

UPDATES

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## 9.1. CHARACTERISTICS

### 9.1.1. TECHNICAL DATA

DIMENSIONS	
Max length	2300 mm
Max width (at handlebar)	876 mm
Max height (at front fairing)	1452 mm
Height at saddle	860 mm
Wheelbase	1554 mm
Minimum ground clearance	261 mm
Normal running weight	250 kg

ENGINE	
Model	V990
Type	Two cylinder, 4-stroke, 60° longitudinal V with 4 valves per cylinder and 2 cam shafts under the head
Number of cylinders	2
Total cylinder capacity	998 cm <sup>3</sup>
Bore / Stroke	97 mm / 67,5 mm
Compression ratio	10,4 ± 0,5: 1
Starting unit	Electrical
Engine rpm when idling	1200 ± 100 rpm
Clutch	Multi-disc, in an oil bath, with hydraulic control on the left side of the handlebar, and PPC device.
Lubrication system	Dry guard with separate oil tank and cooling radiator
Air filter	With dry filtration cartridge
Cooling	Liquid

GEARBOX	
Type	Mechanical, 6-speed, controlled by a pedal on the left of the engine

CAPACITY	
Fuel (including reserve)	25 litres
Fuel reserve	4 ± 1 litres
Engine oil	Gearbox oil 4300 cm <sup>3</sup> – gearbox oil and oil filter 4500 cm <sup>3</sup>
Fork oil	680 ± 2 cm <sup>3</sup> (for each sleeve)
Cooling liquid	2,5 litres (50% water + 50% anti-freeze with ethylene glycol)
Seats	2
Maximum load carried	182 kg (rider + passenger + luggage)

GEAR RATIO				
Ratio	Primary	Secondary	Final Ratio	Total Ratio
1 <sup>st</sup>	31/60 = 1: 1,935	14/35 = 1: 2,50	16/45 = 1: 2,8125	1:13,605
2 <sup>nd</sup>		16/28 = 1: 1,750		1:9,524
3 <sup>rd</sup>		19/26 = 1: 1,368		1:7,445
4 <sup>th</sup>		22/24 = 1: 1,090		1:5,932
5 <sup>th</sup>		23/22 = 1: 0,956		1:4,203
6 <sup>th</sup>		27/23 = 1: 0,851		1:4,631

TRANSMISSION CHAIN	
Type	Endless (without connecting link) and with sealed links
Model	525

FUEL SUPPLY SYSTEM	
Type	Electronic injection (Multi-point)
Choke	47 mm Ø

FUEL SUPPLY	
Fuel	Super, lead-free petrol, in compliance with DIN 51 607, minimum octane rating 95 (N.O.R.M.) and 85 (N.O.M.M.)

<b>FRAME</b>	
Type	Twin-chassis with cast and extruded, shaped light alloy parts.
Steering angle of inclination	27,8°
Trail	129 mm

<b>SUSPENSION</b>	
Front	Telescopic upside-down fork, adjustable hydraulic operation, 50 mm Ø sleeves
Stroke	195 mm
Rear	Oscillating swing arm in light ally, with differently shaped arms and a single, adjustable, hydro-pneumatic shock absorber.
Wheel Stroke	200 mm

<b>BRAKES</b>	
Front	Double floating disc on the hub – 300 mm Ø, callipers with 4, differently sized pistons – 30 mm Ø – 32 mm Ø
Rear	Disc brake – 272 mm Ø – caliper with double 34 mm Ø piston

<b>WHEEL RIMS</b>	
Type	Spoked for tubeless tyres.
Front	2,50 x 19"
Rear	4,00 x 17"

<b>TYRES</b>					
Wheel	Brand	Type	Size	Pressure kPa (bar)	
				Rider only	Rider and Passenger
Front (standard)	PIRELLI	SCORPION S/T MT 90	110/80R 19"	220 (2,2)	250 (2,5)
Rear (standard)	PIRELLI	SCORPION S/T MT 90	150/70R 17"	250 (2,5)	290 (2,9)
Front (alternative)	METZELER	TOURANCE	110/80R 19"	220 (2,2)	250 (2,5)
Rear (alternative)	METZELER	TOURANCE	150/70R 17"	250 (2,5)	290 (2,9)

Wheel	Brand	Type	Size	Pressure kPa (bar)	
				Rider only	
Front (alternative)	METZELER	KAROO (*)	110/80R 19"	Off road only: 200 (2,0) (**) Mixed off road – all-round: 220 (2,2)	
Rear (alternative)	METZELER	KAROO (*)	150/70R 17"	Off road only: 220 (2,2) (**) Mixed off road – all-round: 250 (2,5)	

(\*) Maximum permissible speed = 170 km/h

(\*\*) Pressure for off road riding to be adapted to suit type of terrain



**WARNING!**

When METZELER KAROO type tyres are fitted, the affixing of the blue sticker (supplied with the tyres) to the speedometer, indicating the maximum speed, is obligatory. When using “off-road / all-round” tyres, be very careful when riding on asphalted roads due to the lack of grip and stability on these roads.

<b>SPARK PLUGS</b>	
Standard	NGK R DCPR9E
Gap on spark plug electrodes	0,6 – 0,7 mm
Resistance	5 kΩ

<b>ELECTRICAL SYSTEM</b>	
Battery	12 V – 12 Ah
Main fuses	30 A
Secondary fuses	15 A
Generator (with permanent magneto)	12 V – 470 W

<b>LIGHT BULBS</b>	
Bright / dim headlamp (halogen)	12 V – 60/55 W H4 V
Front parking light	12 V – 3 W
Indicator light	12 V – 10 W
Number plate light	12 V – 5 W
Rear parking light / stop light	12 V – 5 / 21 W
Dashboard backlighting	LED

<b>LEDS</b>	
Gearbox in neutral	LED
Indicator light	LED
Fuel reserve	LED
Bright headlight	LED
Stand down	LED
Engine oil pressure	LED
Diagnostics	LED

**9.1.2. ROUTINE MAINTENANCE SCHEDULE**

WORK TO BE DONE BY AN Official **aprilia** Dealer (THAT CAN BE DONE BY THE USER).

**Key**

- 1 = check and clean and adjust, lubricate, or replace where necessary.
- 2 = clean
- 3 = replace
- 4 = adjust

**IMPORTANT!** These maintenance tasks must be done twice as frequently is the bike is used in rainy or dusty areas, or over uneven ground, or when used for sports riding.

(\*\*) = Check every fortnight or at the intervals indicated.

Components	On completing running in [1000 km (625 miles)]	Every 7500 km (4687 miles) or 12 months	Every 15000 km (9375 miles) or 24 months
Spark plug	-	1	3
Air filter	-	1	3
Engine oil filter	3	3	-
Engine oil filter (on oil tank)	2	-	2
Front fork	1	-	1
Light functioning / alignment	-	1	-
Light system	1	1	-
Safety switches	1	1	-
Clutch control fluid	-	1	-
Brake fluid	-	1	-
Cooling liquid	-	-	1
Engine oil	3	3	-
Tyres	1	Every 1000 km (625 miles): 1	
Tyre pressure (**)	4	Every 1000 km (625 miles): 4	
Tightness of battery terminals	1	-	-
Engine oil pressure LED	Each time the bike is started up: 1		
Tension and lubrication of the transmission chain	Every 1000 km (625 miles): 1		
Wear on the brake pads	1	Before each trip and every 2000 km (1250 miles): 1	

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WORK TO BE DONE BY AN Official **aprilia** Dealer

Key

1 = check and clean, and adjust, lubricate, or replace where necessary (as per the instructions in the Workshop Manual).

2 = clean

3 = replace

4 = adjust

**IMPORTANT!** These maintenance tasks must be done twice as frequently if the bike is used in rainy or dusty areas, or over uneven ground, or when used for sports riding.

(\*) **PLEASE NOTE!** There are grains inside the nipples.

Components	On completing running in [1000 km (625 miles)]	Every 7500 km (4687 miles)	Every 15000 km (9375 miles) or 24 months
Rear shock absorber	-	-	1
Transmission cables and controls	1	1	-
Minimum carburation (CO)	-	1	-
Linkage bearings in the rear suspension	-	-	1
Steering bearings and play in the steering	1	1	-
Wheel bearings	-	1	-
Brake discs	1	1	-
General running of the bike	1	1	-
Adjustment of play on the valves	4	-	4
Braking systems	1	1	-
Cooling system	-	1	-
Clutch control fluid	Every 2 years: 3		
Brake fluid			
Cooling liquid			
Front fork oil	After the first 7500 km (4687 miles) and then every 22500 km (14000 miles): 3		
Front fork oil seals	After the first 30000 km (18750 miles) and then every 22500 km (14000 miles): 3		
Brake pads	When worn: 3		
Wheels/tyres	1	1	-
Tightness of bolts	1	1	-
Tightness of battery terminals	1	-	-
Synchronisation of cylinders	4	4	-
Suspension and alignment	1	-	1
Final transmission (chain, chain ring, and pinion)	-	1	-
Fuel hoses	-	1	Every 4 years: 3
Tightening of nipples / spokes (*)	1	1	-
Wear on the clutch	-	1	-

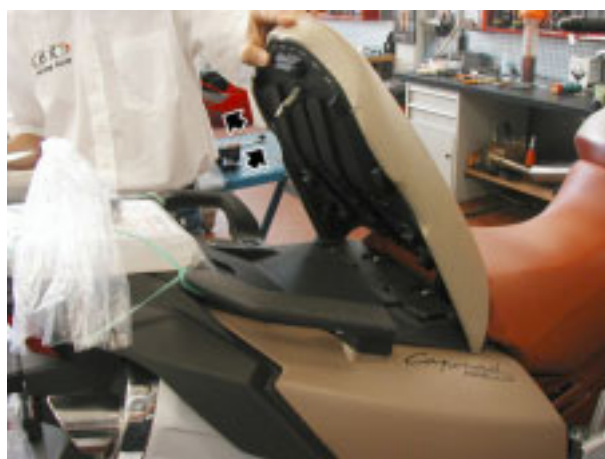
**9.2. BODYWORK**

**9.2.1. RELEASING / FIXING THE REAR SADDLE**

- Put the bike up on the central stand.
- Insert the key in the saddle lock.



- Turn the key clockwise, and lift and remove the rear saddle.



**PLEASE NOTE:** The tool kit and document holder space is situated under the rear saddle.

**To gain access to it:**

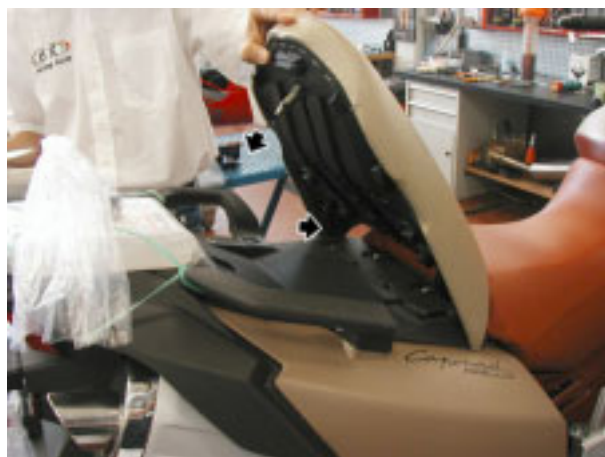
- Remove the cover for the tool kit and document holder space.



**To fix the rear saddle:**

**IMPORTANT!** Before lowering and fixing the rear saddle, check that you have not left the key in the tool kit and document holder space.

- Insert the two front hooks in their respective seatings.
- Lower the rear saddle and push down until the lock is heard clicking closed.





**9.2.2. REMOVING THE RIDER'S SADDLE**

- Remove the rear saddle (see 9.2.1 RELEASING / FIXING THE REAR SADDLE).
- Unscrew and remove the two rear bolts that secure the saddle, and retrieve the bushings.
- Lift and remove the saddle.



**IMPORTANT!** When refitting position the front saddle locking cable correctly in the relevant prong on the tank.



**9.2.3. REMOVING THE FRONT FAIRING**

- Unscrew and remove the four bolts that secure the windshield – front fairing.
- Remove the windshield – front fairing.



- Unscrew and remove the four bolts that secure the upper dashboard bracket.
- Remove the upper dashboard bracket.



- Unscrew and remove the four bolts that secure the lower dashboard bracket.



- Remove the lower dashboard bracket.



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- Work on both sides, and remove the two lower fixing bolts.



- Remove both side covers.



**9.2.4. REMOVING THE FRONT INDICATORS**

- Remove the side fairing, complete with the indicator (see 9.2.3 REMOVING THE FRONT FAIRING).
- Disconnect the electrical connector for the relevant indicator.
- Unscrew the indicator fixing bolt, holding the locknut with a suitable set spanner.
- Remove the indicator.



**9.2.5. REMOVING THE UPPER SUMP GUARD**

- Unscrew and remove the five fixing screws (two on each side and one in the front).



- Remove the upper sump guard.



**9.2.6. REMOVING THE LOWER SUMP GUARD**

- Unscrew and remove the four fixing screws.
- Remove the lower sump guard.





**9.2.7. REMOVING THE SIDE GUARDS**

- Unscrew and remove the rear screw and bush.



- Unscrew and remove the front fixing screw.



- Remove the side guard.



**9.2.8. REMOVING THE INNER GUARD**

- Unscrew and remove the two rear screws.



- Unscrew and remove the two front screws.
- Remove the inner guard.





**9.2.9. REMOVING THE SUMP GUARD PROTECTION**

- Remove the side guards (see 9.2.7 – REMOVING THE SIDE GUARDS).
- Remove the two side fairings.
- Remove the upper sump guard (see 9.2.5 – REMOVING THE UPPER SUMP GUARD).
- Remove the lower sump guard (see 9.2.6 – REMOVING THE LOWER SUMP GUARD).



- Remove the hose clamp that holds the breather pipes on the left.
- Unscrew and remove the two rear fixing bolts.



- Unscrew and remove the two front fixing bolts.
- Remove the sump guard protection.



**9.2.10. REMOVING THE CHAIN GUARD**

- Unscrew and remove the front fixing screw.

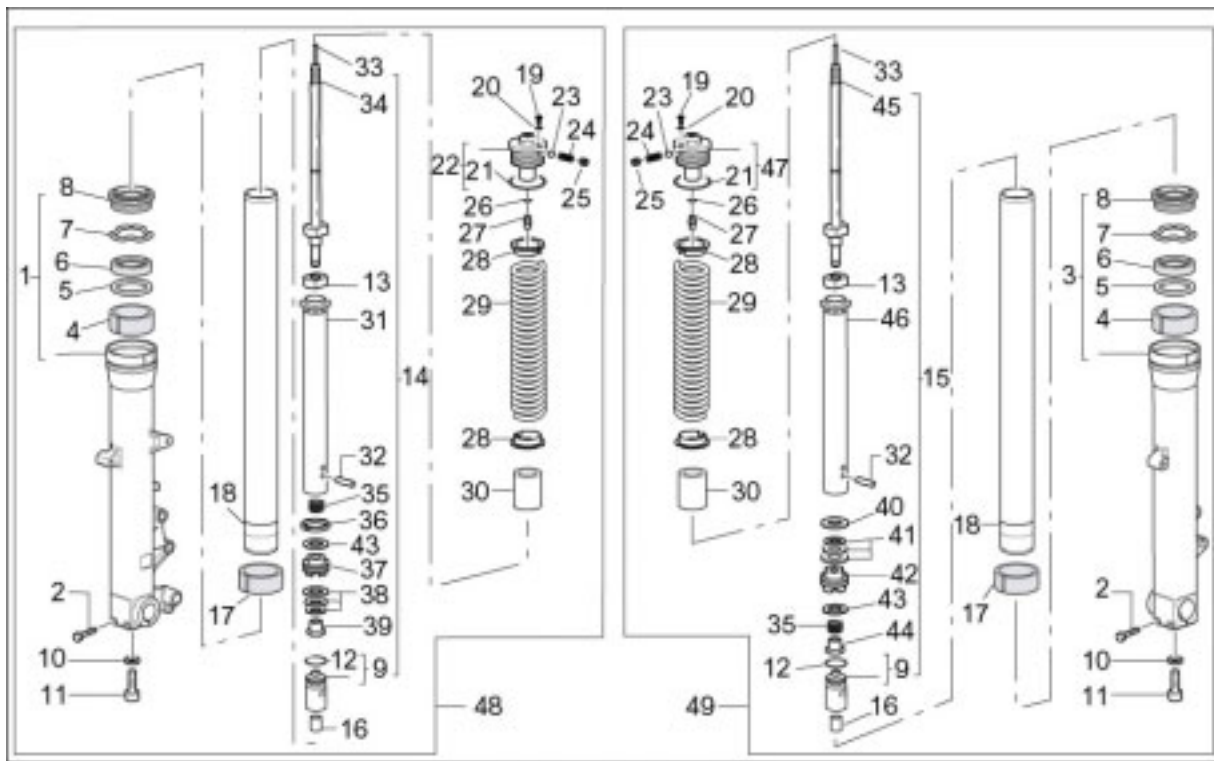


- Unscrew and remove the lower fixing screw.
- Remove the guard.



9.3. FRONT FORK

9.3.1. EXPLODED VIEW OF FRONT FORK



Key:

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1. Right sleeve</li> <li>2. Screw</li> <li>3. Left sleeve</li> <li>4. Bush</li> <li>5. Ring</li> <li>6. Oil seal</li> <li>7. Stop Ring</li> <li>8. Dust cover</li> <li>9. Complete stroke limit stop</li> <li>10. Seal washer</li> <li>11. Screw</li> <li>12. O-Ring</li> <li>13. Nut</li> <li>14. Complete right plunger</li> <li>15. Complete left plunger</li> <li>16. Reference pin</li> <li>17. Bush</li> <li>18. Sleeve</li> <li>19. Screw</li> <li>20. O-Ring</li> <li>21. O-Ring</li> <li>22. Right plug</li> <li>23. Ball</li> <li>24. Spring</li> <li>25. Dowel</li> <li>26. O-Ring</li> <li>27. Dowel + O-Ring</li> </ul> | <ul style="list-style-type: none"> <li>28. Ring</li> <li>29. Spring</li> <li>30. Pipe</li> <li>31. Casing</li> <li>32. Pin</li> <li>33. Rod</li> <li>34. Complete right rod</li> <li>35. Spring</li> <li>36. Piston ring</li> <li>37. Right piston</li> <li>38. Spacer</li> <li>39. Spacer</li> <li>40. Spacer</li> <li>41. Spacer</li> <li>42. Nut</li> <li>43. Cup</li> <li>44. Spacer</li> <li>45. Spacer</li> <li>46. Spacer</li> <li>47. Left piston</li> <li>48. Spacer</li> <li>49. Nut</li> <li>50. Complete left rod</li> <li>51. Left casing</li> <li>52. Left plug</li> <li>53. Complete right sleeve</li> <li>54. Complete left sleeve</li> </ul> |
|---|---|

**9.3.2. REMOVING SLEEVES - RODS**

**IMPORTANT!** Although the two sleeves work differently, their component parts are similar and so they can be removed, serviced, and refitted in the same way. Therefore, the instructions given below are to be taken as applying to both sleeves.

- Remove the sleeve – rod unit.
- Carefully clean the entire sleeve – rod.

**IMPORTANT!** Before proceeding with the tasks below, prepare a receptacle that can hold more than 750 cm<sup>3</sup>.

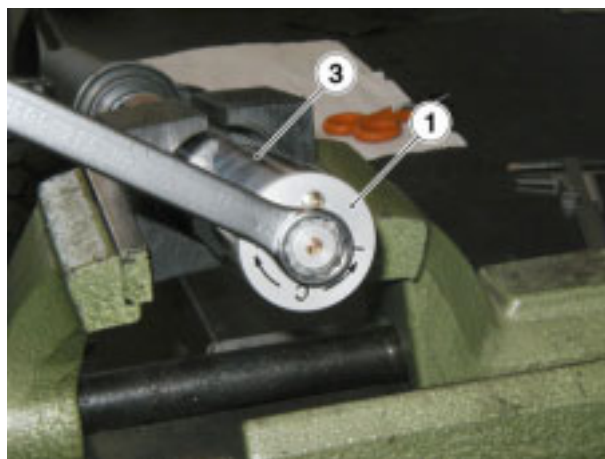
- Position the sleeve (3) in a vice with protected jaws. Use a hexagonal spanner to unscrew the plug (1) that closes off the top.
- Be careful not to damage the O-Ring (2) while removing it. Push the rod inside the sleeve.



**WARNING!**  
The sleeve – rod unit contains oil. Do not tip it over or put at too great an angle while disassembling it.

- Unscrew the return-nut indicated by the arrow, holding the plug (1) still using a hexagonal spanner.
- Remove the plug.

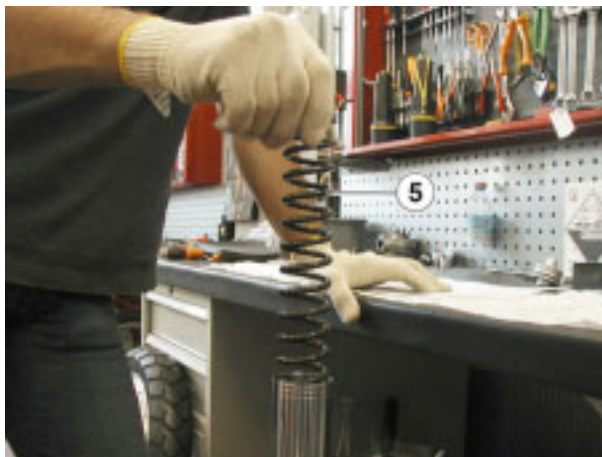
- Remove the plastic bush (4).



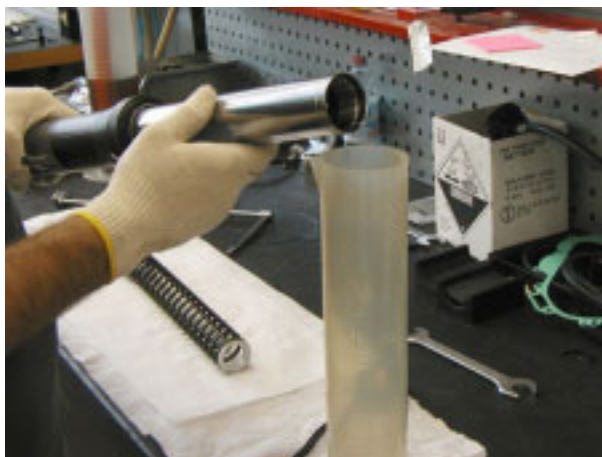


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- Remove the spring (5). Allow all the oil to run off the coils of the spring into the sleeve, so as not to have to top up or replace the oil.



- Pour the oil out into a container as indicated in the figure.



- Remove the pre-tensioned pipe.



- Unscrew the lower central bolt for the plunger seal, housed in the sleeve.



- Remove the central bolt (6) and remove the copper washer (7).

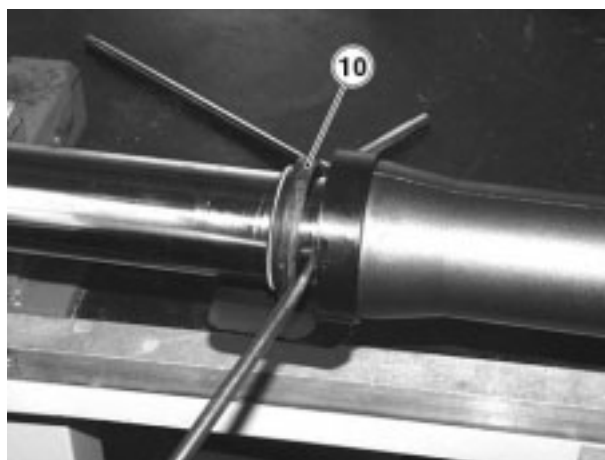


- Remove the plunger (8) from the sleeve (3) complete with the bush (9).

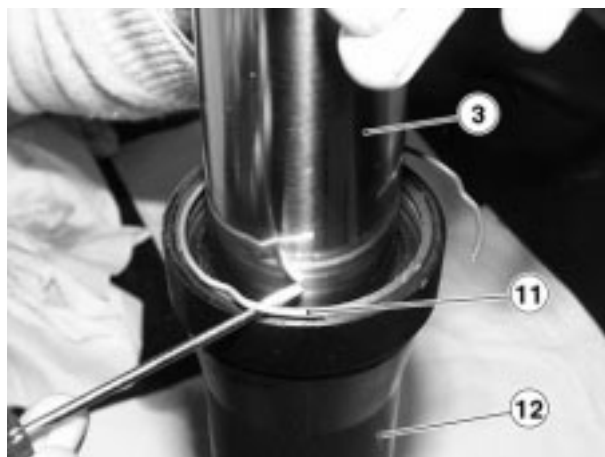
**IMPORTANT!** If you find that the plunger (8) has been damaged, replace it altogether.



- Using a straight-tipped screwdriver as a lever, remove the dust scraper (10).

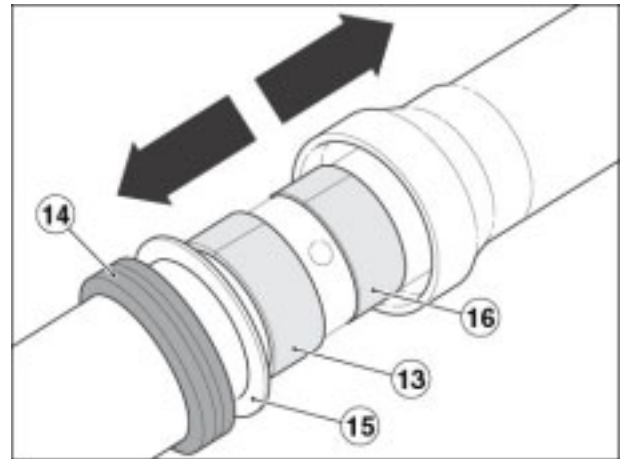


- Using a thin screwdriver, remove the stop ring (11) from the inside of the sleeve (12).
- Grip the rod (3) and remove it from the sleeve (12) by pulling firmly.



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- The guide ring (13) acts as a stop. Remove the following from the sleeve (12): the gasket ring (14), the washer (15) and the guide bush (16).
- The guide ring (13) and the guide bush (16) can be removed using a small screwdriver, after which the washer (15) and the gasket ring (14) can be removed from the rod (3).



**9.3.3. CHECKING THE COMPONENTS**

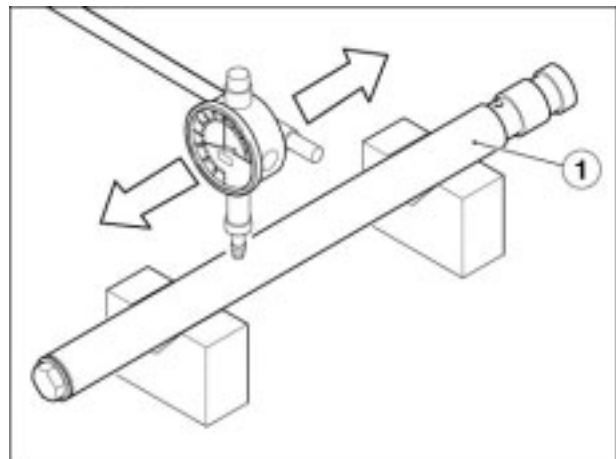
**ROD**

- Check that the sliding surfaces have not been scored or scratched.  
The score marks referred to above can be removed using wet sandpaper (grain size 1).
- If the score marks are deep, replace the rod (1).  
Using an indicator check that any curvature on the rod (1) is within the limit. If it exceeds the limit, replace the rod.

**Curvature limit: 0,2 mm.**



**DANGER**  
A curved rod must NEVER be straightened, as its structure would be weakened making its use on the bike dangerous.



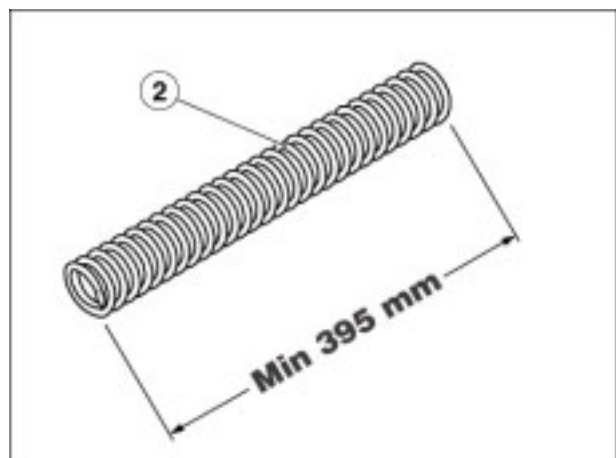
**SLEEVE**

- Check that the sleeve does not show any signs of damage and/or cracks. If any are found, replace it.

**SPRING**

- Check the integrity of the spring (2), and make sure that its length is within the limit.
- If the length is not within the limit, replace the spring (2).

**Minimum length of unloaded spring: 395 mm.**

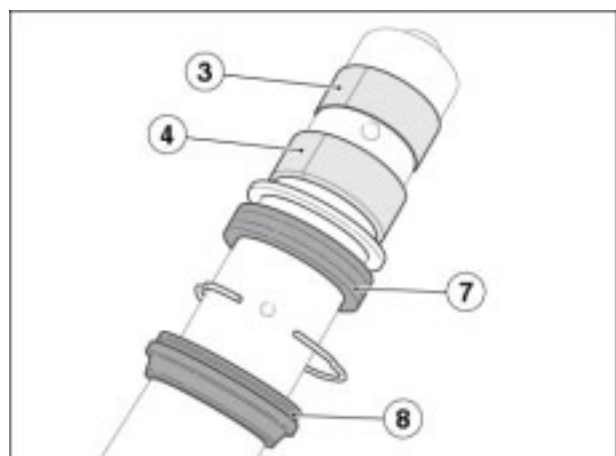


- Check the state of the following components:
  - Guide Ring (3)
  - Guide Bush (4)
  - Plunger (5)
  - Plastic Bush (6).

If any signs of excessive wear or damage are spotted, replace the component involved.



**WARNING!**  
Remove any signs of dirt from the bushes, being careful not to scratch their surfaces.

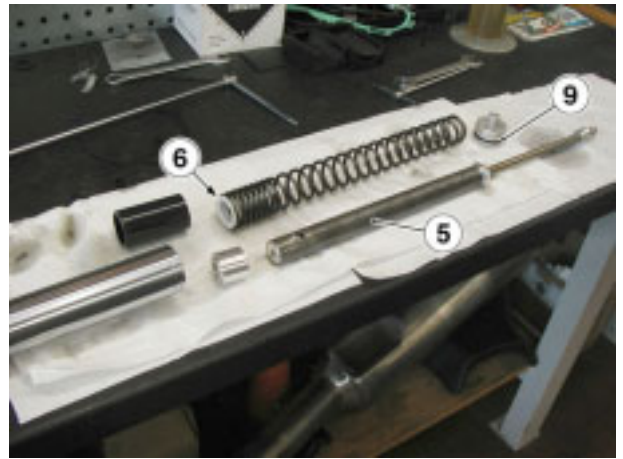


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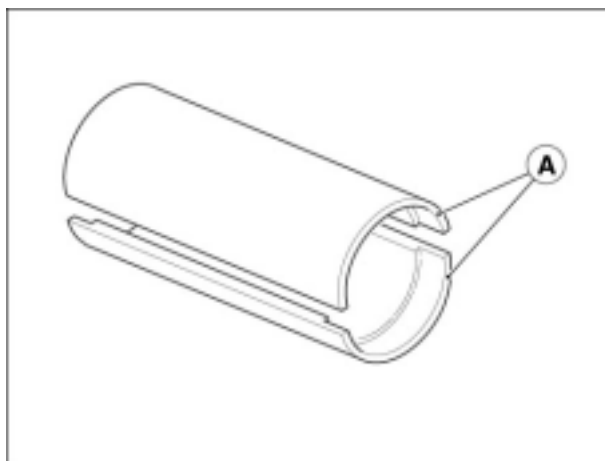
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- Replace the following components with new parts:
  - Gasket Ring (7)
  - Dust scraper (8)
  - O-Ring on the plug (9).

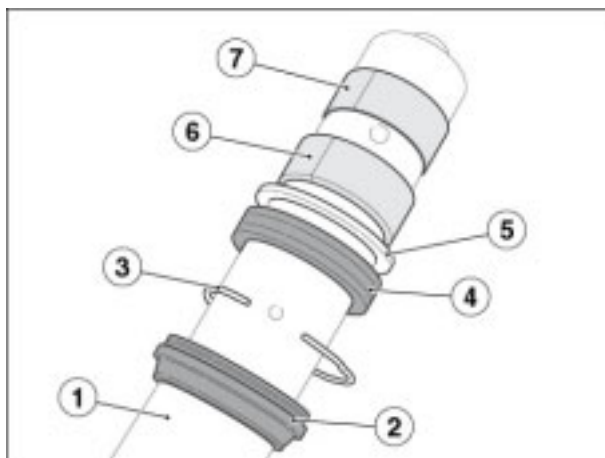


9.3.4. REFITTING SLEEVES - RODS

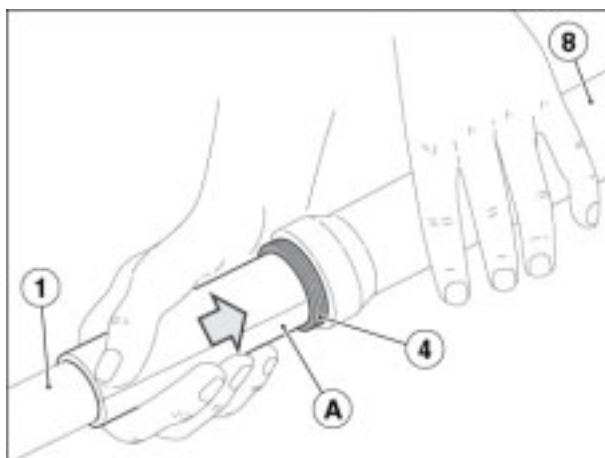
**IMPORTANT!** Before proceeding with the tasks below, prepare the special **OPT** tool (A) and, before refitting the gaskets and the bushes, spread a film of front fork oil over it.



- Fit the following components on the rod (19 in the order shown):
  - Dust scraper (2)
  - Stop Ring (3)
  - Gasket Ring (4), lubricated.
  - Washer (5)
  - Guide Bush (6)
  - Guide Ring (7)



- Place the sleeve (8) in a vice, putting soft material (aluminium) between the sleeve and the jaws.
- Insert the rod (1) into the sleeve (8) and then move the guide bush (6) and washer (5) against the sleeve.
- Using the purpose-made feeder (A), push the gasket ring (4) into the sleeve all the way to the stop.
- Then install the stop ring (3) and the dust scraper (2).



- Push the plunger (9) all the way into the sleeve (1), complete with the bush (10).



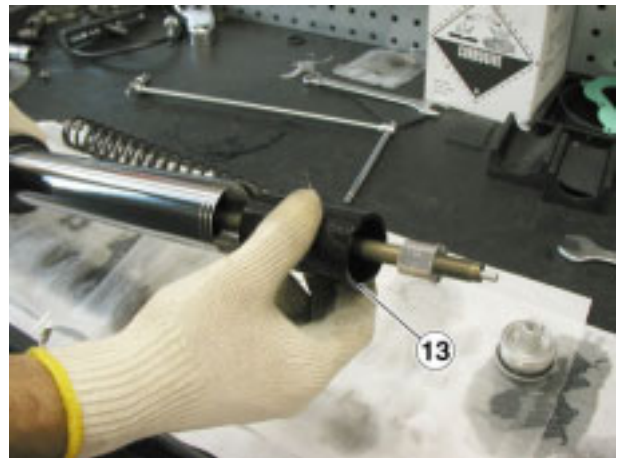
- Position the copper washer (12) on the bolt (11).



- Insert the bolt into the sleeve and tighten.



- Insert the pre-loaded pipe (13) into the sleeve (1).



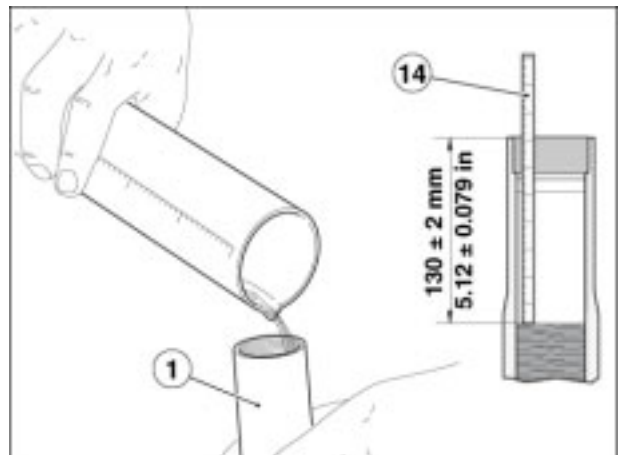
- Pour the front fork oil into the sleeve (1) up to the correct level, which can be checked by putting a graduated rod (14) into the sleeve (1).

**Quantity of oil:  $680 \pm 2,5 \text{ cm}^3$**

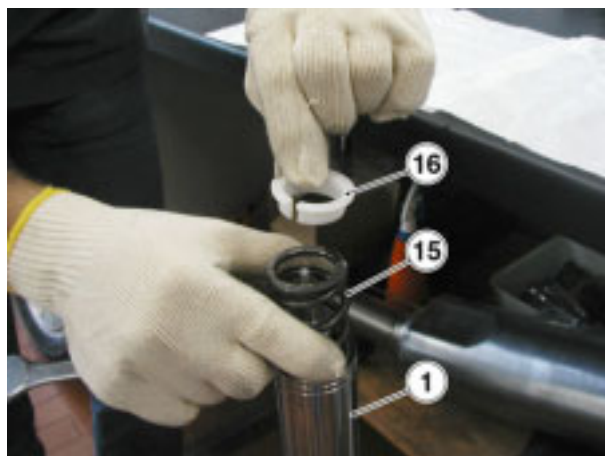
**Oil level:  $130 \pm 2 \text{ mm}$  (from the brim of the sleeve).**

**IMPORTANT!** To measure the oil level correctly, the sleeve (1) must be perfectly upright and complete with the sleeve packing.

The oil level must be the same in both sleeves.



- Insert the spring (15) into the sleeve (1) complete with the bush (16).



- Check that the O-Ring (17) is in place on the upper sleeve plug.
- Screw the plug onto the plunger shaft and tighten.



- Screw the plug into the sleeve and tighten.

