescribed torque.

🔧 Tightening torque
Fork leg fastening screw 25 Nm
(2.5 m-kgf, 18 ft-lbf)

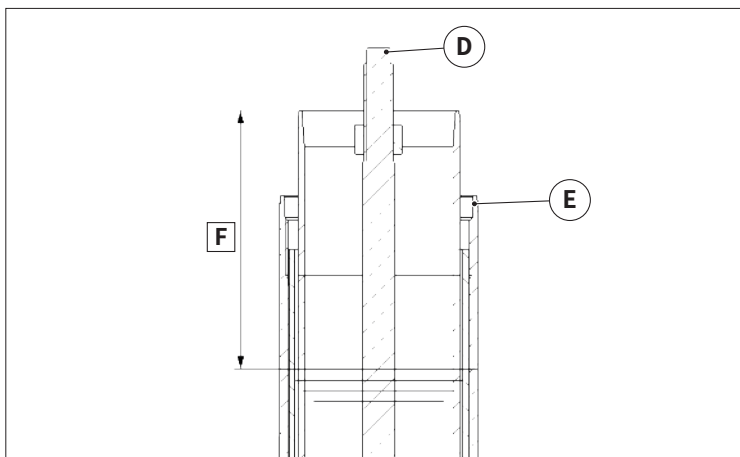


Keeping the stem in an upright position.

Introduce approx. 3/4 of the total amount of fork oil inside the stem. Pump the rod of the pumping element several times (up-down movement), so that the oil fills the inside of the pumping element rod.

Top up the stem by adding the remaining oil to the prescribed amount.

♻ Amount of oil for forks (right or left leg):
(482 ± 10 g, 550 ml)



⚠ Check the correct oil level by keeping the fork leg in a perfectly vertical position.

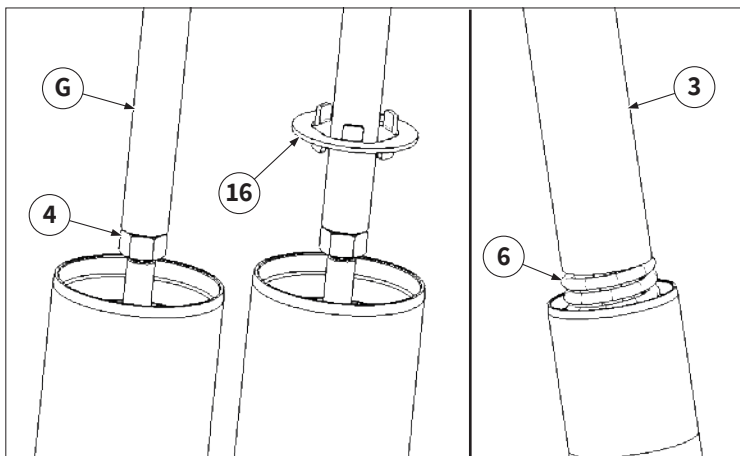
Lower the pumping element rod "D" fully down.

Lower the fork cover "E" until the dust scraper is resting against the leg clamp.

Measure the oil level "F" from the upper edge of the fork leg to the pumping element stop on the hydraulic cartridge.

✂ Millimetre rod.

✂ Distance "F" of the fork leg edge - pumping element stem stop:
130.0 ± 2 mm (5.12 ± 0.08 in).



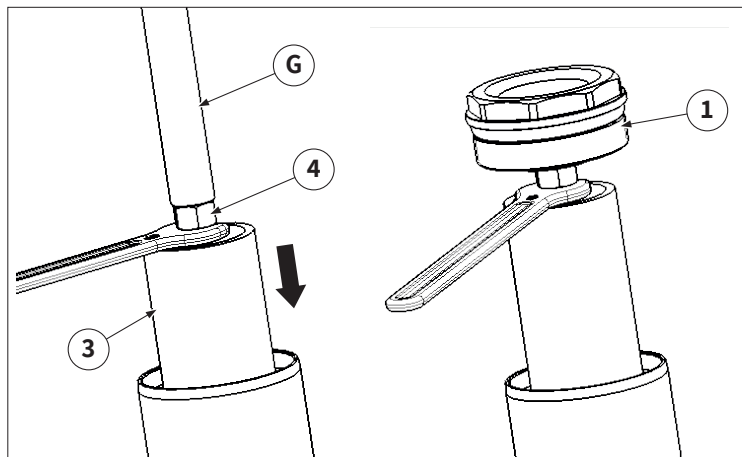
Check that locknut "4" is fully screwed onto the stem.

Screw compression stem "G" onto the pumping element stem.

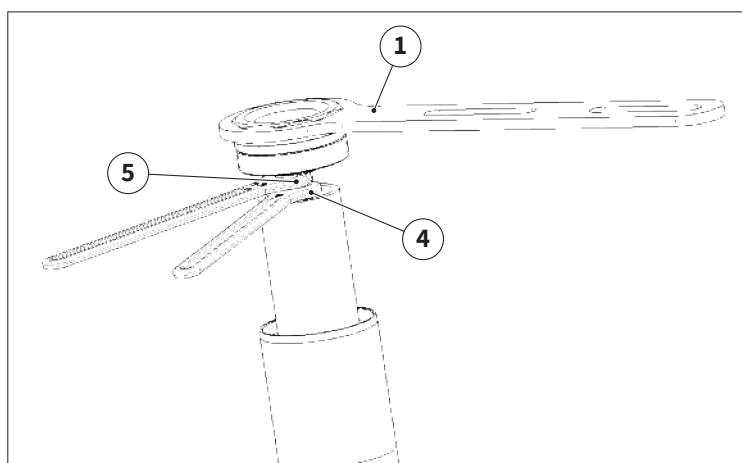
✂ Stem "G" for fork pump compression.

Insert the spring housing ring "16" into the stem.

Insert the spring "6" and bottom tube "3" into the stem.



Using compression stem "G", lower the bottom tube "3" and compress the spring to access locknut "4" with an open spanner. Remove the stem "G" from the pumping element and screw cap "1" onto the pumping element by hand until it stops.



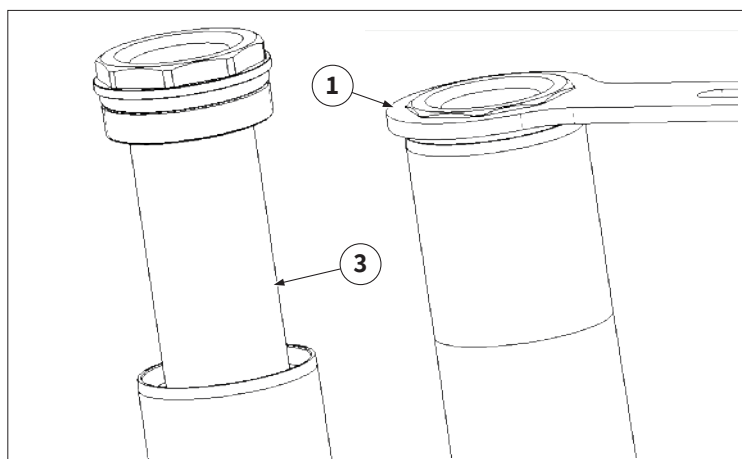
Attach the fork leg cap to the stem, acting on the cap hexagon column and lock nut simultaneously with the help of two open-end spanners ("4" and "5").

- ✂ - Octagonal spanner R5294 "1";
- Fixed open spanner 13 mm "4";
- Fixed open spanner 9 mm "5".

Check tightness by acting on the octagonal cap with the specific spanner "1".

🔧 **Tightening torque**
Octagonal fork leg cap
15 Nm (1.5 m-kgf, 11 ft-lbf)

Remove the open-end spanners "4" and "5".



⚠ **Check that the bottom tube "3" is properly fitted against the bottom of the cap.**

Lift the fork cover and tighten cap "1" using a suitable octagonal cap spanner.



12.10.3 Fork oil change

Preliminary operations:

- Remove the fork legs (as described on page 109).

Remove the stem cap "1" using an octagonal spanner and tilt the stem to drain all the oil present.

Fill with new oil.

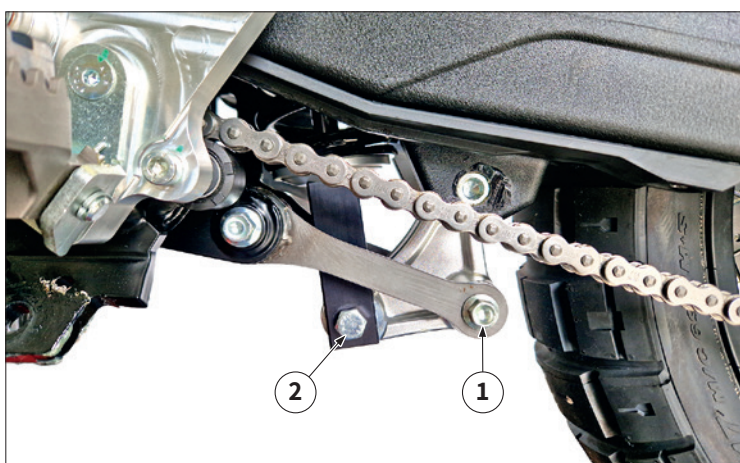
Repeat the operation on the other fork stem.



Quantity of oil per suspension (right or left leg):
 482 ± 10 g, 550 ml.



Octagonal spanner R5294.



12.10.4 Rear shock absorber

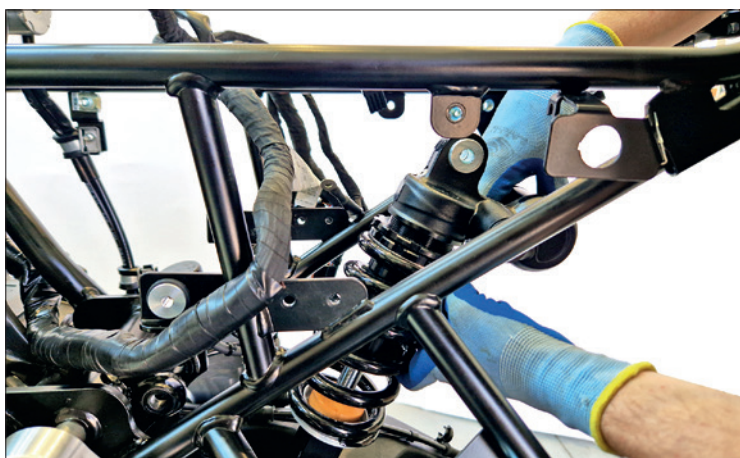
Preliminary operations:

- Remove the filter casing (as described on page 147).

Remove the pin and bearing from the linkage connection "1", the screw and the nut from lower shock absorber connection "2".



Remove the pin "3" and the locking nut from the upper fastening of the shock absorber.



Remove the rear shock absorber by pulling it out from above.



Proceed in the reverse order for reassembly.



Apply threadlock (LOCTITE®) to the M10 screw of the lower shock absorber connection.

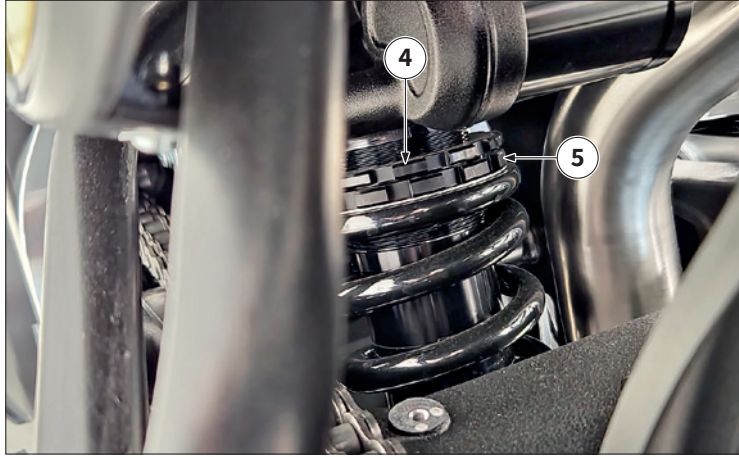


When reassembling, apply lithium soap grease to the bearing.



Tightening torques

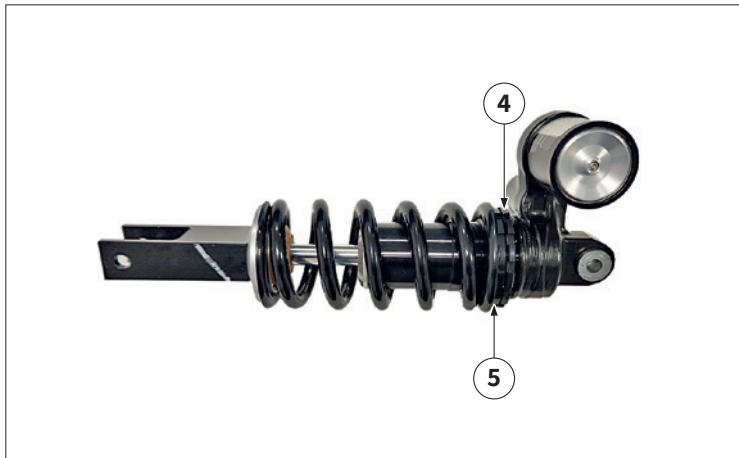
- Linkage M12 pin: 40 Nm (4.0 m·kgf, 30 ft·lbf);
- M10 screw shock absorber lower connection: 40 Nm (4.0 m·kgf, 30 ft·lbf).



Shock absorber preload adjustment

For different use needs, it is possible to customize the setting. To make changes it is recommended to wait until the engine is completely cold. Adjust the spring preload according to the conditions of use of the vehicle.

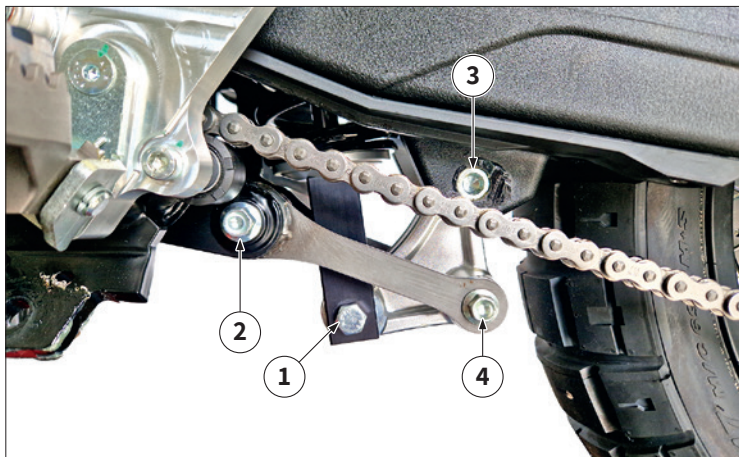
- Using two hook wrenches, loosen the retaining ring nut "4" and turn the ring nut "5" to the desired position;
- Tighten the retaining ring nut "4" again.



✗ Using a hook wrench, turn the ring nut "5" to the desired position.

⚠ Do not force the rotation of the registers beyond the limit switch (in both directions), to avoid possible damage.

i Proceed in the reverse order for reassembly.



12.10.5 Linkage

Remove the screw and nut from the lower shock absorber connection "1". Remove the pins and bearings from connections "2" and "3" to remove the linkages. Remove the pin and bearing from connection "4" to separate the two components.

♻ When reassembling, apply lithium grease to the bearings.

i Proceed in the reverse order for reassembly.

🔧 Tightening torques

- M10 screw shock absorber fastening "1": 40 Nm (4.0 m·kgf, 30 ft·lbf);
- Linkage M12 pin "2": 50 Nm (5.0 m·kgf, 36 ft·lbf);
- Swingarm fastening pin M12 "3": 50 Nm (5.0 m·kgf, 36 ft·lbf);
- Linkage M12 pin "4": 40 Nm (4.0 m·kgf, 30 ft·lbf).

12.11 STEERING

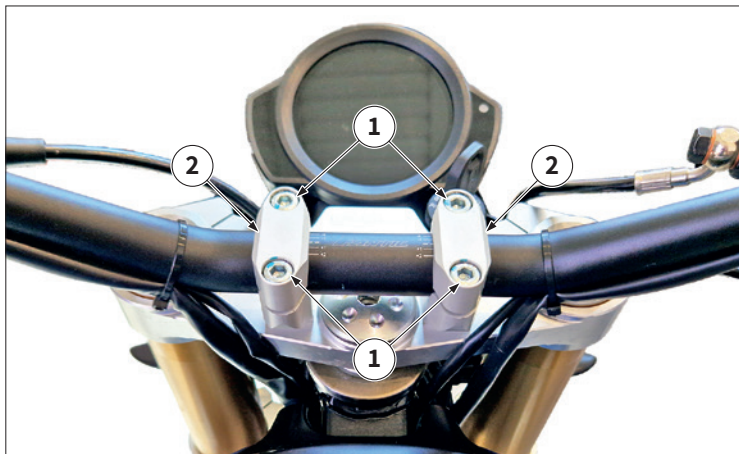
12.11.1 Handlebar

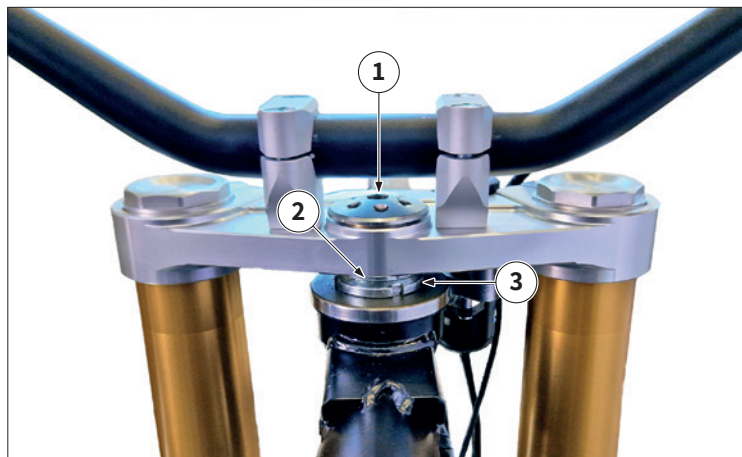
Remove the screws "1" and U-bolts "2", then remove the handlebar.

i Proceed in the reverse order for reassembly.

🔧 Tightening torque

- Handlebar U-bolts M8: 23 Nm (2.3 m·kgf, 17 ft·lbf).



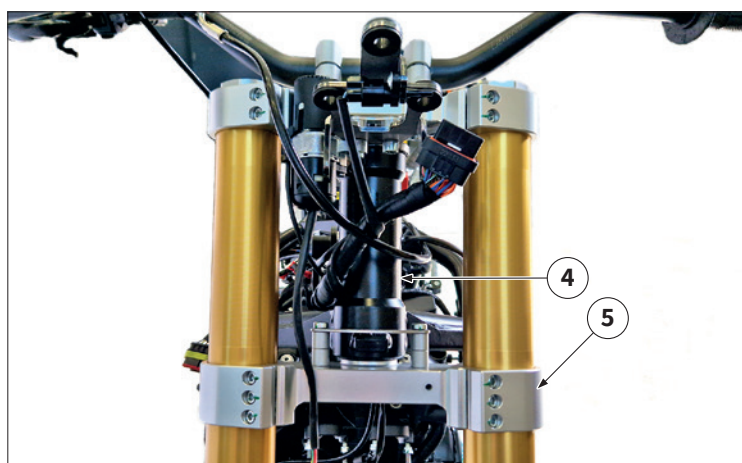


12.11.2 Steering plates

Preliminary operations:

- Remove the dashboard (as described on page 34);
- Remove the handlebar (as described on page 117);
- Remove the fork stems (as described on page 109);
- Remove the ignition switch (as described on page 148).

Remove the screw "1" and pull out the upper steering plate, then remove the ring nuts "2" and "3".



Remove the steering head "4", then remove the bottom plate "5".
Remove the internal steering tube bearings at the same time.

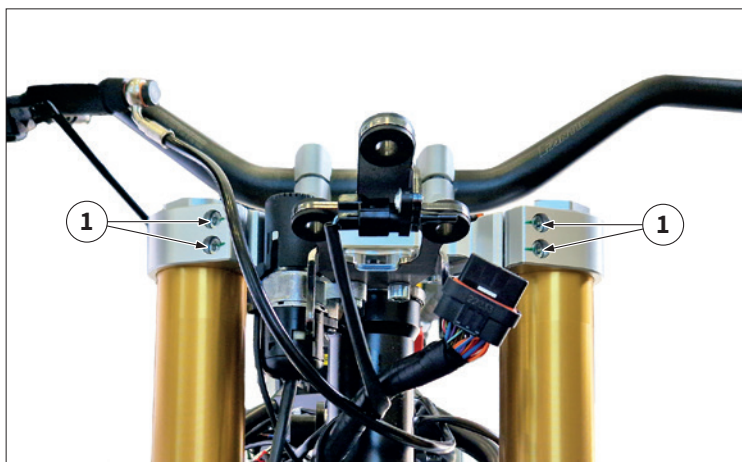
i Proceed in the reverse order for reassembly.

 For tightening, refer to paragraph "5.1.1 Frame parts tightening sequences" on page 16, regarding the steering ring nuts.



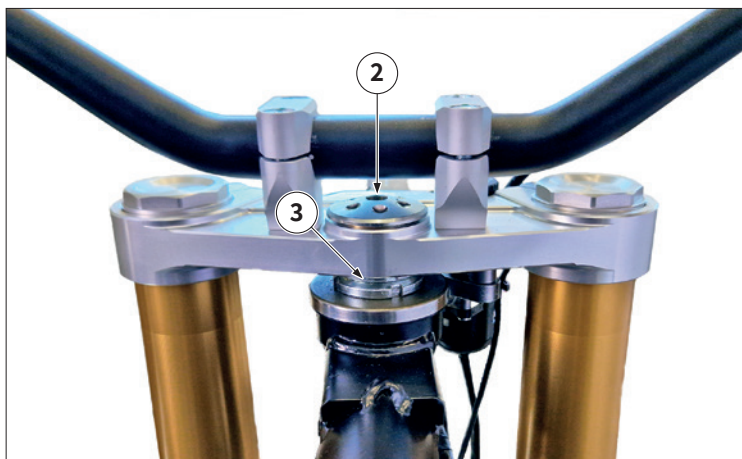
12.11.3 Steering clearance check and adjustment

- i** Periodically check the clearance on the steering tube moving the swingarm back and forth as shown in the figure.



If clearance is noticed proceed to the adjustment operating as follows:

Loosen the screws "1 " on both sides of the upper steering plate.



Loosen screw "2" and the upper counter ring nut "3".



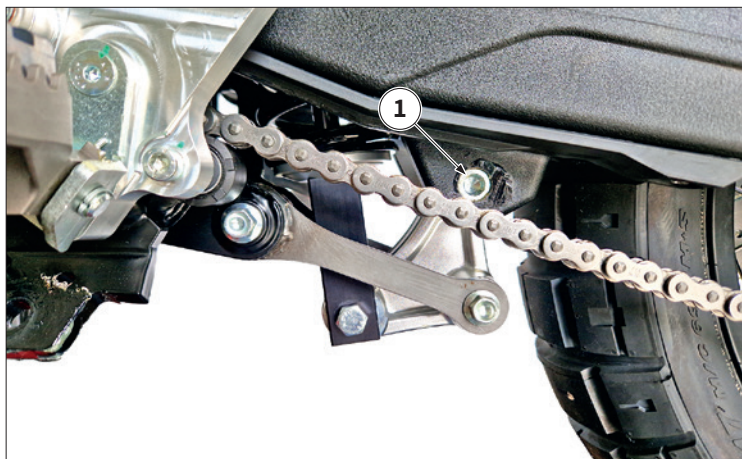
Recover the clearance operating on the ring nut "4".

- !** A proper adjustment does not leave clearance, must not cause hardening or irregularity during the handlebar rotation.

- !** Check the U-bolts assembling direction which may vary the handlebar position.

Reassemble and tighten the steering column:

- i** Follow the procedure outlined in paragraph "5.1.1 Frame parts tightening sequences" on page 16 with regard to the steering rings.

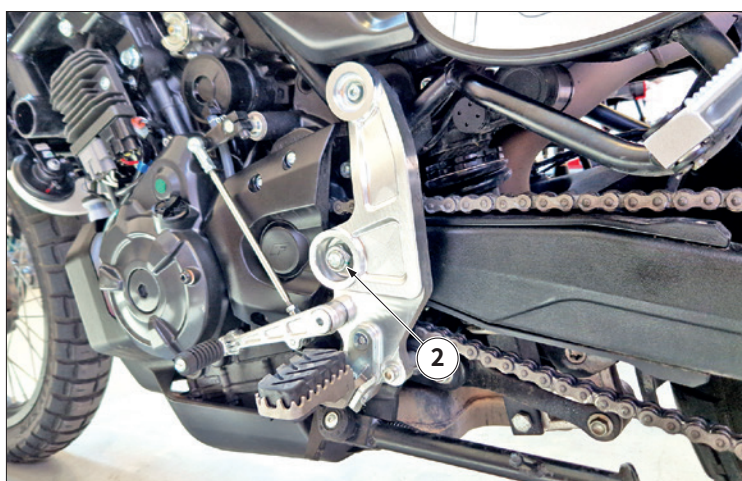


12.12 SWINGARM

Preliminary operations:

- Remove the rear wheel (as described on page 124);
- Remove the rear brake calliper (as described on page 128).

Remove the swingarm lower fastening pin "1".

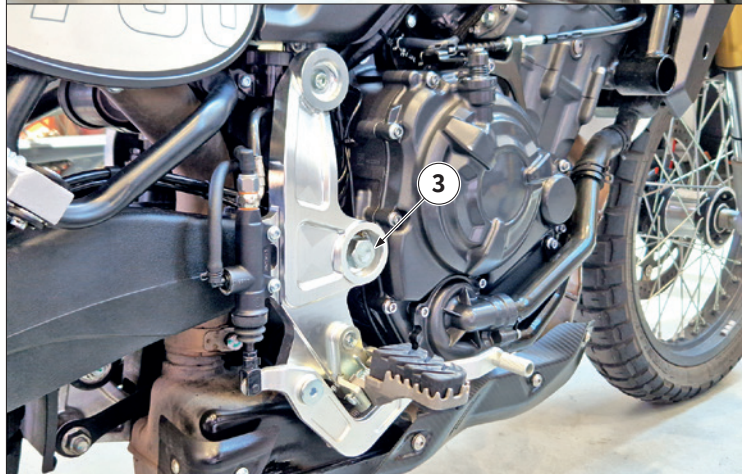


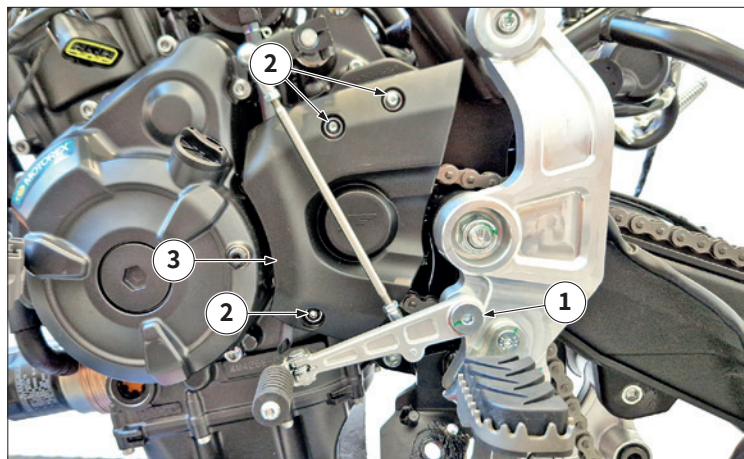
Remove the nut "2" and, holding the swingarm, slide pin "3" out from the opposite side.

Remove the swingarm.

i Proceed in the reverse order for reassembly.

Tightening torque
 M12 pin swingarm fastening: 50 Nm (5.0 m·kgf, 36 ft·lbf).





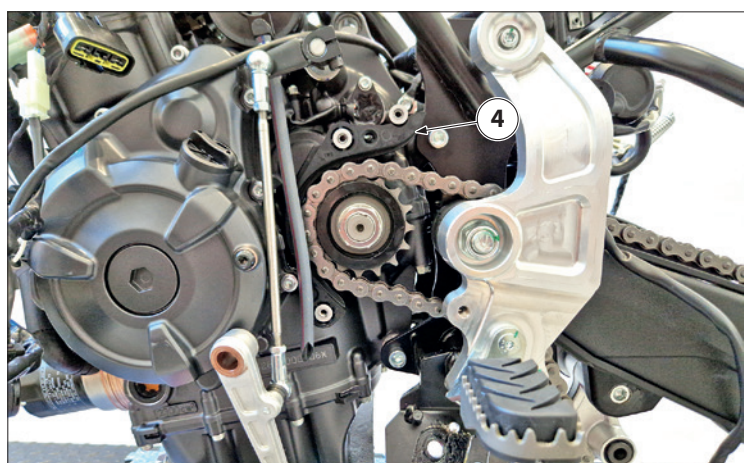
12.13 DRIVE CHAIN

12.13.1 Chain replacement

Preliminary operations:

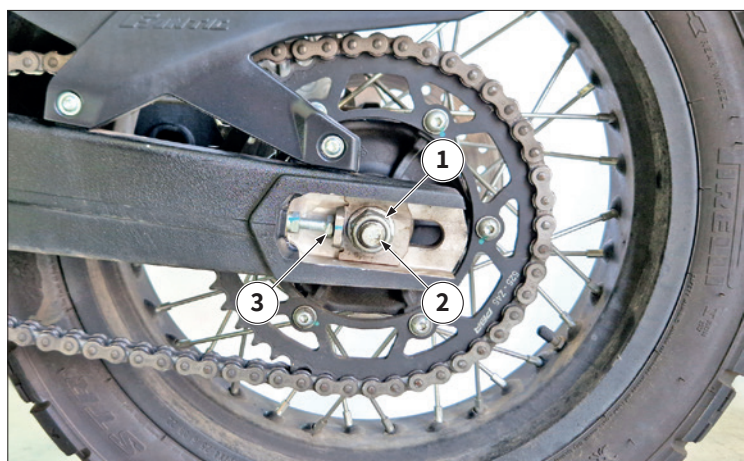
- Remove the swingarm (as described on page 120).

Remove the gear lever fastening screw "1", screws "2" and sprocket guard "3".



Remove the chain slide "4", then slide the chain off.

i Proceed in the reverse order for reassembly.



12.13.2 Chain clearance adjustment

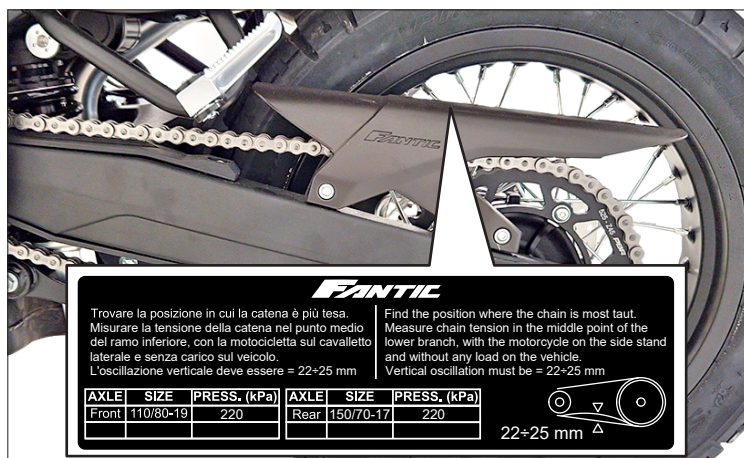
Loosen the rear wheel axle "1".

Loosen the nut "2" and turn the screw "3" until the desired chain tension is reached.

Proceed similarly on the opposite side until the perfect alignment of the wheel is obtained, then tighten the nut "2" on both sides and the rear wheel pin "1".

! Perform the chain clearance adjustment procedure with the rear suspension free of loads.

i Proceed in the reverse order for reassembly.



The sticker shows how to position the vehicle to measure the chain tension and the minimum and maximum clearance tolerances.

i It can be found positioned on the chain guard, left side of the vehicle.

! If one of these components is damaged, the entire chain assembly (sprocket, chain and rim) must be replaced.

i Also check the wear of the chain guide and the chain sliding shoe.



Pressing with a finger an intermediate point between the sprocket and the rim, press the lower branch of the chain first downwards and then towards the other, measuring the distance from the edge of the swingarm; check that the vertical oscillation, obtained as the difference between the highest value "A" and the lowest value "B".

Chain swing
"A" 35 mm (1.37 in) ~ "B" 38 mm (1.49 in).

Move the vehicle forward, in order to check the vertical oscillation of the chain also in other positions; the clearance must remain constant in all the phases of the wheel rotation.

For a longer life of the drive chain it is advisable to periodically check its tensioning. Always keep it clean of dirt deposited and lubricate it.



12.13.3 Rim removal

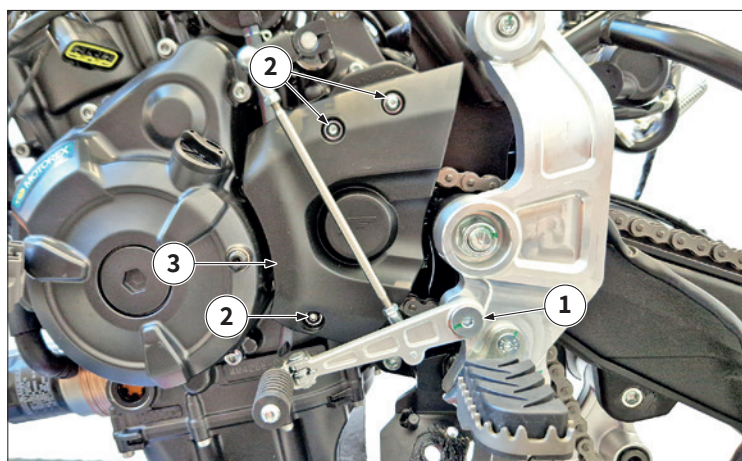
Preliminary operations:

- Remove the rear wheel (as described on page 124).

Remove the the six screws "1" and nuts, then remove the rim.

Proceed in the reverse order for reassembly.

Tightening torque
M8 screws for rim fastening: 25 Nm (2.5 m·kgf, 18 ft·lbf).

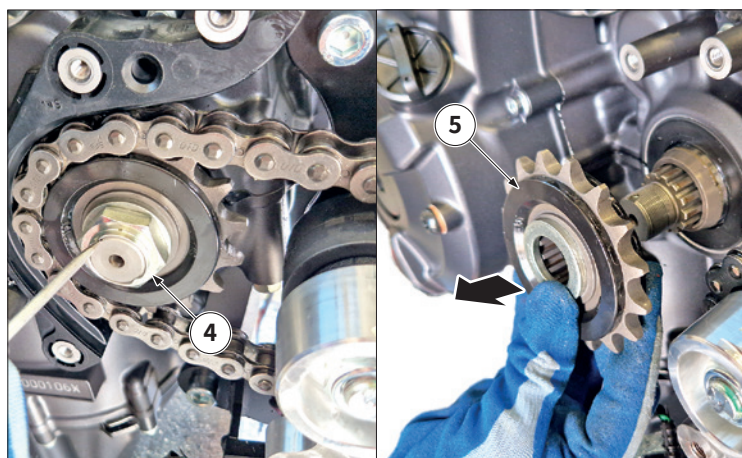


12.13.4 Sprocket removal

Preliminary operations:

- Remove the swingarm (as described on page 120).

Remove the gear lever fastening screw "1", screws "2" and sprocket guard "3".

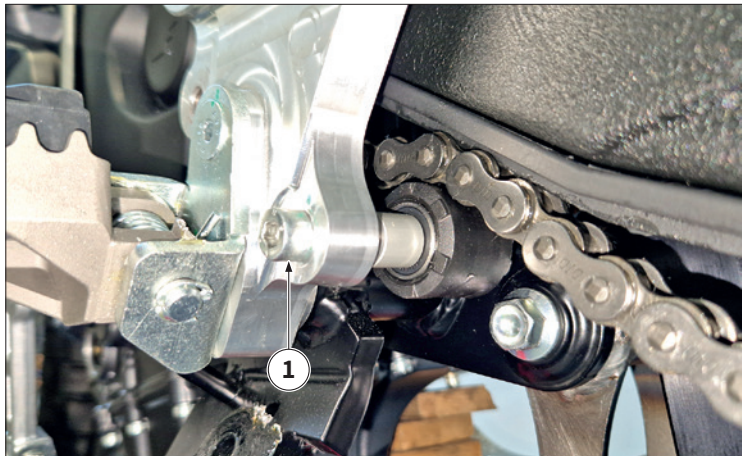


Remove the nut "4" then remove the sprocket "5".

Proceed in the reverse order for reassembly.

Check the sprocket and rim teeth condition, if excessive wear is found, replace the rim, the sprocket and the drive chain.

To avoid early wear of the new components, replace all three together.



12.13.5 Chain roller removal

Remove the screw "1" then remove the chain roller.

i Proceed in the reverse order for reassembly.

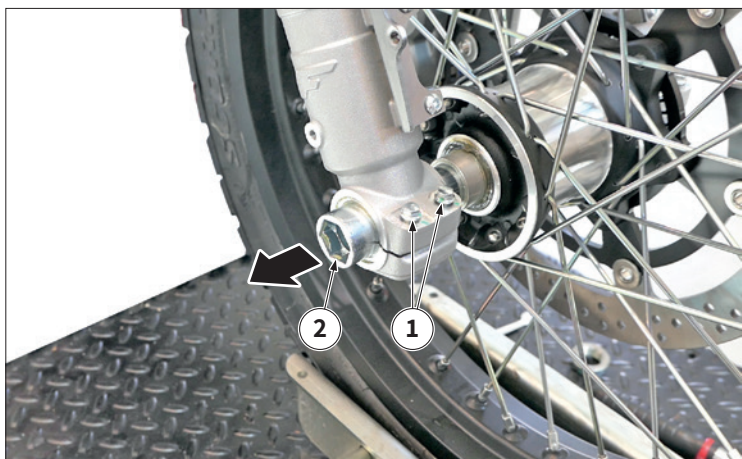


12.14 WHEELS AND BRAKE DISCS

12.14.1 Front wheel

i Lift the vehicle using a suitable central support.

Remove the central nut.

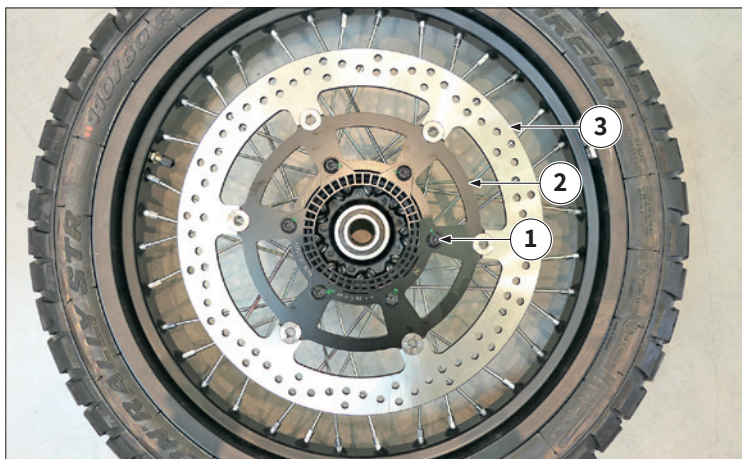


Loosen screws "1" on both sides, then slide out wheel axle "2" and remove the front wheel.

i Proceed in the reverse order for reassembly.

Tightening torques

- Screws M6 fork stems "1": 10 Nm (1.0 m·kgf, 7 ft·lbf);
- M25 nut for wheel axle "2": 50 Nm (5.0 m·kgf, 36 ft·lbf).



12.14.2 Front brake disc

Preliminary operations:

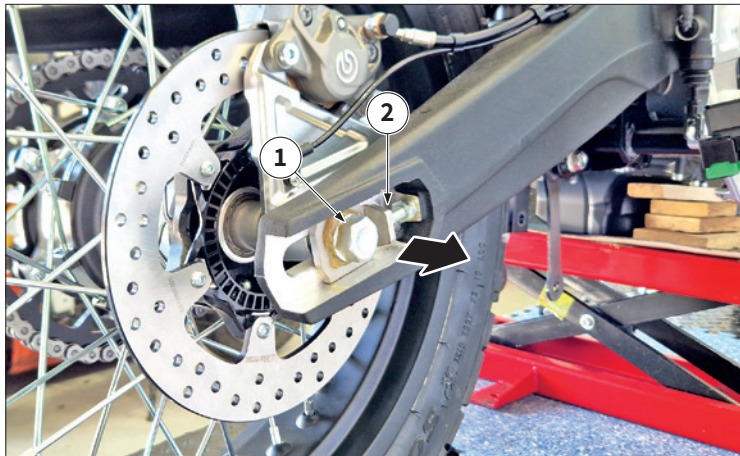
- Remove the front wheel (as described on page 123).

Remove the six screws "1" and the phonic wheel "2", then remove the brake disc "3".

i Proceed in the reverse order for reassembly.

 Apply threadlocker (LOCTITE®) to the front brake disc M8 screws.

 Tightening torque
 M8 screws front brake disc: 22 Nm (2.2 m·kgf, 16 ft·lbf).



12.14.3 Rear wheel

- (i) Lift the vehicle using a suitable central support.**

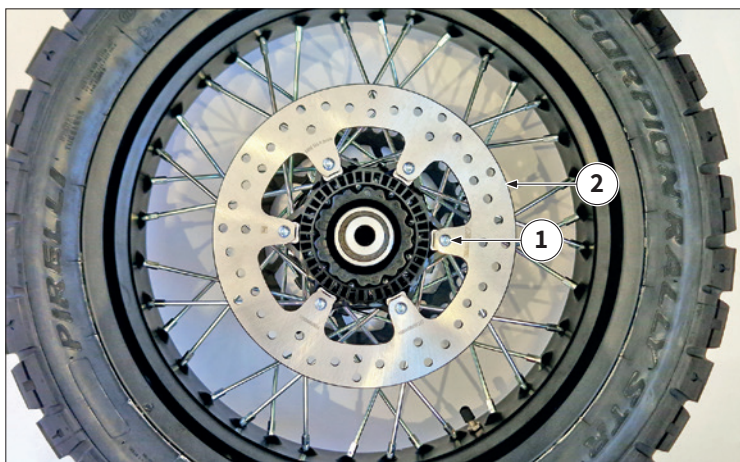
Supporting the rear wheel, remove wheel axle "1" and adjustment plates "2", then remove the rear wheel.

- (i) Proceed in the reverse order for reassembly.**



Tightening torque

Axle M17 Rear wheel : 80 Nm (8.0 m·kgf, 59 ft·lbf).



12.14.4 Rear brake disc

Preliminary operations:

- Remove the rear wheel (as described on page 124).

Remove the six screws "1" and the brake disc "2", taking care to hold the phonic wheel in place.

- (i) Proceed in the reverse order for reassembly.**



Apply threadlocker (LOCTITE ®) to the front brake disc M8 screws.



Tightening torque

M6 screws rear brake disc: 16 Nm (1.6 m·kgf, 12 ft·lbf).

12.14.5 Wheel bearings check

Perform this check with the bearings installed on the front wheel and/or on the rear wheel.

Check the integrity of all components and in particular of those indicated below.

Rotation check

Manually rotate the inner ring of each bearing. The rotation must be continuous, free from impediments and/or noise.

If one or both bearings are not within the check parameters, replace both wheel bearings.

Radial clearance and axial clearance check

Check the radial clearance and axial clearance. Axial clearance: a minimum axial clearance is allowed. Radial clearance: none.

If one or both bearings are not within the check parameters, replace both wheel bearings.



Always replace both wheel bearings.



Always replace the bearings with bearings of the same type.



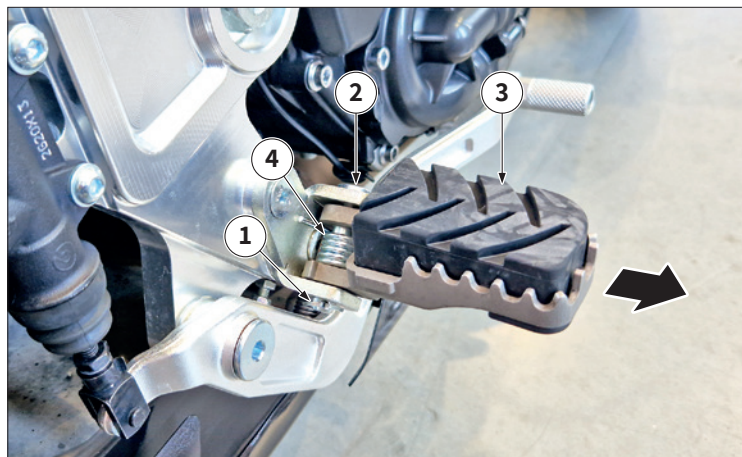
Check the integrity of the gaskets; if they show damage or excessive wear, replace them.



Always replace both gaskets.



Always replace the gaskets with new gaskets of the same type.



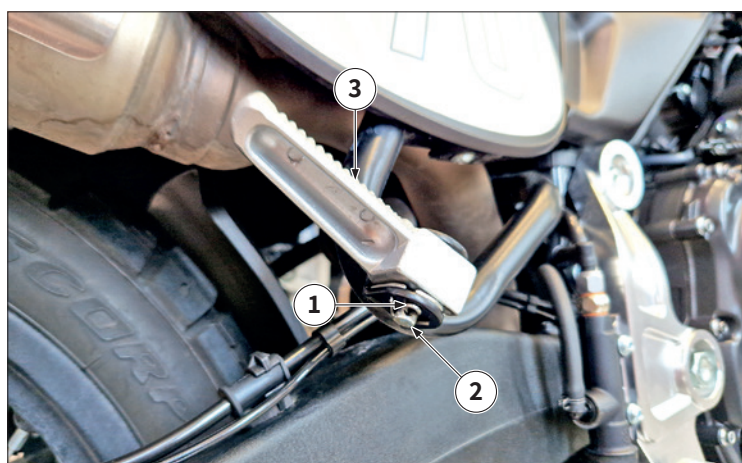
12.15 FOOTBOARDS

12.15.1 Driver footboards

Remove the split pin "1" and remove pin "2", then remove footboard "3" taking care to recover return spring "4".

Repeat the operation for the footboard on the opposite side.

(i) Proceed in the reverse order for reassembly.

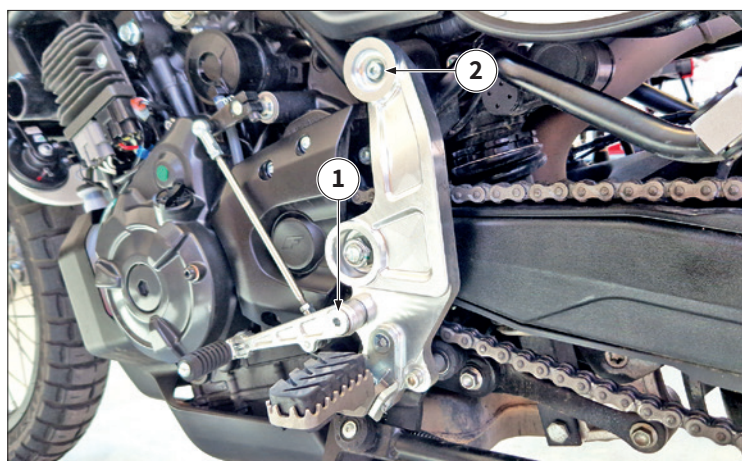


12.15.2 Passenger footboards

Remove the split pin "1" to remove the pin "2", then remove the footboard "3".

Repeat the operation for the footboard on the opposite side.

(i) Proceed in the reverse order for reassembly.



12.15.3 Frame plate for left rider pedal

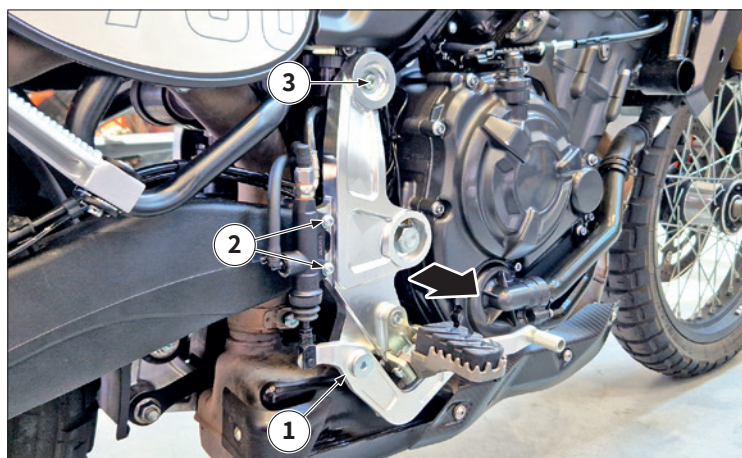
Preliminary operations:

– Remove the swingarm (as described on page 120).

Remove the gear lever fastening screw "1", screw "2" and the lower screw located under the footboard.

Remove the left frame plate.

(i) Proceed in the reverse order for reassembly.



12.15.4 Frame plate for right rider pedal

Preliminary operations:

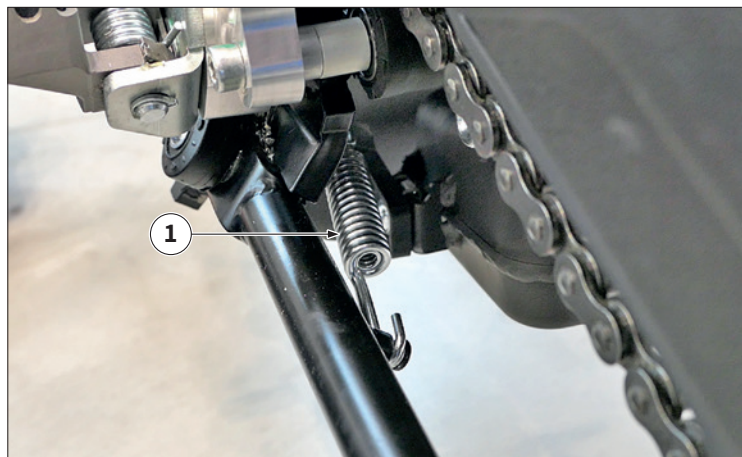
– Remove the swingarm (as described on page 120).

Remove the rear brake lever "1" and rear brake master cylinder fastening screws "2".

Remove the screw "3" and the lower screw located under the footboard.

Remove the right frame plate.

(i) Proceed in the reverse order for reassembly.

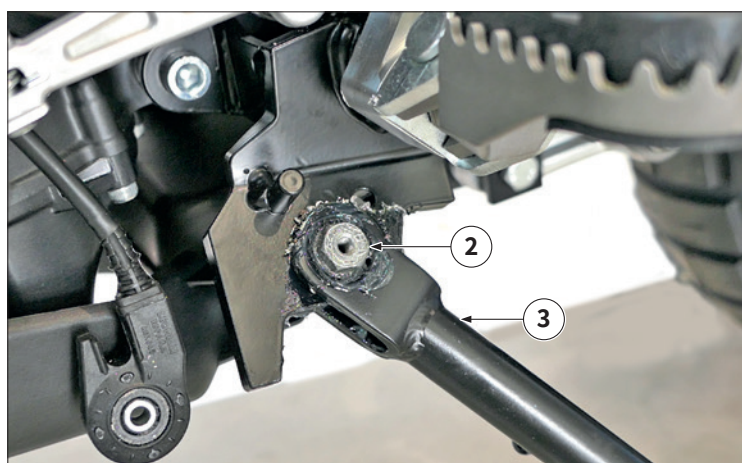


12.16 KICKSTAND

Preliminary operations:

- Remove the kickstand sensor (as described on page 126).

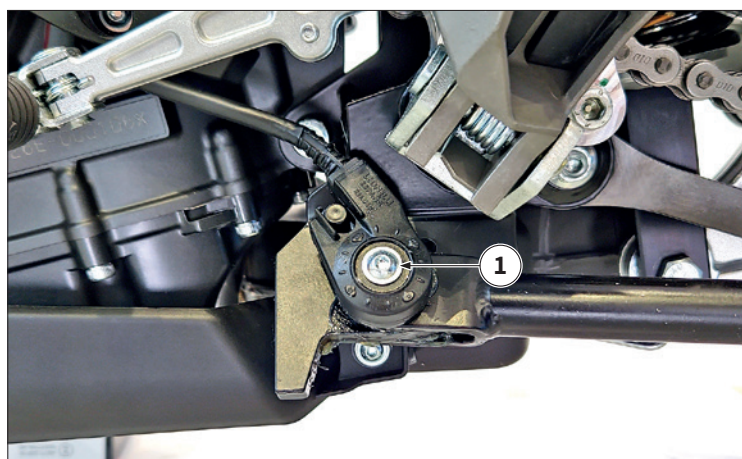
Remove the spring "1".



Remove the kickstand pin "2" and nut, then remove kickstand "3".

i Proceed in the reverse order for reassembly.

Tightening torque
 Screw M8 kickstand: 38 Nm (3.8 m·kgf, 28 ft·lbf).



12.16.1 Kickstand sensor

Disconnect the connector from the main wiring, remove screw "1" and pull out the kickstand sensor.

i Proceed in the reverse order for reassembly.

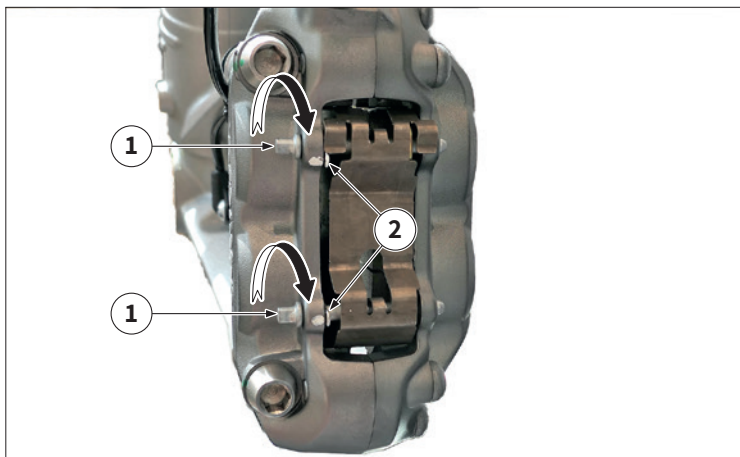
12.17 BRAKING SYSTEM

! Considering the danger to the vehicle and to the rider, it is absolutely essential, after the brakes are reassembled and the braking system restored to normal conditions of use, that the hydraulic circuit is purged of air.

12.17.1 Brake pads

Front brake pads

! Check the wear condition of the front brake pads by looking from the bottom upwards in the direction of the calliper wheel axle, where it is possible to see the ends of the pads, which should have at least a 1.5 mm (0.05 in) layer of lining. If the layer is lower, proceed immediately to replace them.



i Perform the check following the times indicated in the scheduled maintenance table.

Turn pins "1" until split pins "2" are visible, then remove them. Remove the pins "1" and brake pads.

i Proceed in the reverse order for reassembly.

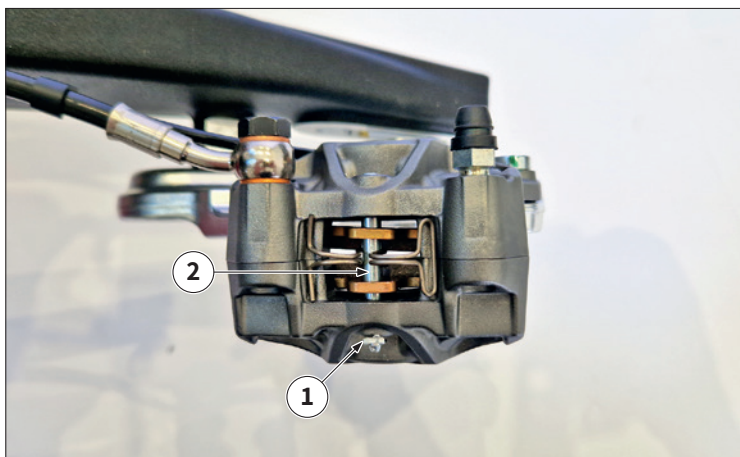
Rear brake pads

! Check the wear condition of the rear brake pads by looking at the rear from above, where it is possible to see the ends of the pads, which should have at least a 1.5 mm (0.05 in) layer of lining. If the layer is lower, proceed immediately to replace them.

i Perform the check following the times indicated in the scheduled maintenance table.

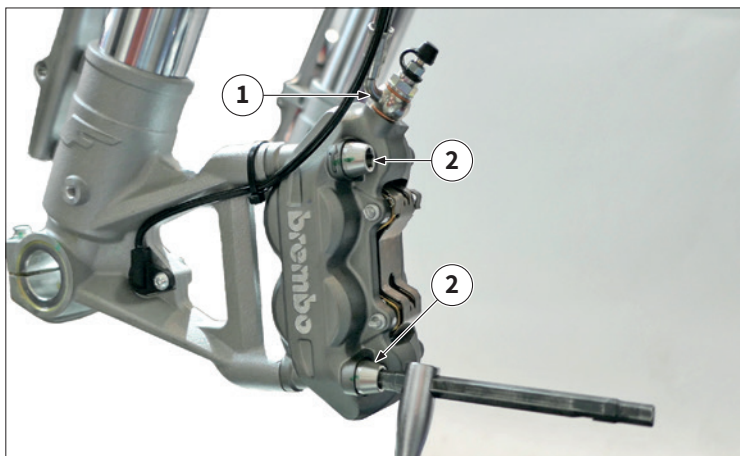
Preliminary operations:

- Remove the rear wheel (as described on page 124).



Remove the nut "1", then with the help of a tool remove pin "2". The brake pads will fall down on their own.

i Proceed in the reverse order for reassembly.



12.17.2 Front brake calliper

Remove the front brake tube connection "1".

i Place a container for collecting brake fluid.

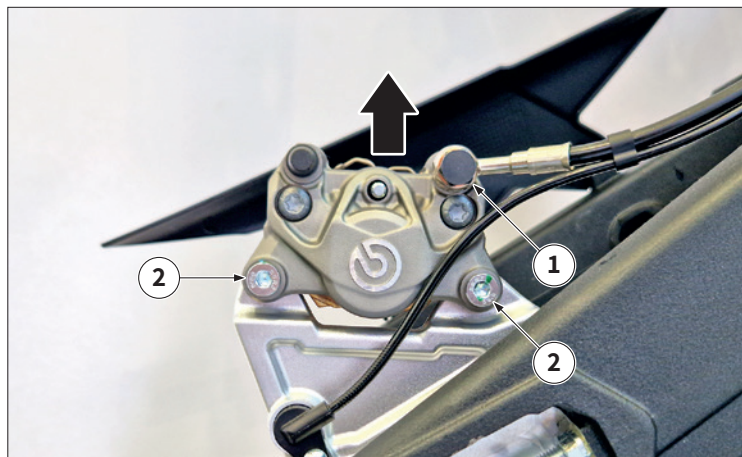
i When reassembling, replace the sealing washers of the fitting.

Remove the screws "2" and the brake calliper.

i Proceed in the reverse order for reassembly.

i Apply threadlocker (LOCTITE ®) to the front calliper screws.

Tightening torque
 Front brake calliper screws: 45 Nm (4.5 m·kgf, 33 ft·lbf).



12.17.3 Rear brake calliper

Remove the rear brake tube connection "1".

-  **Place a container for collecting brake fluid.**
-  **When reassembling, replace the sealing washers of the fitting.**

Remove the screws "2" and the brake calliper.

-  **Proceed in the reverse order for reassembly.**
-  **Apply threadlock (LOCTITE ®) to the rear brake calliper screws.**

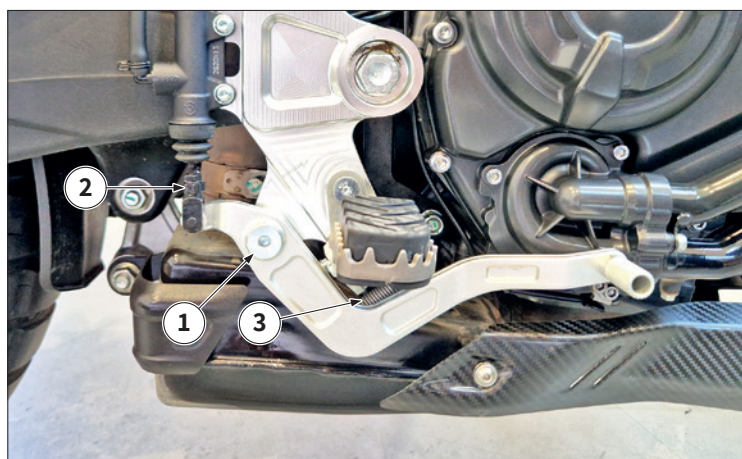
-  **Tightening torque**
 Rear brake caliper screws "2": 18 Nm (1.8 m·kgf, 13 ft·lbf).



12.17.4 Front brake lever

Remove the lower nut and screw "2", then remove the brake lever.

-  **Proceed in the reverse order for reassembly.**

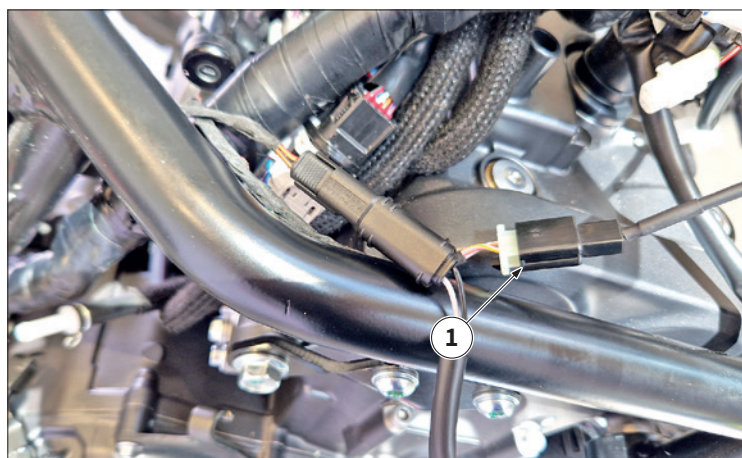


12.17.5 Rear brake lever

Remove the screw "1" and clip "2", then brake lever spring "3".

Remove the rear brake lever.

-  **Proceed in the reverse order for reassembly.**
-  **Apply copper grease to the rear brake lever fastening screw.**
-  **Tightening torque**
 Rear brake lever screw "1": 18 Nm (1.8 m·kgf, 13 ft·lbf).

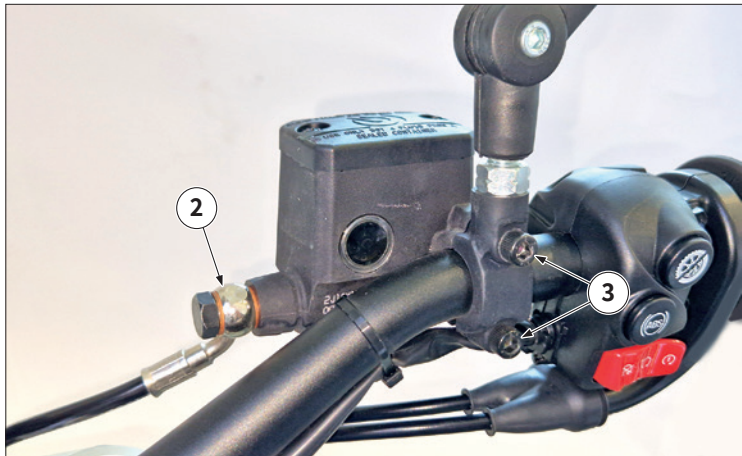


12.17.6 Front brake master cylinder

Preliminary operations:

- Remove the tank (as described on page 106).

Disconnect connector "1" of the brake light switch.



Remove the front brake tube connection "2".

i Place a container for collecting brake fluid.

♻️ When reassembling, replace the sealing washers of the fitting.

Remove the screws "3" fastening the upper collar, then remove the front brake master cylinder.

i Proceed in the reverse order for reassembly.

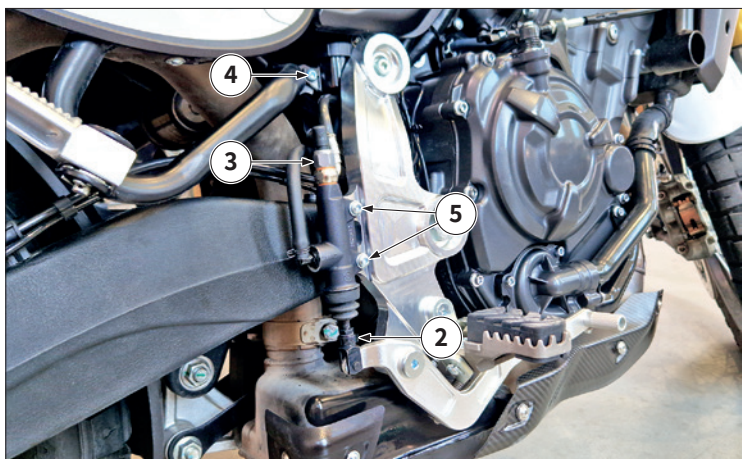


12.17.7 Rear brake master cylinder

Preliminary operations:

– Remove the filter casing (as described on page 147).

Disconnect connector "1" of the brake light switch.



Remove the clip "2" fastening the brake lever to the master cylinder, rear brake light switch fitting "3", brake fluid reservoir fastening screw "4" and screws "5", then remove the rear brake master cylinder.

i Proceed in the reverse order for reassembly.

🔧 Tightening torque
 Rear brake light switch "3":
 4 ÷ 5 Nm (0.4 ÷ 0.5 kgf, 2.9 ÷ 3.7 lbf).

12.17.8 Brake system purging

This vehicle is equipped with an ABS braking system with **cornering** function.

The ABS system intervenes on the pressure exerted on the brakes by the rider based on wheel speed and vehicle deceleration. This electronic device improves riding stability, even on surfaces with poor grip.

The **cornering** function allows the ABS system to determine cornering forces, lean angles and to calculate the correct proportion to be applied to the individual brakes.

i This procedure must be carried out whenever a hydraulic component belonging to the front brake assembly or the rear brake assembly is replaced.

i The brake fluid is hygroscopic, i.e. It absorbs moisture from the surrounding air. If the moisture contained in the brake fluid exceeds a certain value, an inefficient braking results. It is therefore appropriate to take the liquid from sealed containers. Under normal riding and climatic conditions it is advisable to replace this liquid every two years. If the brakes are subjected to heavy stress, replace the liquid more frequently.

⚠ Avoid contact of brake fluid with eyes, skin and clothing. In case of accidental contact, wash with water.

⚠ The brake fluid has a high corrosive power, avoid it from coming into contact with the painted parts.

⚠ When purging, ensure that the vehicle remains upright and is placed on a stable stand.

⚠ When purging, keep the oil levels constantly under control to prevent air from entering the system through the pumps.

i If during the draining operation air continues to go out, examine all the fittings, if they do not show any anomaly, search for air entering from the various seals of the pump and from the calliper pistons.

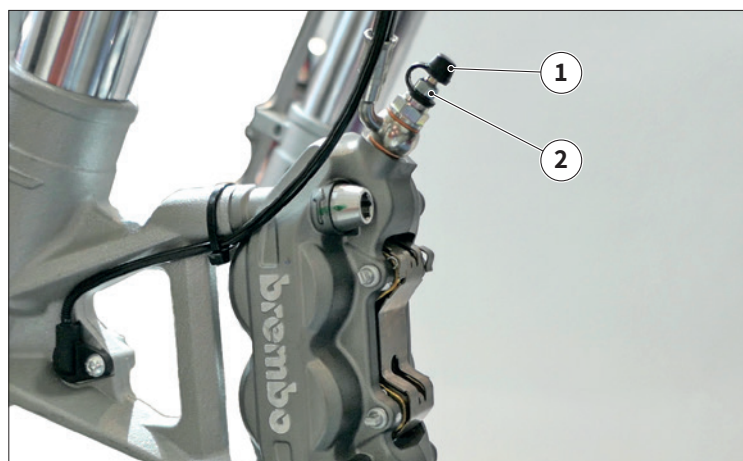
⚠ When carrying out the operation, oil can seep between the bleed screw and the seat on the calliper. Carefully dry the callipers and degrease the disc, in case there is oil on it.

⚠ When the operation is complete, tighten the oil drain screw to the prescribed torque.

⚠ When replacing the ABS module, purge the brake system as described in paragraph "12.18.2 ABS module" on page 133.

In order to purge the ABS system pump, it is necessary to connect a recognised diagnostics tester (as described on page 101) and follow the instructions dictated by the program for diagnosing and purging the ABS system.

For manual operations, proceed as follows.



Front braking system

Remove the rubber protection cap "1" from the bleed valve.

Insert a transparent plastic tube on the bleed valve of the front brake calliper and insert the other end of the tube into a collection container.

Remove the front brake oil reservoir cap.

Operate and release the front brake lever quickly and repeatedly, keeping it fully actuated.

Loosen the bleed valve "2" 1/4 turn so that the brake fluid flows into the container, this will remove tension on the brake lever and this will make it reach the end of stroke.

Close the bleed valve "2" before reaching the end of the stroke with the lever.

Repeat the operation until the liquid reaching the container is completely free of air bubbles.

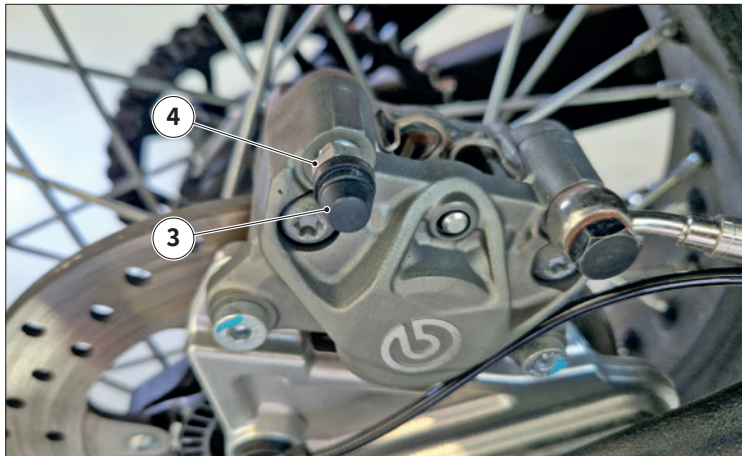
Tighten the bleed valve "2" and remove the tube.

Top up restoring the correct level of brake fluid in the tank.

Reposition and lock the front brake oil reservoir cap.

Reset the rubber protection cap "1".

i When draining the hydraulic system, fill the reservoir with brake fluid when necessary. Check that brake fluid is always present in the reservoir during operation.

**Rear braking system**

Remove the rubber protection cap “3” from the bleed valve.

Insert a transparent plastic tube on the bleed valve of the rear brake calliper and insert the other end of the tube into a collection container.

Remove the rear brake oil reservoir cap.

Operate and release the rear brake lever quickly and repeatedly, keeping it fully actuated.

Loosen the bleed valve “4” 1/4 turn so that the brake fluid flows into the container, this will remove tension on the brake lever and this will make it reach the end of stroke.

Close the bleed valve “4” before reaching the end of the stroke with the lever.

Repeat the operation until the liquid reaching the container is completely free of air bubbles.

Tighten the bleed valve “4” and remove the tube.

Top up restoring the correct level of brake fluid in the tank.

Reposition and lock the rear brake oil reservoir cap.

Reset the rubber protection cap “3”.

i When draining the hydraulic system, fill the reservoir with brake fluid when necessary. Check that brake fluid is always present in the reservoir during operation.

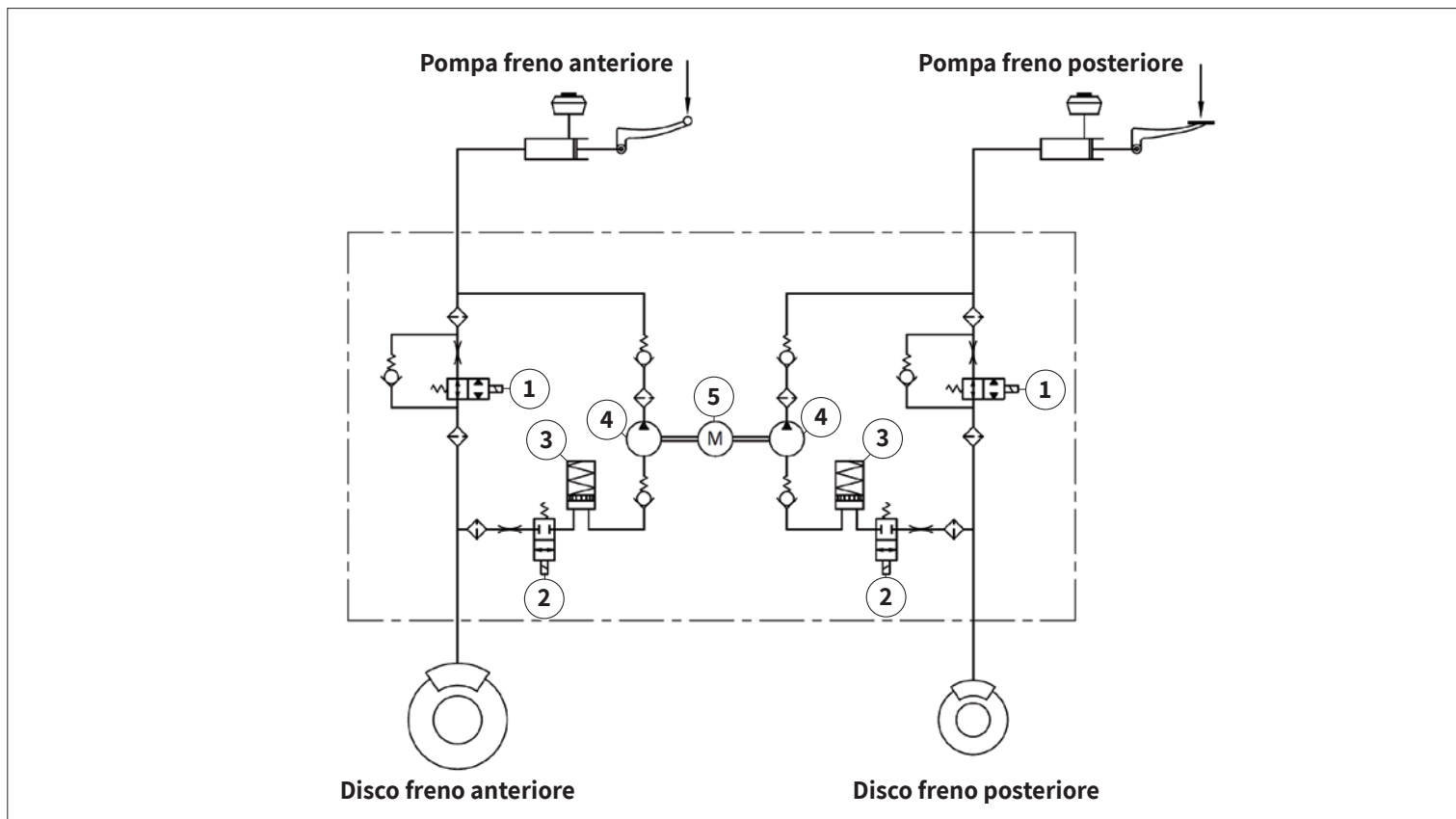
Brake fluid replacement

i To change the brake fluid, operate in the same way for the front and rear parts.

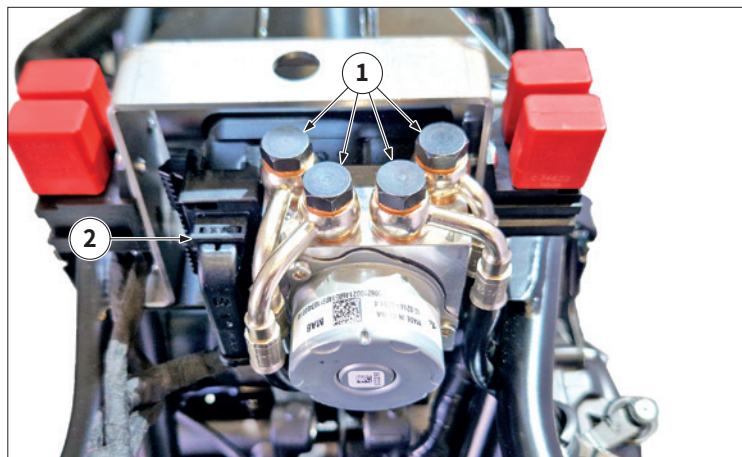
Open the brake fluid reservoir removing the cover and gasket.

Drain the system according to the drain procedure, proceeding until it reaches the level indicated in the inspection window.

Close the brake fluid reservoir.

12.18 REMOVAL OF ABS SYSTEM
12.18.1 ABS system Hydraulic diagram


1. Inlet valve
2. Outlet valve
3. Low pressure accumulator
4. Hydraulic pump
5. Electric motor



12.18.2 ABS module

Preliminary operations:

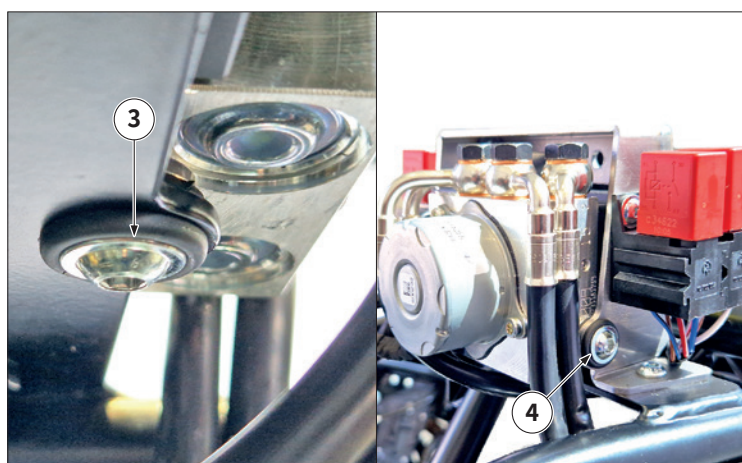
- Remove the filter casing (as described on page 147).

Remove the brake system tube connections "1".

i Place a container for collecting brake fluid.

♻ When reassembling, replace the sealing washers of the fittings.

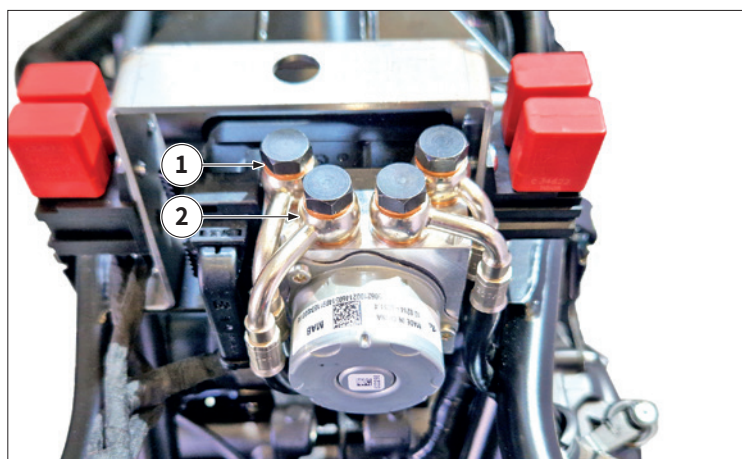
Disconnect the ABS module connector "2".



Remove the lower screw "3" and the side screw "4", then remove the ABS module.

i Proceed in the reverse order for reassembly.

⚠ Following the replacement of the ABS module, drain the system using the diagnostic system.

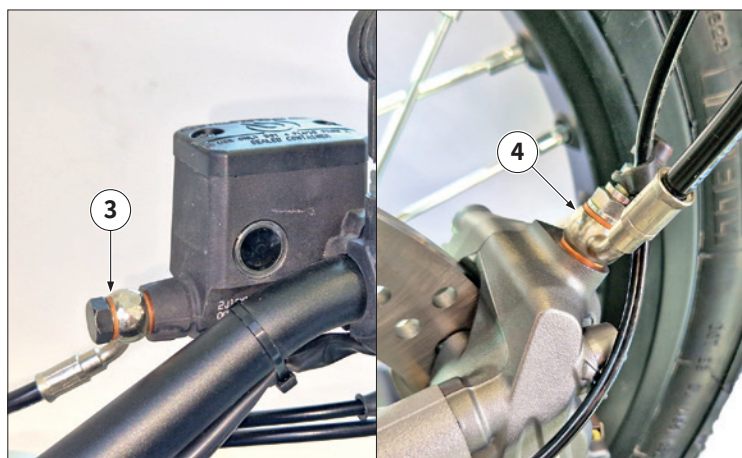


12.18.3 Front ABS tubes

Remove the brake system tube connections "1" and "2".

i Place a container for collecting brake fluid.

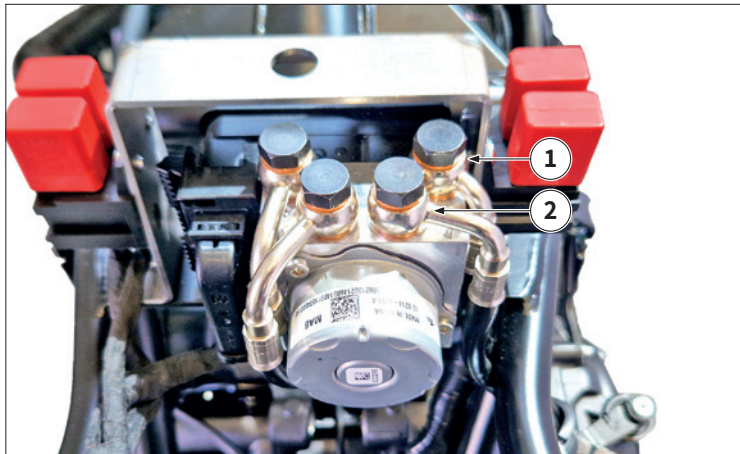
♻ When reassembling, replace the sealing washers of the fittings



Remove the brake system tubes connections on the front brake master cylinder "3" and front brake calliper "4", then remove the tubes.

i Proceed in the reverse order for reassembly.

♻ When reassembling, replace the sealing washers of the fittings



12.18.4 Rear ABS tubes

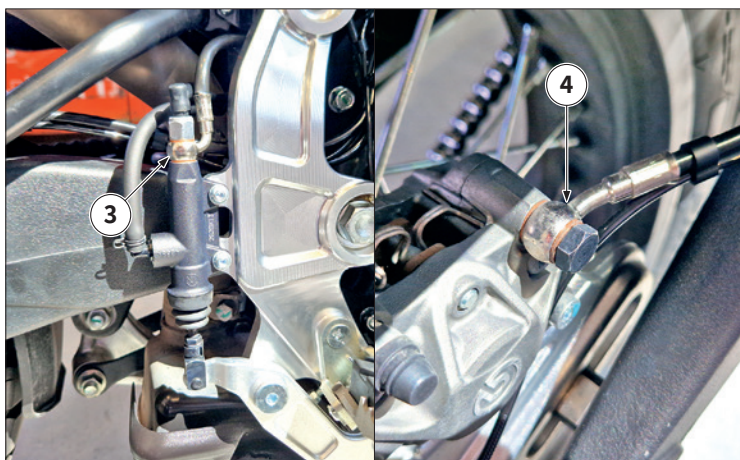
Remove the brake system tube connections "1" and "2".



Place a container for collecting brake fluid.



When reassembling, replace the sealing washers of the fittings.



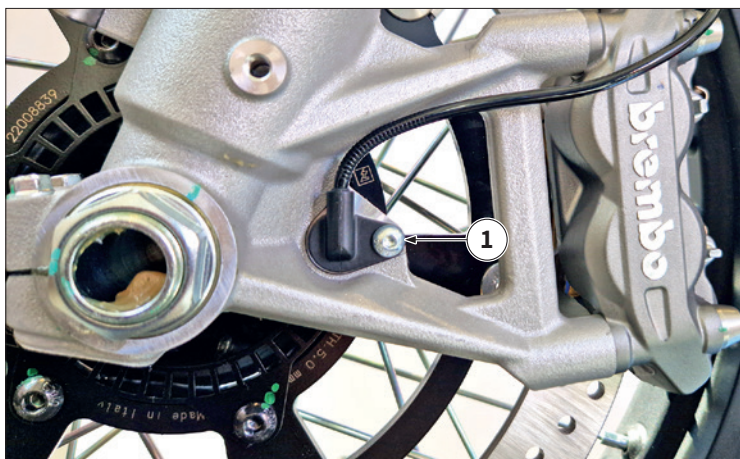
Remove the brake system tube connections on the rear brake master cylinder "3" and rear brake calliper "4", then remove the tubes.



Proceed in the reverse order for reassembly.

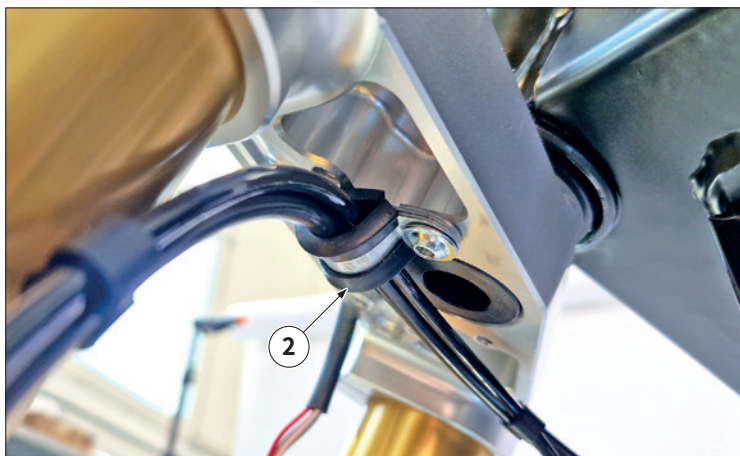


When reassembling, replace the sealing washers of the fittings.

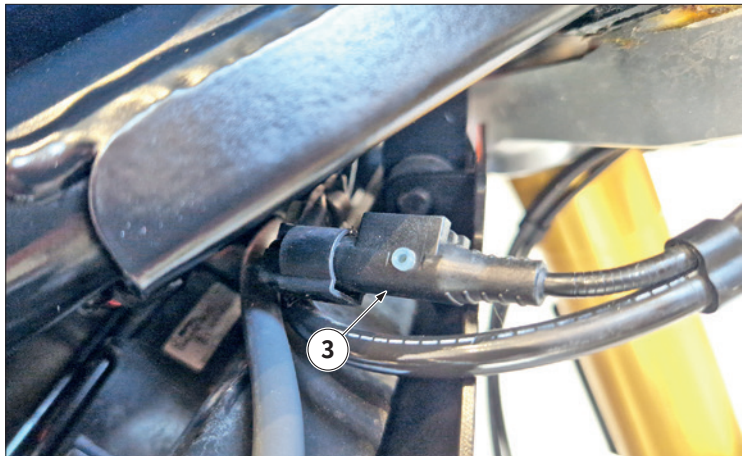


12.18.5 Front ABS sensor

Remove the sensor fastening screw "1".



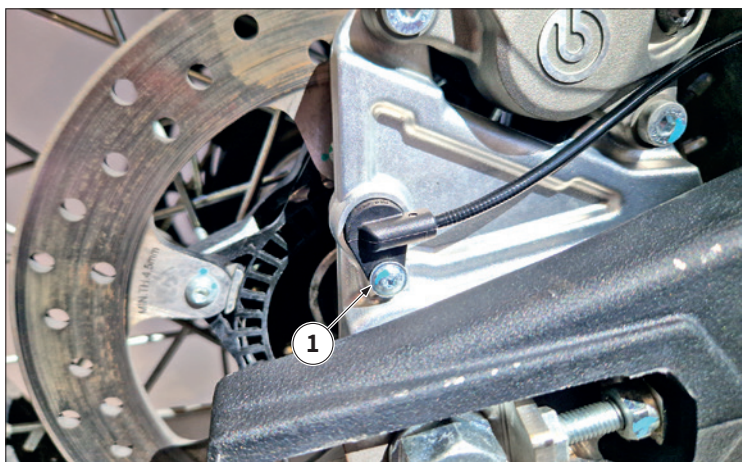
Remove the cable gland "2".



Disconnect connector "3" and remove the ABS sensor cable.

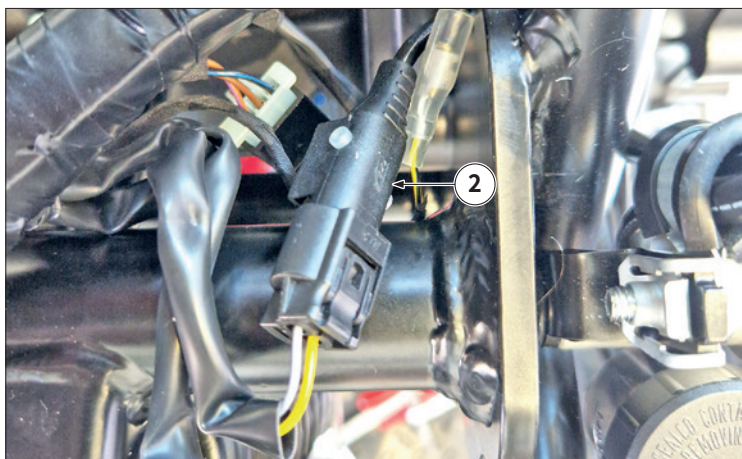
i Proceed in the reverse order for reassembly.

i The distance of the ABS sensor from the phonic wheel must be between a minimum of 0.3 mm and a maximum of 1.5 mm.



12.18.6 Rear ABS sensor

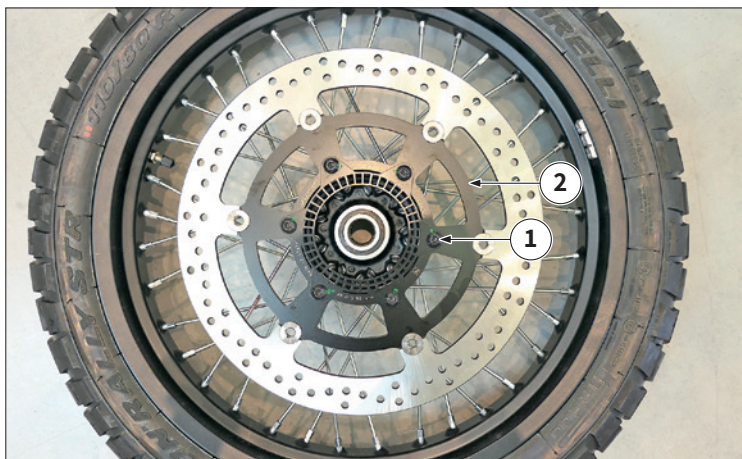
Remove the sensor fastening screw "1".



Disconnect connector "2" and remove the ABS sensor cable.

i Proceed in the reverse order for reassembly.

i The distance of the ABS sensor from the phonic wheel must be between a minimum of 0.3 mm and a maximum of 1.5 mm.



12.18.7 Front ABS phonic wheel

Preliminary operations:

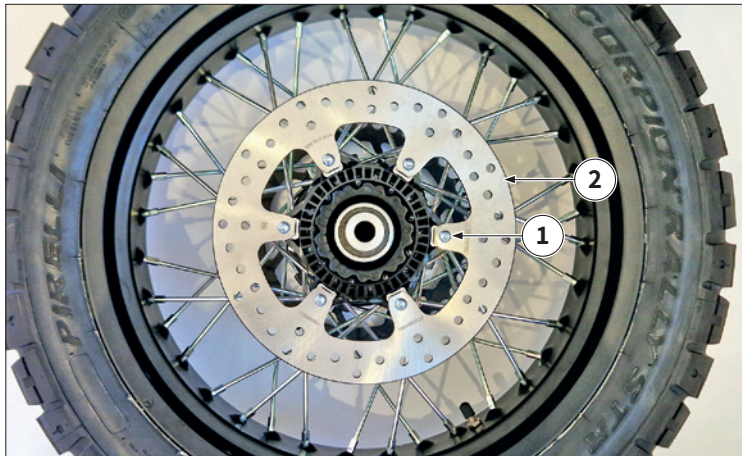
– Remove the front wheel (as described on page 123).

Remove the six screws "1" then remove the phonic wheel "2" and the brake disc.

i Proceed in the reverse order for reassembly.

 Apply threadlocker (LOCTITE ®) to the front brake disc M8 screws.

 Tightening torque
 M8 screws front brake disc: 22 Nm (2.2 m·kgf, 16 ft·lbf).



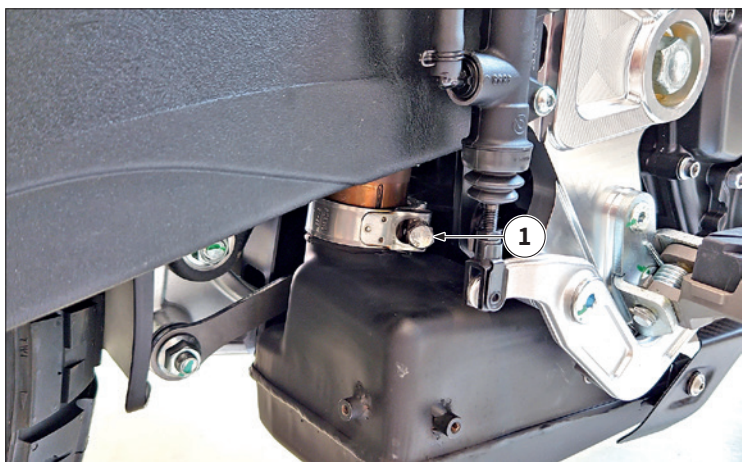
12.18.8 Rear ABS phonic wheel

Preliminary operations:

- Remove the rear wheel (as described on page 124).

Remove the six screws "1" and the brake disc "2", then remove the rear phonic wheel.

i Proceed in the reverse order for reassembly.



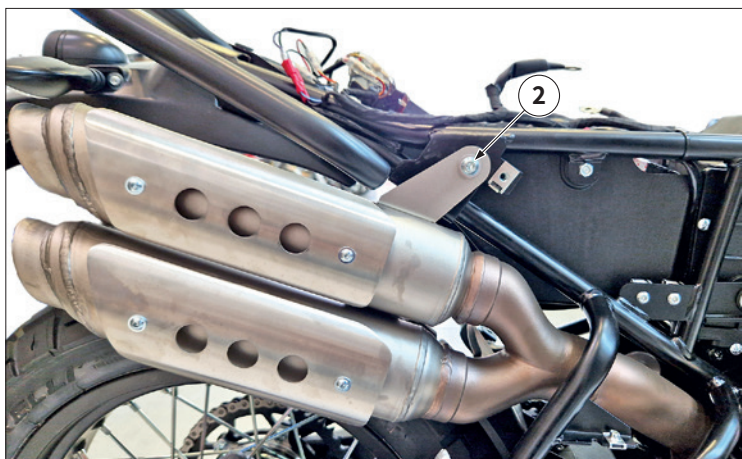
12.19 EXHAUST SYSTEM

12.19.1 Silencer

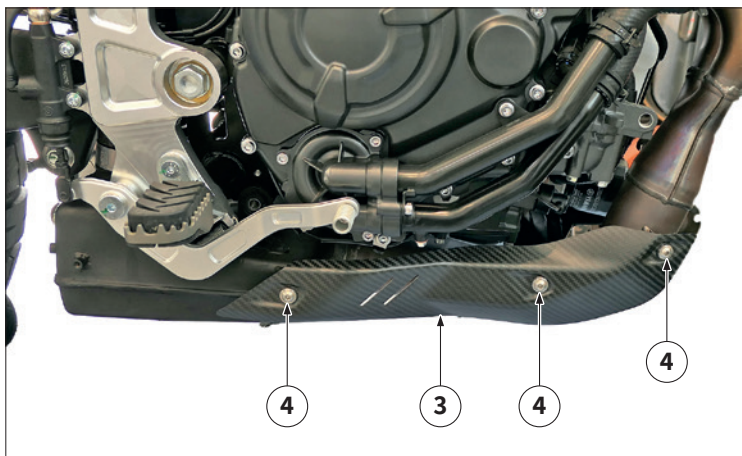
Preliminary operations:

- Remove the right side panel (as described on page 104);
- Remove the oxygen sensor (as described on page 138);
- Remove the radiator (as described on page 138).

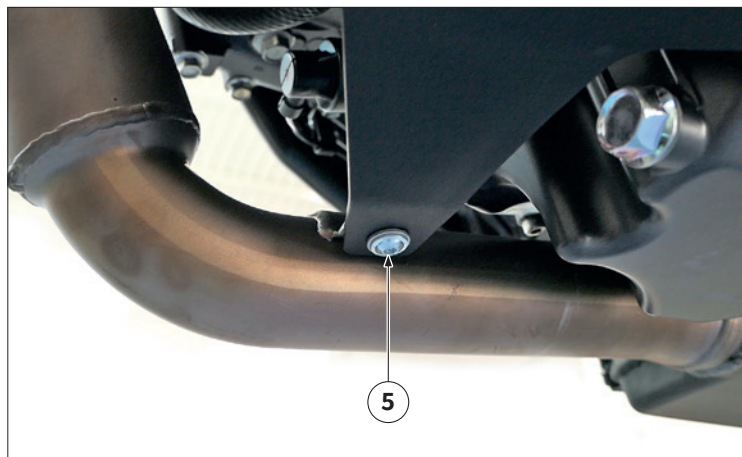
Loosen clamp "1".



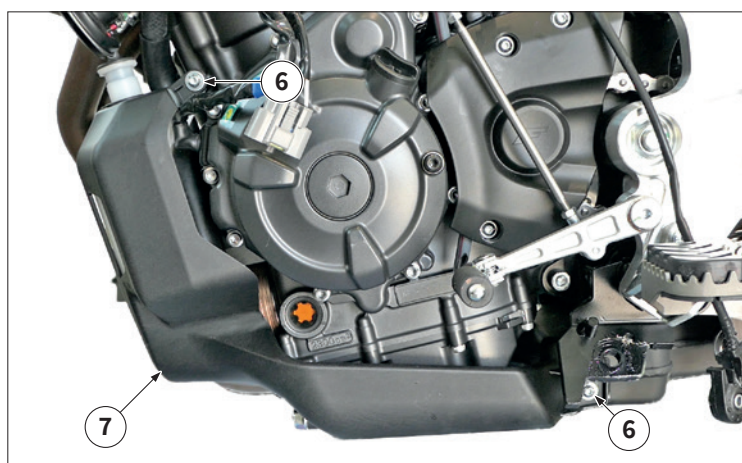
Remove the screw "2" and the silencer.



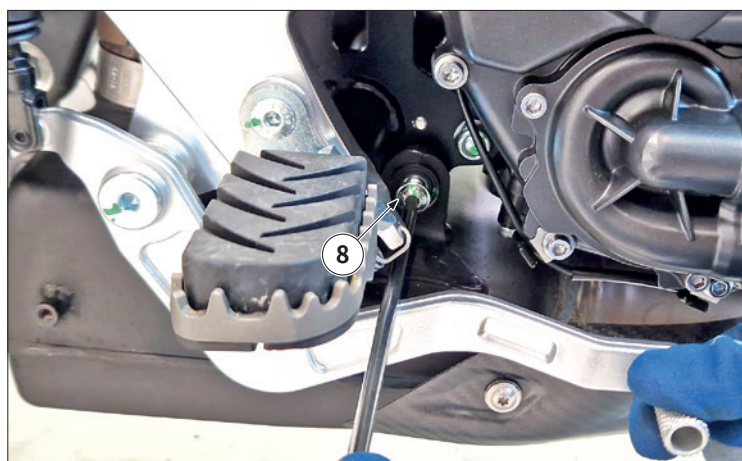
Remove the heat shield "3" by removing the three fastening screws "4" and their washers.



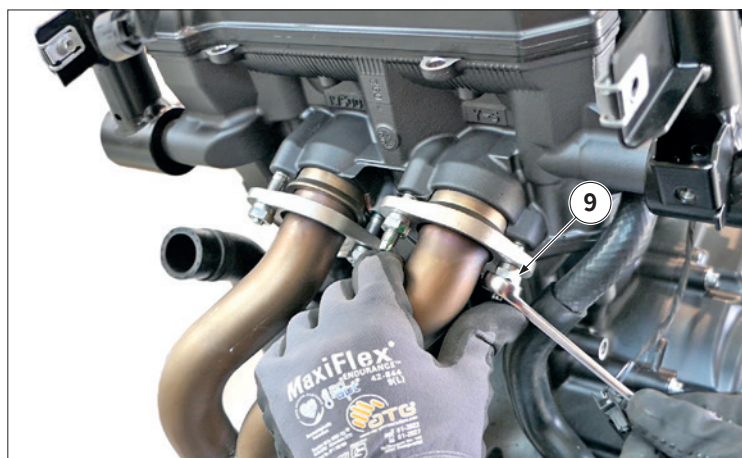
Remove the screw "5".



Remove the screws "6" on the opposite side, then remove the central protection "7".



Remove the screw "8".



Remove the four screws "9" fastening the manifold, then remove the manifold.

i Proceed in the reverse order for reassembly.

Tightening torque
 Manifold fastening screws "9": 18 Nm (1.8 m·kgf, 13 ft·lbf).

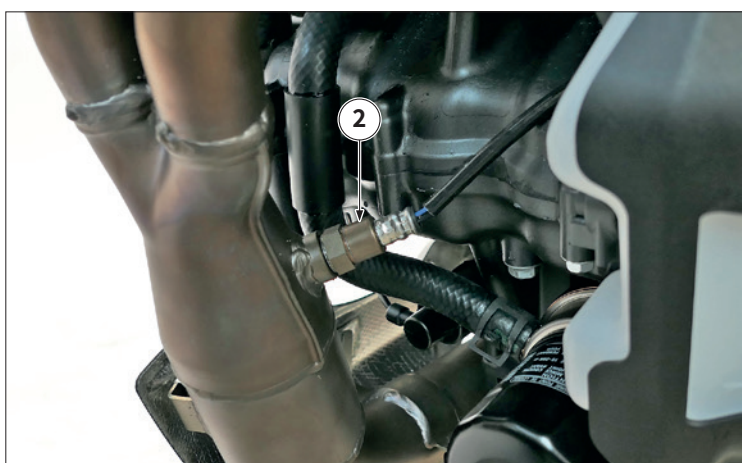


12.19.2 Oxygen sensor

Preliminary operations:

- Remove the left side panel (as described on page 104).

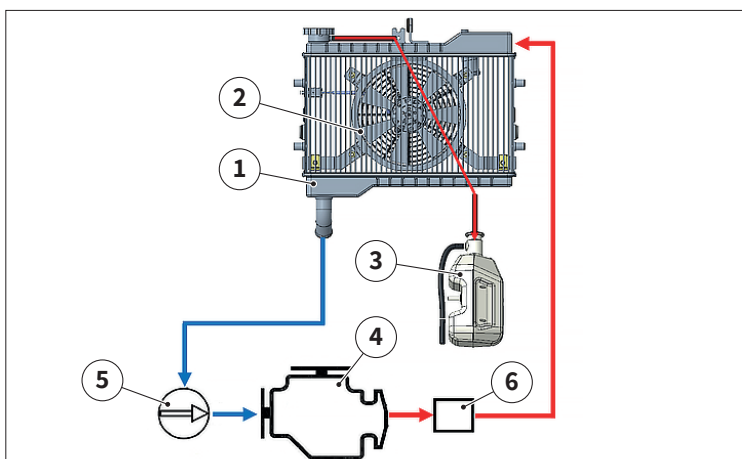
Disconnect the probe connector "1".



Remove the probe "2" from the manifold.

i Proceed in the reverse order for reassembly.

Tightening torque
 Oxygen sensor "2": 22 Nm (2.2 m·kgf, 16 ft·lbf).

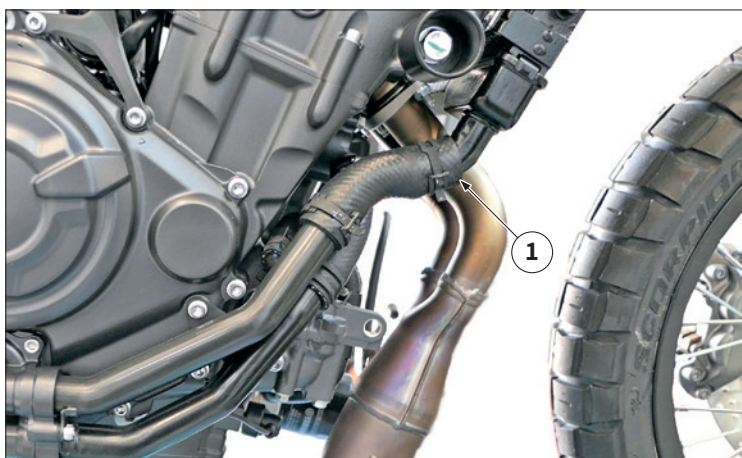


12.20 COOLING SYSTEM

12.20.1 Cooling system diagram

1. Radiator
2. Cooling fan
3. Expansion vessel
4. Engine
5. Coolant pump
6. Thermostat

! Perform the following operations only when the engine is cold.

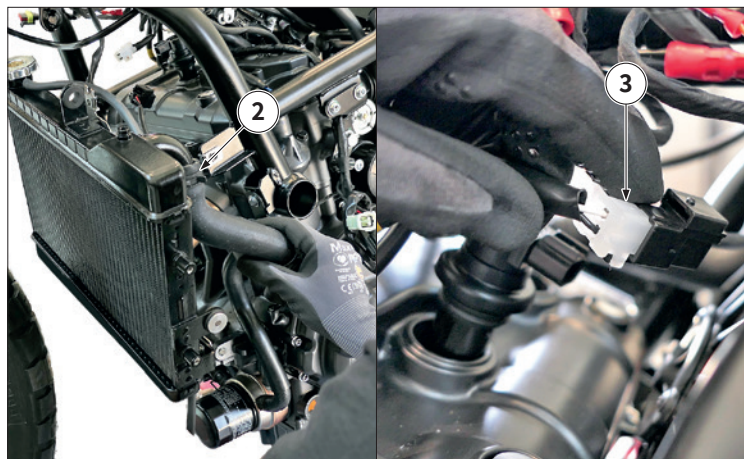


12.20.2 Radiator

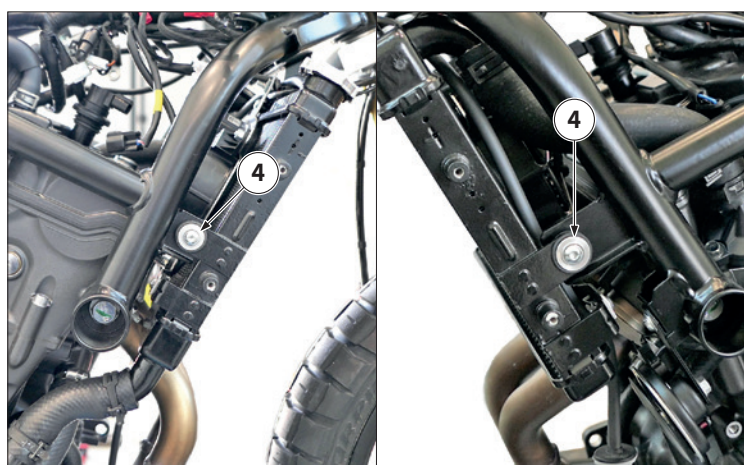
Preliminary operations:

- Remove the right side panel (as described on page 104);
- Remove the expansion tank (as described on page 140).

Release the tube "1" and empty the coolant from the radiator.

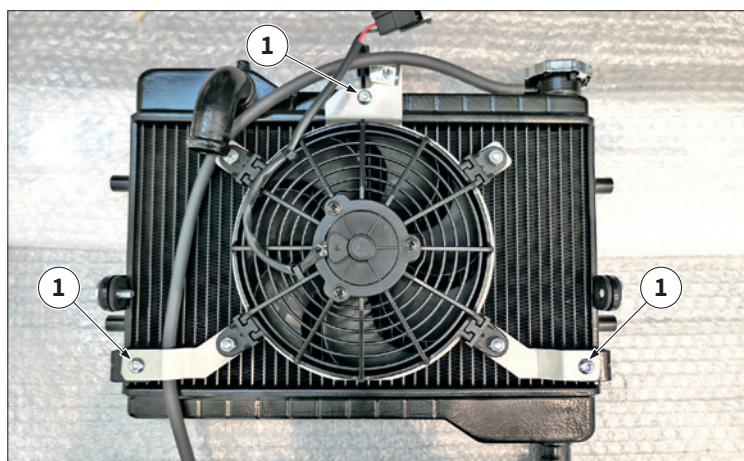


Disconnect the tube "2" on the opposite side and disconnect the fan connector "3".



Remove the screws "4" fastening the radiator, then remove the radiator.

i Proceed in the reverse order for reassembly.

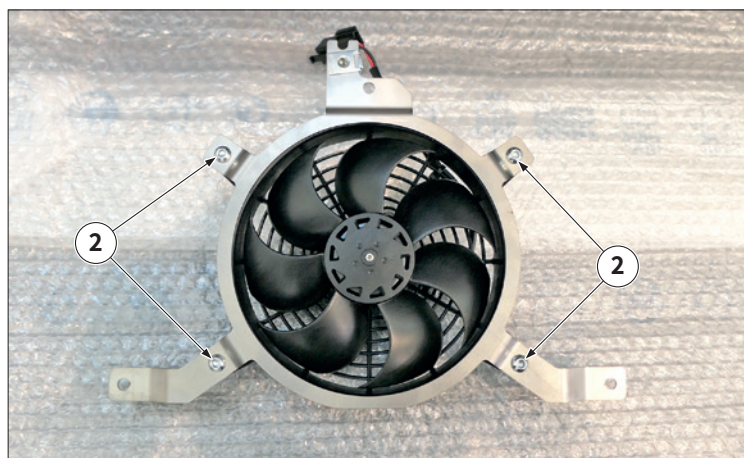


12.20.3 Fan

Preliminary operations:

- Remove the radiator (as described on page 138).

Remove the three screws "1" that secure the fan bracket to the radiator.



Remove the screws "2" then the fan.

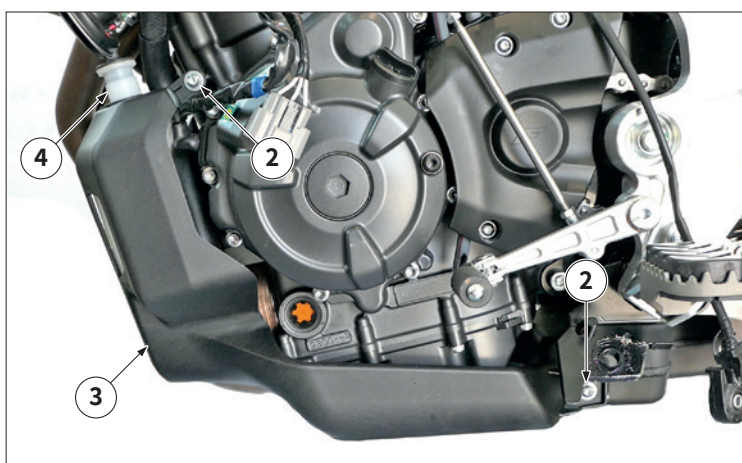
i Proceed in the reverse order for reassembly.

- Tightening torques**
- Fan bracket fastening screws: 5 Nm (0.5 m·kgf, 3 ft·lbf);
 - Fan fastening screws: 5 Nm (0.5 m·kgf, 3 ft·lbf).


12.20.4 Expansion tank.

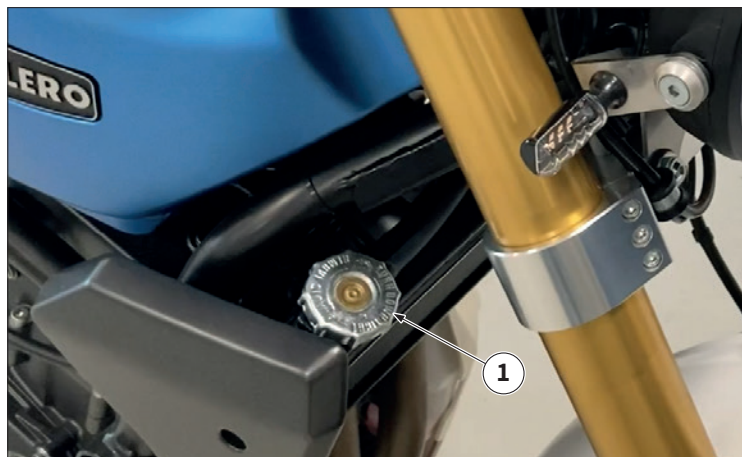
i Place a container for collecting the coolant.

Remove the screw "1".



Remove the screws "2" and the lower centre cover "3", then remove the expansion tank "4".

i Proceed in the reverse order for reassembly.



12.20.5 Coolant change.



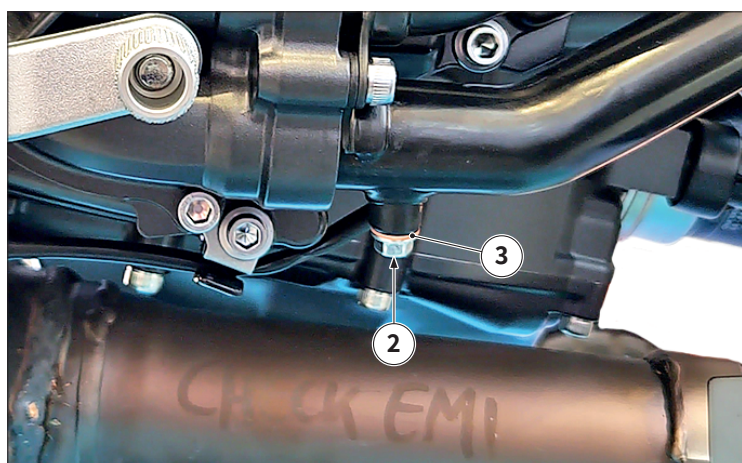
Do not remove the radiator cap when the engine is hot, as the radiator is under pressure: hot liquid and steam could escape, resulting in serious injury.

Preliminary operations:

- Check that the engine and radiator are cold before proceeding.
- Remove the central cover and expansion tank (as described on page 140).
- Prepare a sufficiently large container for collecting the coolant, to be placed under the vehicle radiator.

Remove the radiator cap "1";

Remove the coolant drain bolt "2".



Replace the copper washer "3" on the drain bolt.



Check that all coolant is drained correctly.



Clean the vehicle of any residue on the engine, bodywork and cooling system.

Install drain bolt "2" with a new copper washer "3".

Tightening torques: Coolant drain bolt 7 Nm (0.7 m•kg, 5.2 ft•lb)

Refit the expansion tank and lower central cover.

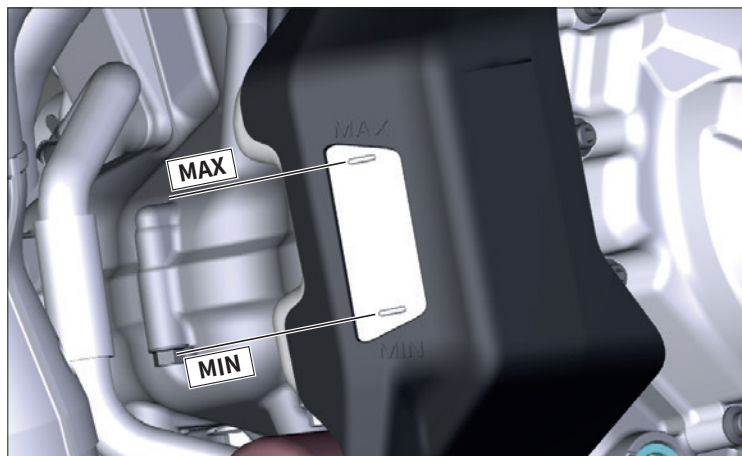
Prepare the new coolant by mixing only distilled water and the recommended antifreeze fluid.

Coolant quantity: 1.6 l (0.35 UK gal, 0.42 US gal)

Recommended product:
Antifreeze liquid based on ethylene glycol with organic additives.

If the vehicle needs topping up, add distilled water only. If the liquid has to be completely restored, add a mixture of water and antifreeze fluid.

Mixing ratio
Distilled water : Antifreeze liquid = 1:1



Fill the coolant.

Close the radiator cap "1".

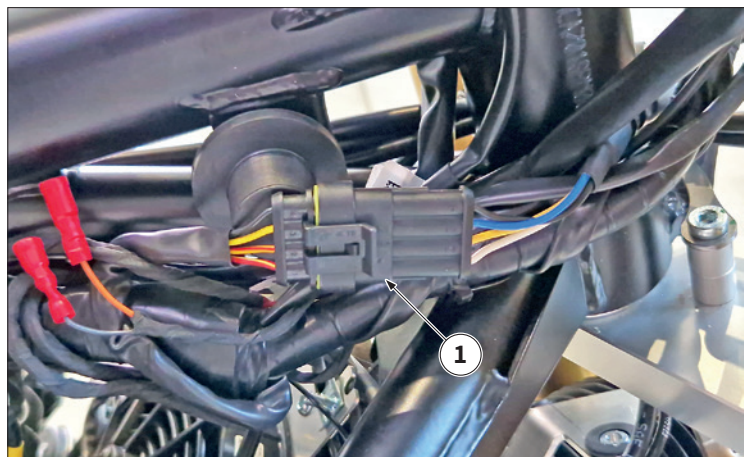


Press the rubber tubes several times to facilitate the release of any air bubbles.

Start the vehicle: keep it running for at least one minute before checking the level again.



Repeat the procedure until the coolant level has settled.



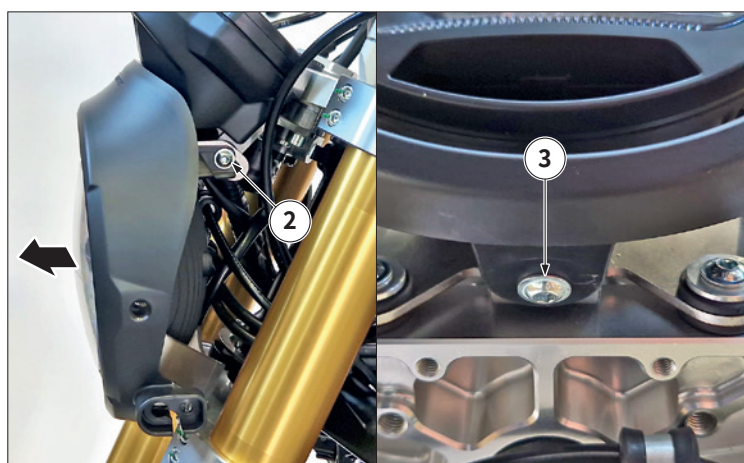
12.21 HEADLIGHT ASSEMBLY

12.21.1 Headlight

Preliminary operations:

- Remove the front turn signals. (as described on page 143)

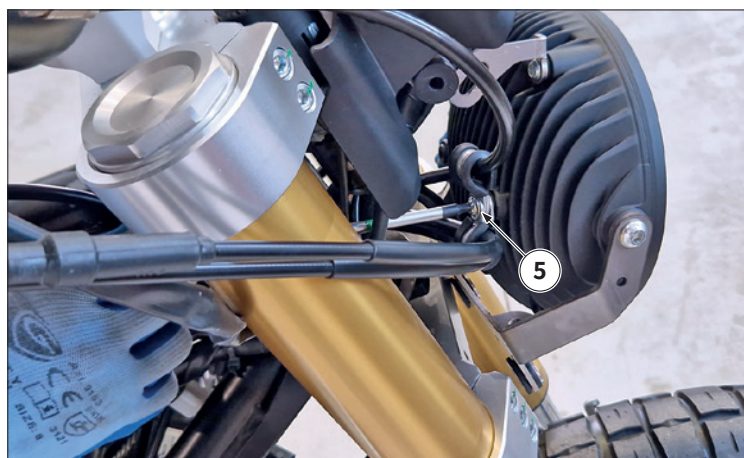
Disconnect connector "1" from the wiring.



Remove the two side screws "2" and the lower screw "3", then remove the headlamp cover.



Remove the two screws "4" fastening the light to the bottom plate

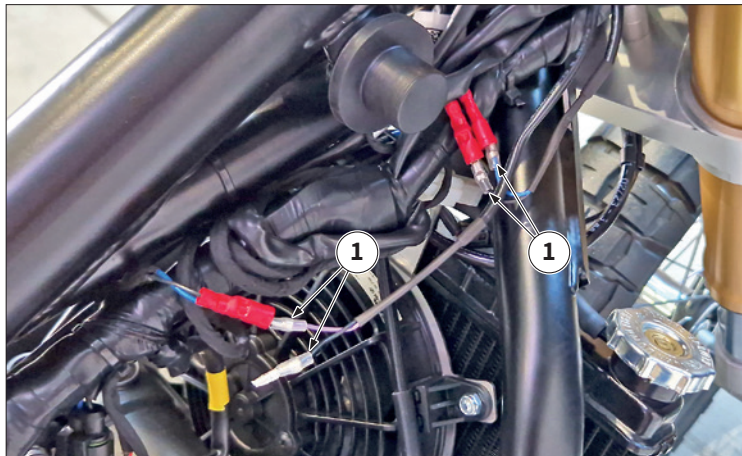


Remove the screw "5" fastening the cable glands and the two cable glands, then remove the headlight.

i Proceed in the reverse order for reassembly.

Tightening torques

- Headlight fastening screws: 15 Nm (1.5 m·kgf, 11 ft·lbf);
- Cable gland screw: 10 Nm (1.0 m·kgf, 7 ft·lbf);
- Headlight protection screw: 10 Nm (1.0 m·kgf, 7 ft·lbf).

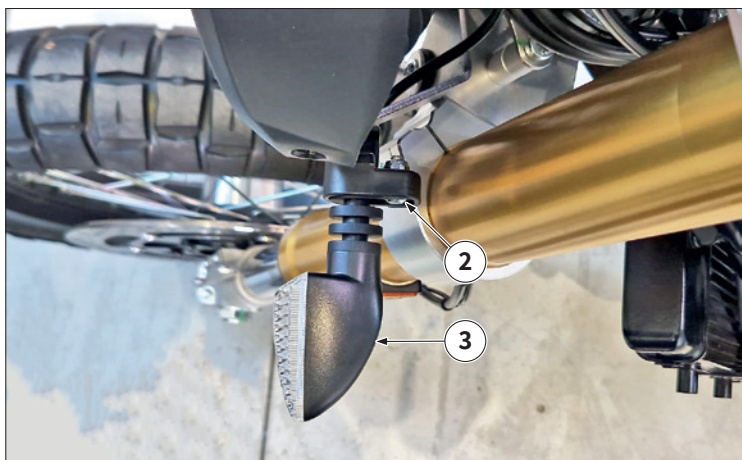


12.21.2 Front turn signals

Preliminary operations:

- Remove the tank (as described on page 106).

Disconnect the turn signal "1" connectors.

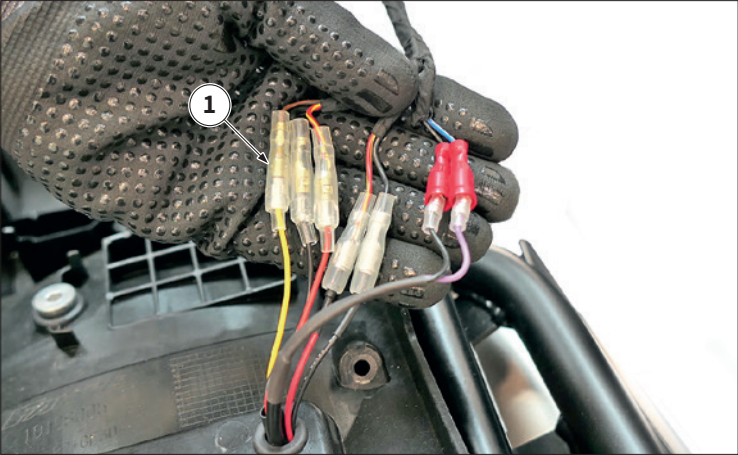


Remove the screw "2" and the nut, then remove the left turn signal "3".

Repeat the operation for the right turn signal.

i Proceed in the reverse order for reassembly.

Tightening torque
Turn signals screws: 2 Nm (0.2 m·kgf, 1 ft·lbf).



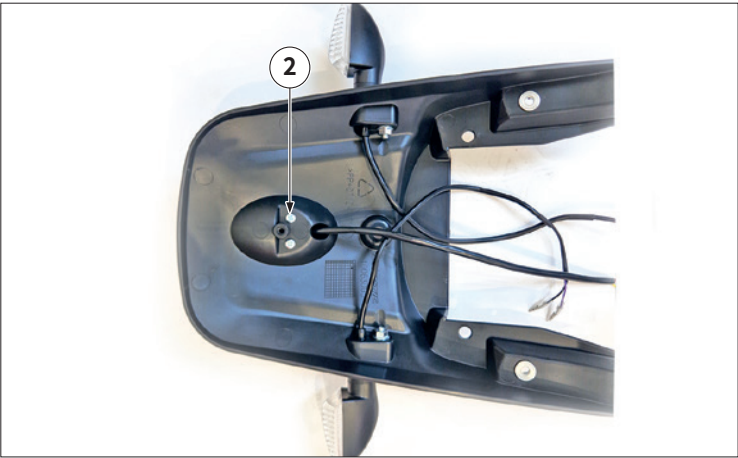
12.22 TAIL LIGHT ASSEMBLY

12.22.1 Tail light

Preliminary operations:

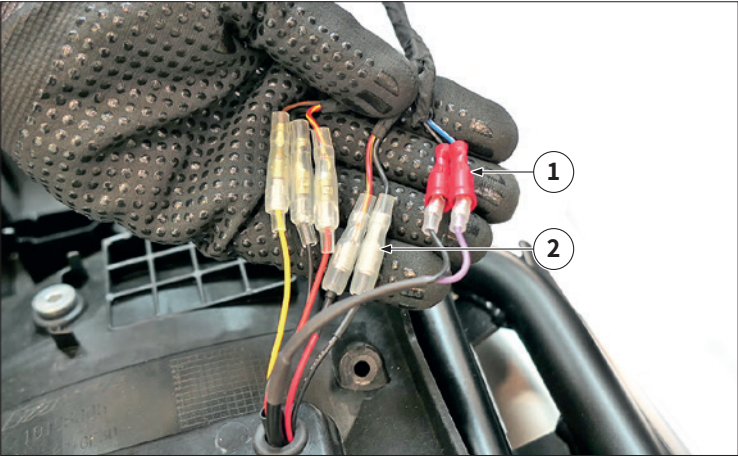
- Remove the licence plate holder (as described on page 102).

Disconnect the rear light wiring "1" (black, yellow, red wires) from the vehicle.



Remove the two fastening screws "2" and the headlight.

i Proceed in the reverse order for reassembly.

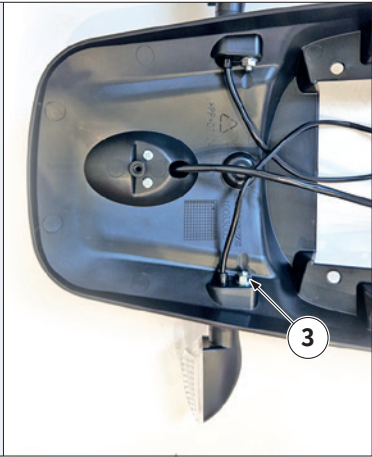
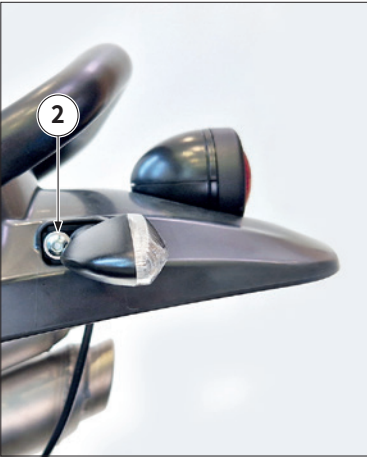


12.22.2 Rear turn signals

Preliminary operations:

- Remove the licence plate holder (as described on page 102).

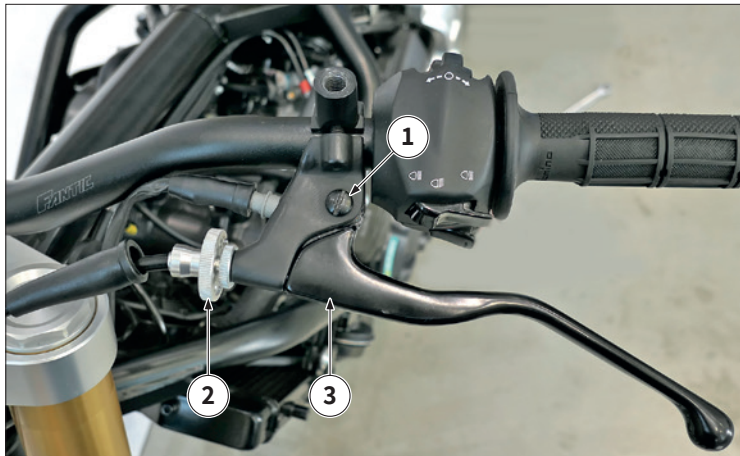
Disconnect the two turn signal wirings "1" and "2".



Remove the screw "2" and the nut "3", then remove the turn signal. Repeat the operation on the turn signal on the opposite side.

i Proceed in the reverse order for reassembly.

Tightening torque
Turn signals screws: 2 Nm (0.2 m·kgf, 1 ft·lbf).



12.23 CLUTCH LEVER

Remove the screw "1", unscrew the clutch adjuster "2" to remove the cable, then remove the clutch lever "3".

i Proceed in the reverse order for reassembly.



12.24 REAR VIEW MIRRORS

Loosen the locknut "1" and unscrew the mirror rod to remove them.

i Proceed in the reverse order for reassembly.



12.25 THROTTLE CONTROL

12.25.1 Throttle control grip

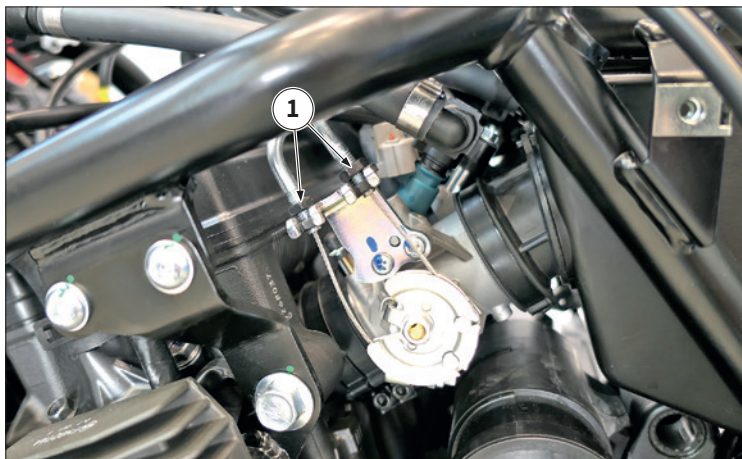
Remove the handlebar counterweight "1" by removing screw "2".



Remove the two screws "3", then remove the throttle control grip.

i Proceed in the reverse order for reassembly.

Tightening torque
Grip screw: 10 Nm (1.0 m·kgf, 7 ft·lbf).



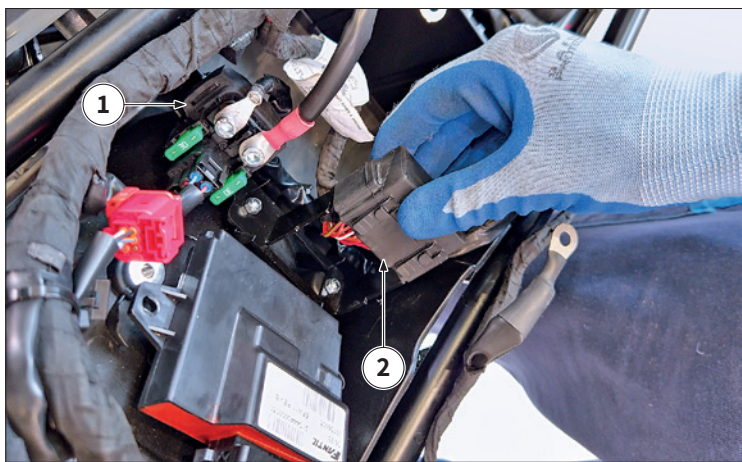
12.25.2 Throttle cables

Preliminary operations:

- Remove the tank (as described on page 106);
- Remove the throttle grip (as described on page 145).

Completely loosen nuts "1" to remove the throttle cables.

i Proceed in the reverse order for reassembly.

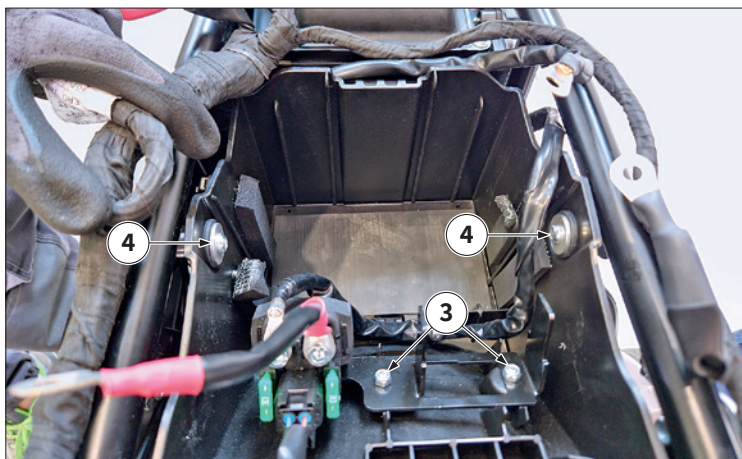


12.26 BATTERY COMPARTMENT

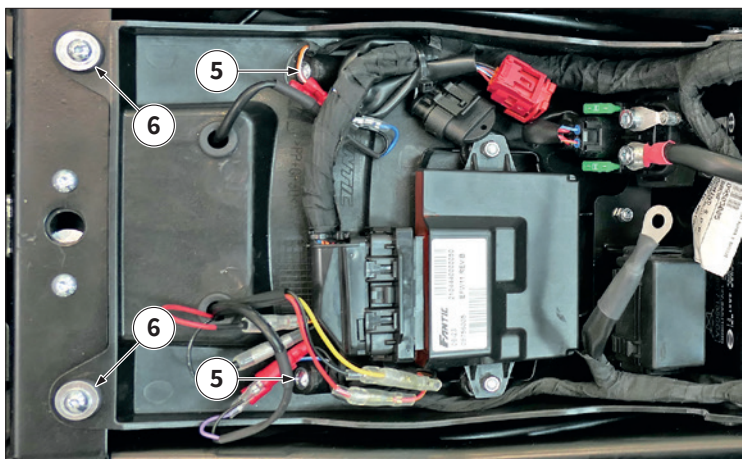
Preliminary operations:

- Remove the battery (as described on page 33);
- Remove the ignition module (as described on page 33);
- Remove the side panels (as described on page 104).

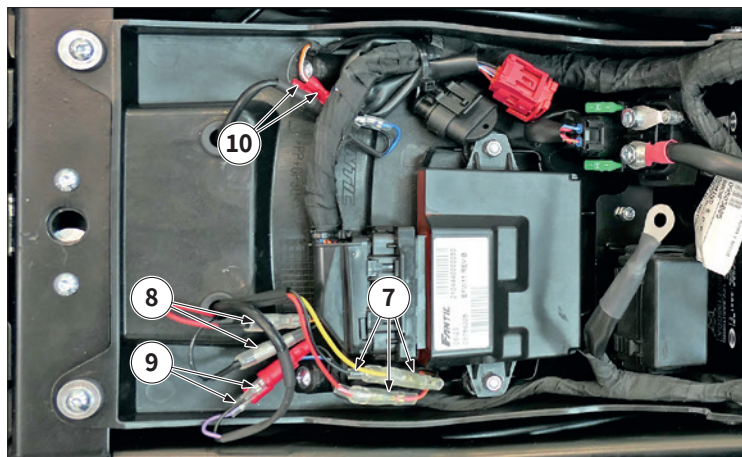
Remove the starter relay "1" and fuse box "2".



Remove the two screws and nuts "3" and the two screws with washers "4".

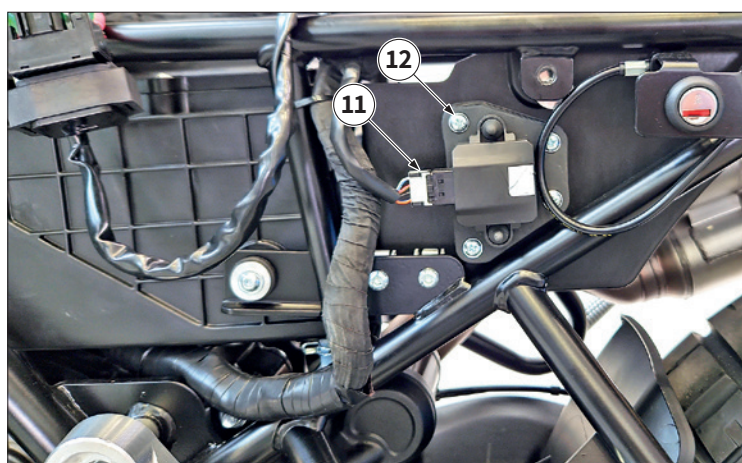


Remove the two self-tapping screws "5" and the two screws with washers "6".



Disconnect the following connectors:

- rear light "7";
- licence plate light "8";
- right rear turn signals "9" and left rear turn signals "10".

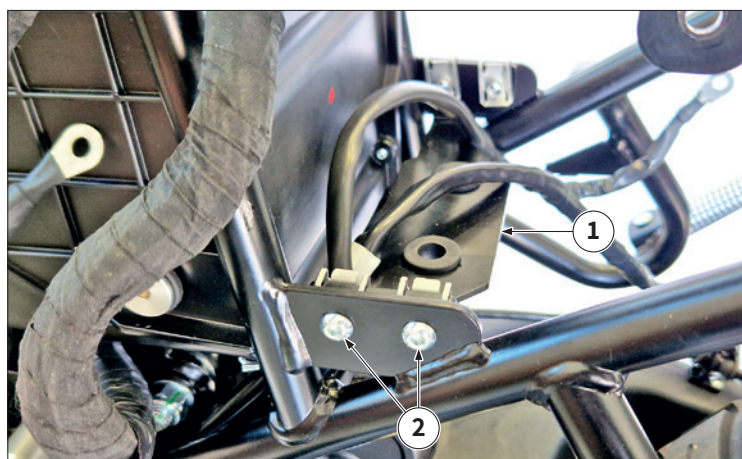


Disconnect the connector "11" of the IMU control unit, then remove the control unit by removing the four self-tapping screws "12", then remove the battery compartment.

i Proceed in the reverse order for reassembly.

Tightening torques

- Self-tapping screws: 1.5 Nm (0.1 m·kgf, 1 ft·lbf);
- Side screws fastening the compartment: 5 Nm (0.5 m·kgf, 3 ft·lbf).

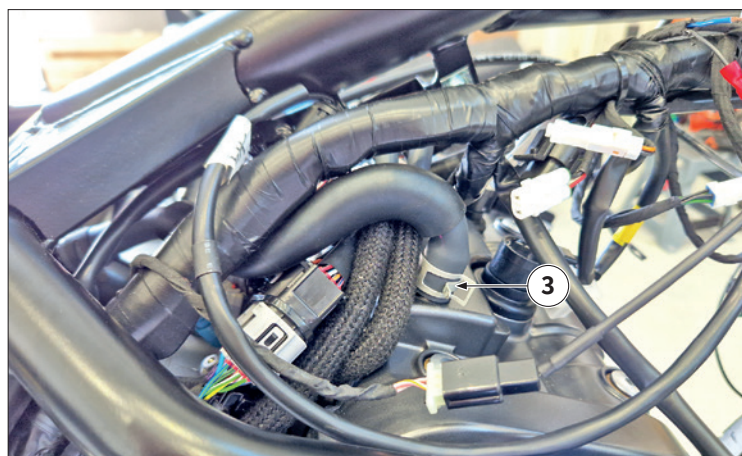


12.27 FILTER CASING

Preliminary operations:

- Remove the seat (as described on page 102);
- Remove the licence plate holder (as described on page 102);
- Remove the tail piece (as described on page 103);
- Remove the side panels (as described on page 104);
- Remove the battery compartment (as described on page 146).

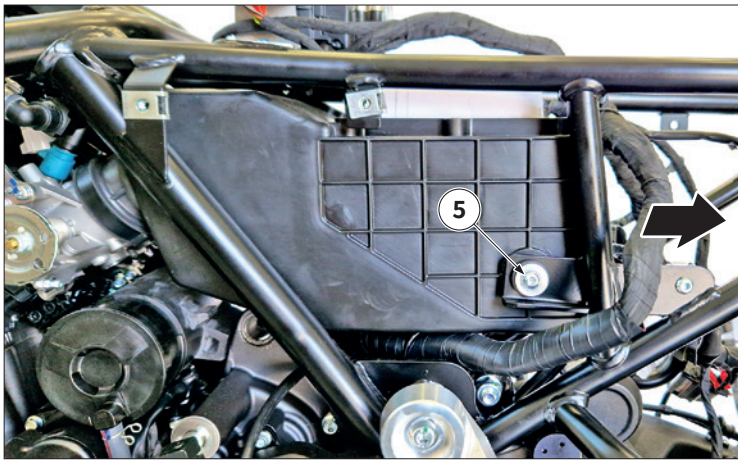
Remove the battery support plate "1" by removing the four studs "2".



Disconnect the vapour recovery tube "3".



Loosen the two clamps "4" fastening the manifolds.



Remove the two side screws "5", then remove the filter box by sliding it first towards the rear of the vehicle and then upwards.

i Proceed in the reverse order for reassembly.



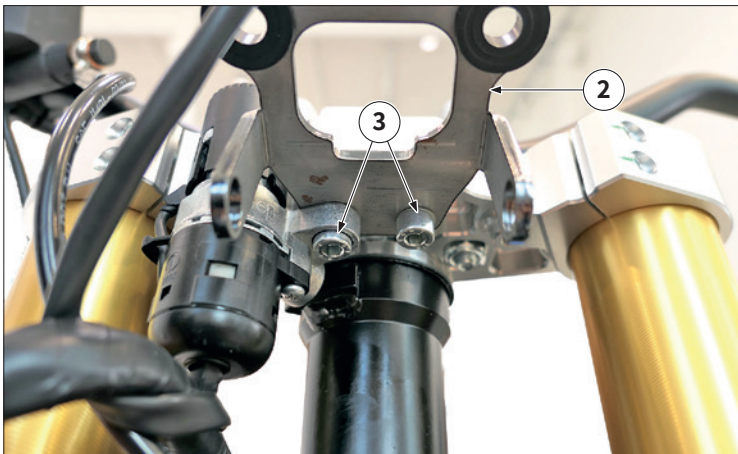
12.28 KEY BLOCK

12.28.1 Ignition block

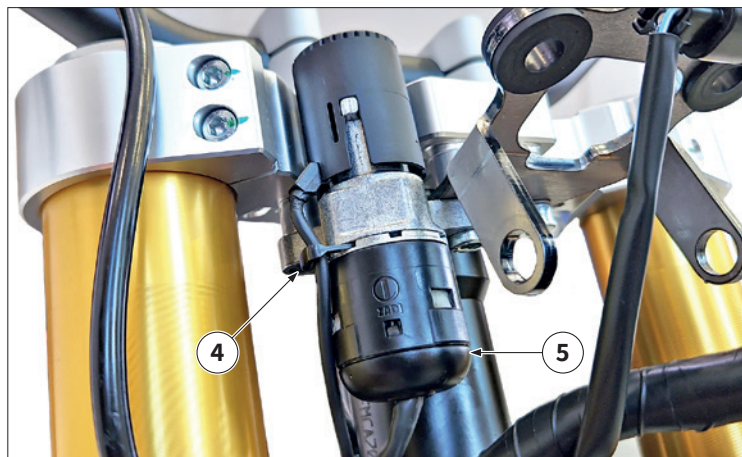
Preliminary operations:

- Remove the dashboard (as described on page 34);
- Remove the tank (as described on page 106);
- Remove the headlight (as described on page 142).

Disconnect the air temperature sensor "1".



Remove the support bracket "2" by removing the two screws "3".



Disconnect the ignition block connectors, then remove the tear-off screw "4" and the ignition block "5".

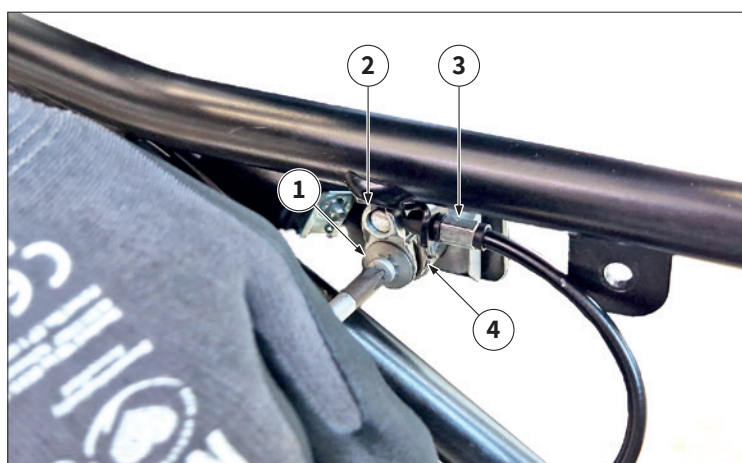
⚠ Use a drill with a drill bit or milling cutter (Ø8) to remove the head of the tear-off screw fastening the block.

♻ When reassembling, secure the block with a new tear-off screw, tightening it until it breaks.

♻ When reassembling, apply threadlocking (LOCTITE®) to the tear-off screw.

ⓘ Proceed in the reverse order for reassembly.

🔧 Tightening torque
 plate fastening screws M8: 20 Nm (2.0 m·kgf, 15 ft·lbf).



12.28.2 Seat key block

Preliminary operations:

- Remove the left side panel (as described on page 104);
- Remove the battery compartment (as described on page 146).

Remove the screw and washer "1"; slide off plate "2" connecting the seat opening cable to the block and remove the cable "3" and spring "4", then slide off the seat key block.

ⓘ Proceed in the reverse order for reassembly.