

aprilia

945W

01/1998-10

RS 250

www.serviceaprilia.com

workshop manual



8140159

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FOREWORD

- This manual supplies the main information for normal servicing procedures.
- The information and illustrations contained in this manual are updated to the moment of its publication. Before consulting the manual, check the vehicle model and the relevant updates in section 9 "UPDATES".
- This publication is meant for professional mechanics, therefore many notions have been intentionally omitted, as they were regarded as superfluous. For any further information, contact **aprilia** Consumer Service.
- For any further information see:
 - ENGINE SPARE PARTS CATALOGUE, N° 801W
 - "CHASSIS PARTS" SPARE PARTS CATALOGUE:
 - N° 380 (Model 1994)
 - N° 380T (Model 1995)
 - N° 380T rel. 01 (Models 1995-1996-1997)
 - N° 381W (Model 1998)
- Use and maintenance manual (aprilia part# 8102854)

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HOW TO USE YOUR SERVICE AND REPAIR MANUAL

◆ ADVICE FOR CONSULTATION

- If not expressly described otherwise, the reassembly of the groups is to be carried out repeating the disassembly phases in the reverse order.
- For each single operation on the engine, consult the specific manual.
- For ordinary maintenance, consult the "USE AND MAINTENANCE" manual.



**Remember: 1 mile = 1.6 km
1 km = 0.625 miles**

◆ SYMBOLS

Carefully observe the instructions preceded by the following warning signs:



Safety norms and regulations to protect the pilot, the mechanic and other people from severe injuries or grave risks.



Indications to make the operations easier. Technical information.



The operations preceded by this symbol must be repeated on the opposite side of the vehicle.

In this manual the various versions are indicated by the following symbols:

ASD automatic light switching version
(Automatic Switch-on Device)

FP Free Power version

OPT optional

 catalytic version

VERSION:

I Italy	NL Holland	BM Bermuda
UK United Kingdom	CH Switzerland	USA United States of America
A Austria	DK Denmark	AUS Australia
P Portugal	J Japan	BR Brazil
SF Finland	SGP Singapore	BR South Africa
B Belgium	PL Poland	NZ New Zealand
D Germany	IL Israel	CDN Canada
F France	RDK South Korea	HR Hungary
E Spain	MAL Malaysia	SLD Slovenia
GR Greece	RCH Chile	

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GENERAL INFORMATION

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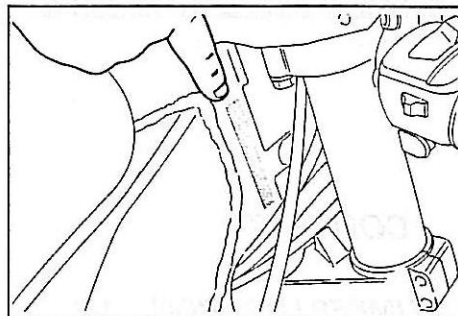
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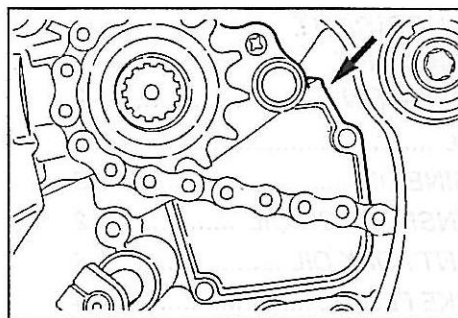
GENERAL INFORMATION

SERIAL NUMBER LOCATION

The frame serial number is stamped on the steering head pipe.



The engine serial number is located on the rear side of the crankcase.



These numbers are required especially for registering the machine and ordering spare parts.

FUEL, LUBRICANT AND COOLANT INFORMATION

FUEL

Gasoline used should be graded 91 octane (R.O.N.) or higher. An unleaded gasoline type is recommended.

ENGINE OIL

Use synthetic oil with ISO-L-ETC++A.P.I. TC++ specifications for unleaded gasoline. This oil is formulated to give best engine performance with least combustion chamber deposits, least preignition, maximum spark plug life and best lubrication.

— TRANSMISSION OIL

Use semisynthetic oil for 4-stroke engines with SAE 20W/50-A.P.I. SG-CCMC G-4 specifications.

GENERAL INFORMATION

FRONT FORK OIL

Use SAE 10W grade fork oil. At very low or very high ambient temperatures, it is possible to use SAE 5W or 20W oils respectively.

BRAKE FLUID

Use brake fluids with DOT4-SAE S1703 specifications.

WARNING:

- *Do not use or mix different types of fluid for refilling the system, otherwise serious damage will result.*
- *Do not use any brake fluid taken from old or used or unsealed containers.*
- *Never re-use brake fluid left over from the previous servicing and stored for a long period.*

COOLANT

Use an anti-freeze/coolant compatible with an aluminium radiator, mixed with distilled water only, at the ratio of 50%.

WATER FOR MIXING

Use distilled water only.

Water other than distilled water can corrode and clog the aluminium radiator.

ANTI-FREEZE/COOLANT

The coolant performs as a corrosion and rust inhibitor as well as an anti-freeze.

Therefore, the coolant should be used at all times even through the atmospheric temperature in your area does not go down to freezing point.

REQUIRED AMOUNT OF WATER/COOLANT

Solution capacity (total): 1,9 litres.

CAUTION:

Mixing of anti-freeze/coolant should not exceed a ratio of 60%. Mixing beyond it would reduce its efficiency. If the anti-freeze/coolant mixing ratio is below 50%, the rust inhibiting performance is greatly reduced. Be sure to mix the solution at 50%, even though the atmospheric temperature does not go down to freezing point.

GENERAL INFORMATION

BREAKING-IN PROCEDURES

During manufacture only the best possible materials are used and all machined parts are finished to a very high standard, but it is still necessary to allow the moving parts to "BREAK-IN" before subjecting the engine to maximum stresses. The future performance and reliability of the engine depends on the care and restraint exercised during its early life.

The general rules are as follows:

- *Do not exceed these engine speeds:*

<i>Initial 800 km</i>	<i>below 6.000 rpm</i>
<i>Up to 1.600 km</i>	<i>below 9.000 rpm</i>
<i>Over 1.600 km</i>	<i>below 12.000 rpm</i>

- *Upon reaching an odometer reading of 1.600 km you can subject the motorcycle to full throttle operation.
However, do not exceed 12.000 rpm at any time.*

CYLINDER IDENTIFICATION

The two cylinders of this engine are identified as Left and Right cylinder, as shown in the photograph (as viewed by the rider on the seat).

PRECAUTIONS AND GENERAL INSTRUCTIONS

Observe the following items without fail when servicing, disassembling and reassembling the motorcycle.

- ❑ Do not run the engine indoors with little or no ventilation.
- ❑ Be sure to replace packings, gaskets, circlips, O-rings (OR) and cotter pins with new ones.

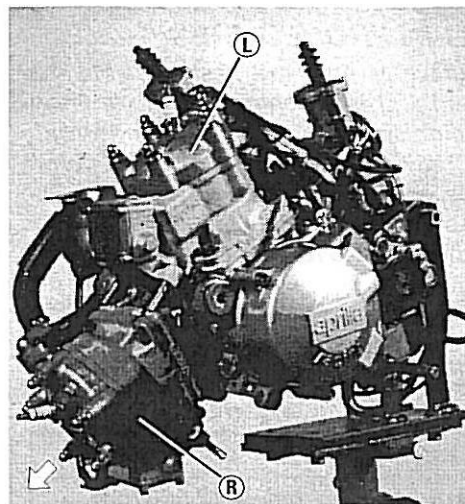
CAUTION:

Never reuse a circlip. After a circlip has been removed from a shaft, it should be discarded and a new circlip must be installed.

When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.

After installing a circlip, always ensure that it is completely seated in its groove and securely fitted.

- ❑ Tighten cylinder head and case bolts and nuts to the specified tightening torque beginning with larger diameter and ending with smaller diameter, and from inside to outside diagonally.
- ❑ Use special tools where specified.
- ❑ Use genuine parts and recommended oils.
- ❑ When 2 or more persons work together, pay attention to the safety of each other.
- ❑ After the reassembly, check parts for tightness and operation.
- ❑ Treat gasoline, which is extremely flammable and highly explosive, with greatest care. Never use gasoline as a cleaning solvent.



GENERAL INFORMATION

REPLACEMENT PARTS

When you replace any parts, use only genuine APRILIA replacement parts. Genuine APRILIA parts are high quality parts which are designed and built specifically for APRILIA vehicles.

CAUTION:

The use of spare parts that are not APRILIA originals may cause problems of performance and even damage.

TECHNICAL SPECIFICATIONS

NOTE:

Technical specifications may vary without prior warning.

SIZES AND WEIGHTS

Max length 1.980 mm
Max width 690 mm
Max height (front cowling)..... 1.090 mm
Height (seat)..... 810 mm
Wheelbase 1.370 mm
Min. ground clearance..... 135 mm
Steering diameter 4.090 mm
Weight without fuel and oil..... 141 kg
Max load
(driver+passenger+luggage) 160 kg
Seats 2

ENGINE

Type 2V 90° cylinders, 2-stroke with lamella
suction and exhaust valve.

Separate lubrication with
variable automatic mixer
(0,9 ÷ 2%). Liquid cooling.

N° cylinders (V 90°) 2

Total displacement 249 cc

Bore x stroke 56 x 50,6 mm

Compression ratio 12,00 ± 0,7 : 1

Starting kick-start

Carburettors 2 MIKUNI TM 34 SS

Air filter with polyurethane filter element

Lubrication system oil pump

with separate circuit

Cooling system liquid with pump

GENERAL INFORMATION

TRANSMISSION

Clutch	oil bath, multiple-disc, with lever control on handlebars
Gear box.....	6-speed, direct drive
Gear change	with pedal (L), 1st low, other 5 high
Primary reduction	Z = 23/59 (1 : 2,565)
Secondary reduction (chain)	Z = 14/42 (1 : 3,000)
Total ratio (engine/wheel)	1 : 6,464
Gear ratios.....	1st-Z = 11/27 (1 : 2,454) 2nd-Z = 16/26 (1 : 1,625) 3rd-Z = 21/17 (1 : 1,235) 4th-Z = 22/23 (1 : 1,045) 5th-Z = 24/22 (1 : 0,916) 6th-Z = 25/21 (1 : 0,840)
Chain	sealed, jointless, DID model 520 V6

REFUELLING

Fuel tank capacity (including reserve).....	16,5 l
Reserve.....	3,5 l
Type of fuel.....	lead-free petrol R.O.N. min 95
Fork oil	420 cc (left tube with spring); the right tube with hydraulic brake has to be filled up to 6 cm from edge (with inner tube fully compressed and cartridge fitted)
Gear oil	0,7 l
Oil mixer (reserve included).....	1,6 l
Oil mixer reserve.....	0,6 l
Coolant	1,9 l (0,95 l distilled water + 0,95 l coolant)

CHASSIS

Type.....	double-beam with cast elements and stamped steel sheet
Drive inclination angle	25°30'
Forward stroke	102 mm
Front suspension	adjustable telehydraulic fork with helical spring and upside-down tubes, travel 120 mm
Rear suspension	rocker arm with adjustable hydraulic single shock absorber, wheel travel 130 mm
Front brake	twin disc Ø 298 mm with hydraulic circuit
Rear brake	Ø 220 mm disc with hydraulic circuit
Rims (light alloy)	front: 3.00" x 17" rear: 4.50" x 17"
Front tyre.....	110/70 ZR17"
Rear tyre.....	150/60 ZR17" or 160/60 ZR17"
Inflation pressure (cold)	front 1,9 bar rear 2,2 bar

GENERAL INFORMATION

IGNITION

Type	CDI
Advance	14 ° B.T.D.C. at 1.300 rpm
Standard spark plug	NGK BR9ECM
Spark plug with lower thermal degree	NGK BR8ECM
Spark plug with higher thermal degree	NGK BR10ECM
Gap between spark plug electrodes...	0,7 ÷ 0,8 mm
Idle speed	1.300 ± 150 rpm

ELECTRIC SYSTEM

Battery	12V – 4Ah
Fuses	20 – 15 – 7,5A
Generator	12V – 180W
Lamp	
Dipped beam	12V – 55W H1
High beam	12V – 55W H3
Parking light	12V – 5W
Turn indicators.....	12V – 10W
Rear parking/brake	12V – 5/21W
Numberplate light	12V – 5W
Tachometer light	12V – 2W
Rev counter lighting	12V – 2W
Multifunction computer display lighting	12V – 2W
Warning lights	
Neutral.....	12V – 2W
High beam	12V – 2W
Parking light	12V – 1,2W
Turn indicators	12V – 2W
Oil mixer level	Red LED

**OPERAZIONI DI MANUTENZIONE
PERIODICA E DI MESSA A PUNTO**

2

***PERIODIC MAINTENANCE AND
TUNE-UP PROCEDURES***

**OPERACIONES DE MANTENIMIENTO
PERIODICO Y DE PUESTA A PUNTO**

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

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2-3 PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

PERIODIC MAINTENANCE SCHEDULE

The chart below lists the recommended intervals for all the required periodic service work necessary to keep the motorcycle operating at peak performance and economy. Mileages are expressed in terms of kilometers.

PERIODIC MAINTENANCE CHART

Remember:
1 mi = 1,6 km
1 km = 0,625 mi

Checking operations	After running-in (1.000 km or 4 months)	Every 4.000 km or 8 months	Every 8.000 km or 16 months
Battery fluid level	C	C	
Spark plugs	P	P	every 6.000 km: S
Carburettors	C	P	
Drive chain	C	every 1.000 km: P/every 4.000 km: C	
Wheels centering		C	
Steering bearings and steering	C	C	
Wheel bearings		C	
Air filter		P	every 12.000 km: S
Clutch play	R	R	
Braking systems	C	C	
Cooling system	C	C	
Lighting system	C	C	
Coolant		every 2 years: S	
Brake fluid		every year: S	
Mixer oil level		every 500 km: C	
Front fork oil		every 12.000 km: S	
Transmission oil	S	C	every 12.000 km: S
Mixer pump and air bleeding	R		R
Tyres inflation pressure		every month: R	
Minimum rpm	R		R
Fuel tap	C	C	
Nut, bolt, screw tightening	C	C	
Suspensions and attitude	C	C	
Brake fluid drain	C		
Drive chain tension and lubrication		every 500 km: C	
Fuel pipes		C	every 4 years: S
Pistons and rings		every 8.000 km: C/every 16.000 km: S	
Exhaust pipe silencers	P	P	
Kick starter pivot		every 8.000 km: C (water-repellent grease)	

- C = check, clean, adjust, lubricate or replace as necessary

P = clean S = replace R = adjust

Carry out the maintenance operations more frequently if you use the motorcycle in rainy and dusty areas or on uneven roads.

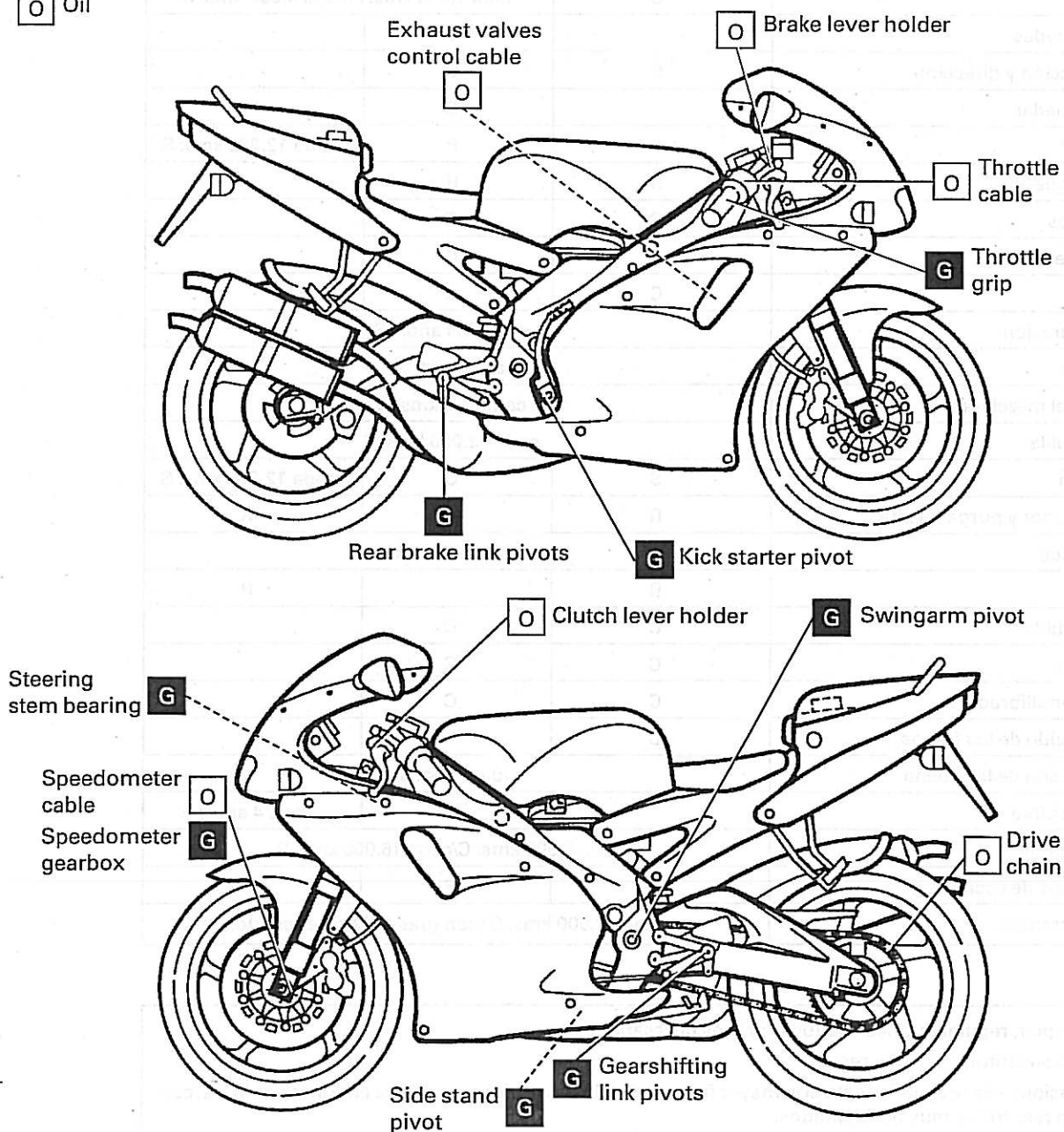
LUBRICATION POINTS

Proper lubrication is important for smooth operation and long life of each working part of the motorcycle.

NOTE:

- Before lubricating each part, clean off any rusty spots and wipe off any grease, oil, dirt or grime.
- Lubricate exposed parts which are subject to rust, with motor oil or grease.

G Grease
O Oil



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

MAINTENANCE AND TUNE-UP PROCEDURES

This section describes the service procedures for the main section of periodic maintenance.

BATTERY

Inspect at initially 1.000 km (or 4 months) and every 4.000 km (or 8 months).

- Remove the driving seat.
- Check the battery voltage with a pocket tester. If the voltage reading is below 12,0V, this battery needs recharging.

Battery voltage: above 12,0V

- Remove the battery \ominus and \oplus lead wires and the elastic and extract the battery from the frame.

CAUTION:

Read the "ELECTRICAL SYSTEM", for servicing the battery.

NOTE:

It is possible to check battery voltage using the multifunction computer installed on the cycle (see Owner's Manual).



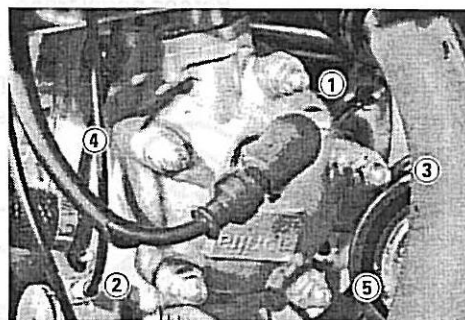
ENGINE BOLTS AND NUTS

Tighten at initially 1.000 km (or 4 months) and every 4.000 km (or 8 months).

CYLINDER HEAD NUTS

- Remove the lower fairings.
- First loosen nuts by 1/4 turn and tighten the cylinder nuts to the specified torque in ascending numerical order as shown in the illustration.

Nut tightening torque: 23 – 27 Nm (2,3 – 2,7 kgm)

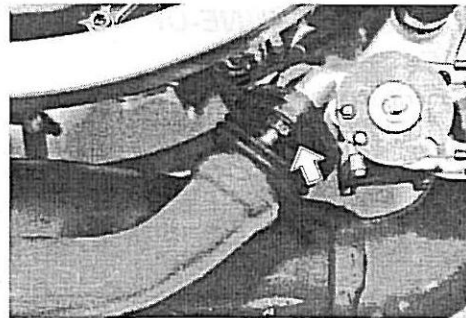


PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

EXHAUST MANIFOLD NUTS

- Tighten the exhaust pipe nuts to the specified torque.

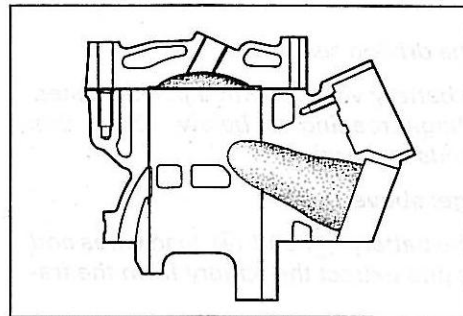
Tightening torque: 18 – 28 Nm (1,8 – 2,8 kgm)



CYLINDER HEAD, CYLINDER AND MUFFLER

Clean every 6.000 km (or 12 months).

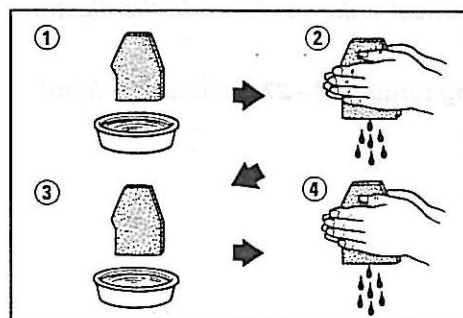
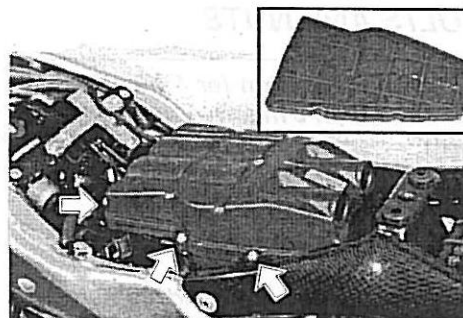
- Carbon deposits in the combustion chamber of the cylinder head and at the piston crown will raise the compression ratio and may cause preignition or overheating.
- Carbon deposited at the exhaust port of the cylinder will prevent the flow of exhaust gas, reducing the output. Remove carbon deposits periodically.



AIR FILTER

Clean every 4.000 km. Change every 12.000 km.

- Remove the driving seat.
- Remove the fuel tank.
- Remove the filter case cover, loosening the 8 screws.
- Remove the air filter element and the grid.
- Wash ① air filter element with suitable clean solvents, non-inflammable and with a low volatility level, and then allow to dry ② thoroughly.
- Apply ③ a filter oil all over the surface, then wring ④ to eliminate all excess oil. The filter element must be well soaked but must not drip.
- Replace the filter element in its housing with the grid and reassemble the filter case cover.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CAUTION:

- Before and during the cleaning operation, inspect the element for tears. A torn element must be replaced.
- Be sure to position the element snugly and correctly, so that no incoming air will bypass it. Remember, rapid wear of piston rings and cylinder bore is often caused by a defective or poorly fitted element.

CAUTION:

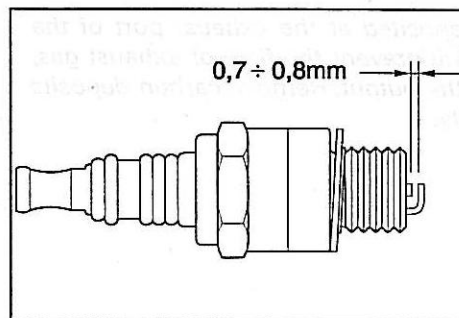
If driving under dusty conditions, clean the air cleaner element more frequently. The surest way to accelerate engine wear is to use the engine without the element or to use a ruptured element. Make sure that the air cleaner is in good condition at all times. Life of the engine depends largely on this component!

SPARK PLUGS

Inspect at initially 1.000 km (or 4 months)
and replace every 6.000 km.

- Remove the driving seat.
- Remove the fuel tank.
- Take off the spark plug caps.
- Remove the spark plugs.

The plug gap is adjusted to 0,7 – 0,8 mm. The gap is correctly adjusted using a thickness gauge. When carbon is deposited on the spark plug, remove the carbon with a spark plug cleaning machine or by carefully using a tool with a pointed end. If electrodes are extremely worn or burnt, replace the plug. Also replace the plug if it has a broken insulator, damaged thread etc.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

NGK BR9ECM listed in the table should be used as the standard plug.

However, the heat range of the plug should be selected to meet the requirements of speed, actual load, fuel etc.

If the plugs need to be replaced, it is recommended that the standard plugs listed in the table be selected.

Remove the plugs and inspect the insulators. Proper heat range would be indicated if both insulators were light brown in colour. If they are blackened by carbon, they should be replaced by a hot type BR8ECM if baked white, by a cold type BR10ECM.

Plugs with high heat range number are used for high speed running. These plugs are designed to be sufficiently cooled to prevent overheating and are called cold type plugs.

Recommended spark plug

NGK	REMARKS
BR8ECM	If the standard plug is apt to get wet, replace with this plug. Hot type.
BR9ECM	Standard plug.
BR10ECM	If the standard plug is apt to overheat, replace with this plug. Cold type.

NOTE:

The "R" type spark plugs has a resistor located at the center electrode to prevent radio noise.

CAUTION:

Confirm the thread size and reach when replacing the plug. If the reach is too short, carbon will be deposited on the thread portion of the plug hole and engine damage may result.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CARBURETTORS

Inspect at initially 1.000 km (or 4 months)
and every 4.000 km (or 8 months).

THROTTLE CABLE

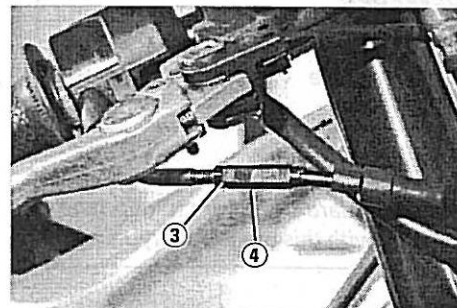
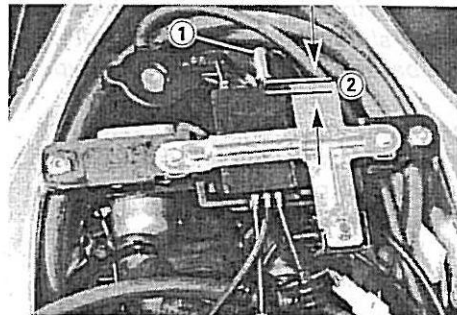
ADJUSTMENT OF CONTROL PLAY

The throttle cable ① should be adjusted to have a play ② of 0,5 - 1,0 mm at the entrance to the cable splitting box. If the adjustment is necessary, adjust the play in the following way:

- Loosen the lock nut ③ and turn the adjuster ④ in or out to obtain the correct play ② of 0,5 - 1,0 mm.
- After adjusting the cable play, tighten the lock nut ③ and re-check cable play.

CAUTION:

This adjustment could affect the oil pump control cable play; so readjust the oil pump control cable play if necessary.



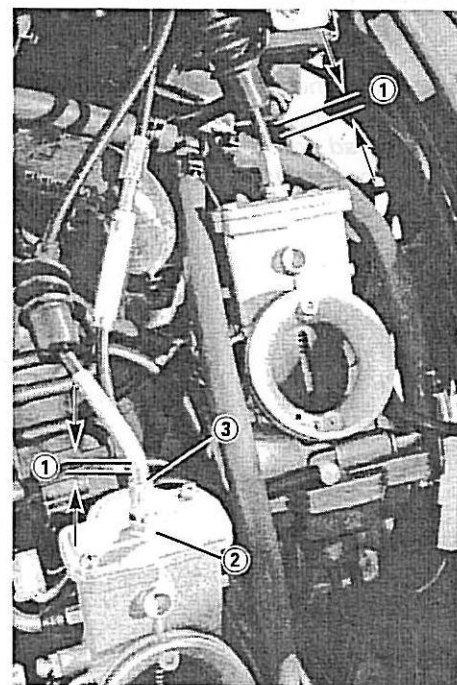
ADJUSTMENT OF CARBURETTOR PLAY

The throttle cable should be adjusted to have a play ① of 0,5 - 1,0 mm. If the adjustment is necessary, adjust the play in the following way:

- Remove the driving seat.
- Remove the fuel tank.
- Loosen the lock nut ② and turn the adjuster ③ in or out to obtain the correct play ① of 0,5 - 1,0 mm.
- After adjusting the play, tighten the lock nut ②.

CAUTION:

After the adjustment is completed, check that handlebar movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

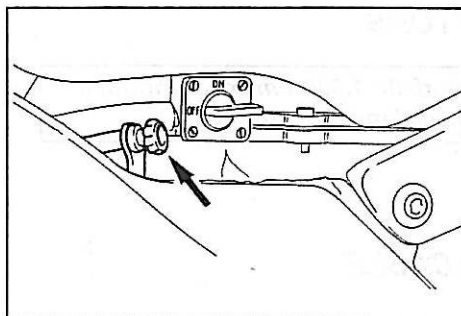
IDLE SPEED ADJUSTMENT

NOTE:

Make this adjustment when the engine is hot, after checking that the throttle cable free play is correct and holding the motorcycle in a vertical position.

- Start up the engine and set its speed at anywhere between 1.300 ± 150 rpm by turning the knob on the left of the cycle rear the fuel tap in both directions.
- When adjusting, accelerate and decelerate repeatedly to verify the correct idle speed of the engine.

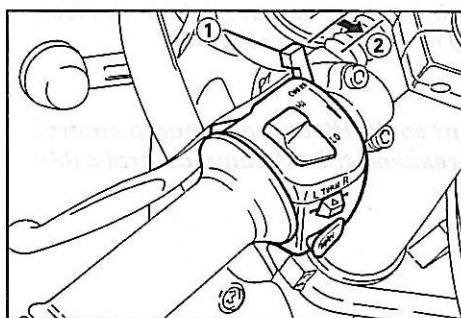
Engine idle speed: 1.300 ± 150 rpm.



CHOKE CABLE

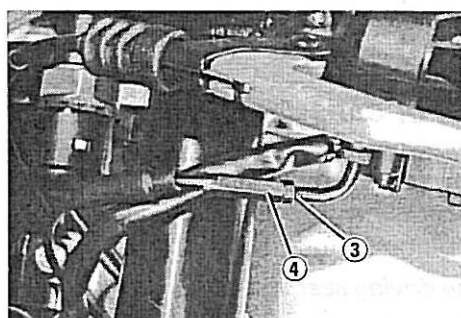
The choke cable should be adjusted so that lever ① has an idle stroke ② of 4 - 5 mm. If the adjustment is necessary, adjust the play in the following way:

- Loosen the lock nut ③ and turn the adjuster ④ in or out to obtain the lever ① idle stroke prescribed.
- After adjusting the play, tighten the lock nut ③ and re-check the lever play.



CAUTION:

After the adjustment is completed, check that the handlebar movement does not raise the engine idle speed and that the throttle grip returns smoothly and automatically.



FUEL HOSES

Inspect every 4.000 km (or 8 months).
Replace every 4 years.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

MIXER PUMP

**Adjust at initially 1.000 km (or 4 months)
and every 8.000 km (or 16 months).**

The engine oil is fed by the mixer pump to the engine.

The amount of oil fed to it is regulated by engine speed and the mixer pump control lever which is controlled by the amount of throttle opening.

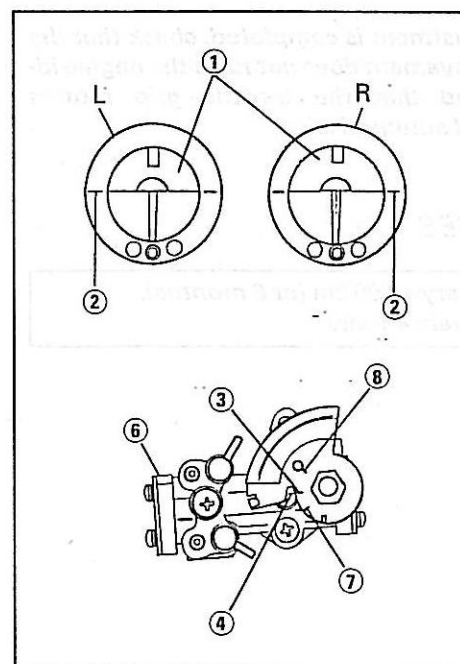
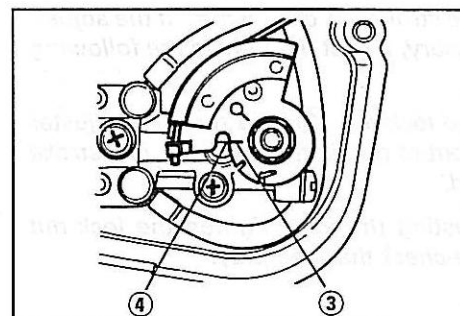
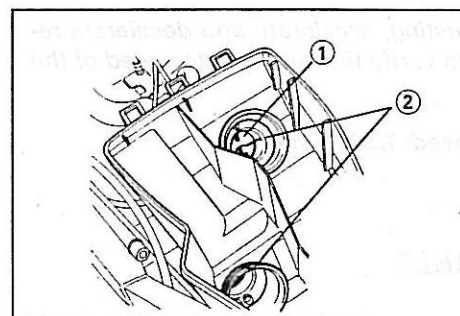
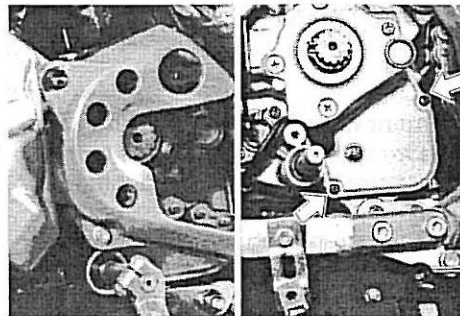
Check the mixer pump in the following manner to confirm correct operation for all throttle valve opening positions.

- Remove the sprocket cover.
- Remove the mixer pump inspection cover.
- Remove the air filter cap, air filter element and grid.
- Turn the throttle grip gradually and raise the throttle valve ① until the valve's lower end aligns with the line ② on the carburetor bore. Hold the throttle in this position.
- Adjust the mixer pump cable adjuster ⑤ so that the line ③ on the pump lever aligns with the notch line ④ on the body.

CAUTION:

Mixer pump cable adjustment must be done after throttle cable adjustment.

- ① Throttle valve
- ② 1/2 opening mark
- ③ 1/2 opening mark
- ④ Reference mark on the pump body
- ⑤ Adjuster
- ⑥ Mixer pump
- ⑦ Full opening mark
- ⑧ Full close mark



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

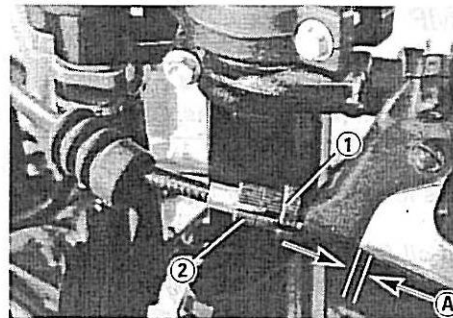
CLUTCH

**Adjust at initially 1.000 km (or 4 months)
and every 4.000 km (or 8 months).**

- Remove the right side fairing.
- Loosen the ring nut ① and turn the adjust nut ② fully in on the clutch lever side.
- Loosen the cable lock nut ③ on the motor, tighten the adjusting nut ④ to provide play in the outer cable. Adjust the play of the cable with adjusting nut ④ until play A of the clutch lever is 2 - 3 mm.
Next, secure the lock nut.

Cable play A : 2 - 3 mm

- If the specified play can not be obtained with adjusting nut ④, carry out the adjustment using the adjusting nut ② on the clutch lever side.



GEAR OIL

**Change at initially 1.000 km (or 4 months)
and every 12.000 km (or 24 months). Check
every 4.000 km (or 8 months).**

After a long period of use, the gear oil will deteriorate and quicken the wear of sliding and interlocking surfaces. Replace the transmission oil periodically following the procedure below.

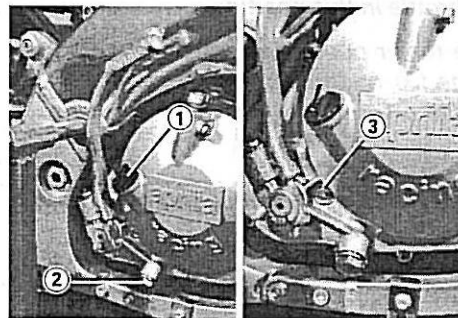
- Remove the right side fairing.
- Start the engine to warm up the oil, this will facilitate draining of oil. Shut off the engine.
- Unscrew the oil filler cap ① and drain plug ②, and drain the oil completely.
- Tighten the drain plug.

Tightening torque: 20 - 25 Nm (2,0 - 2,5 kgm)

- Fill with semisynthetic 4-stroke engine oil with SAE 20W/50-A.P.I. SG-CCMC G-4 specifications and tighten the filler plug.

Capacity: 0,7 litres

- Check oil level with level screw ③ after running the engine for about 3 mins.



COOLING SYSTEM

*Inspect at initially 1.000 km (or 4 months)
and every 4.000 km (or 8 months). Change
coolant every 2 years.*

CHANGE THE COOLANT

- Remove driving and passenger seats.
- Disassemble the fuel tank.
- Remove the right and left side fairings.
- Remove radiator cap ①.
- Remove radiator and lower cylinder manifolds ②.
- Remove drain plugs ③ from right and left cylinders.

CAUTION:

The cylinder drain plugs must be removed when replacing the coolant.

Drain plug: 8 – 12 Nm (0,8 – 1,2 kgm)

WARNING:

Do not open the radiator cap when the engine is hot, as you may be injured by escaping hot liquid or vapor.

WARNING:

Coolant may be harmful if swallowed or if it comes into contact with skin or eyes. If coolant gets into the eyes or contact with the skin, it should be soaked thoroughly with plenty of water. If swallowed, induce vomiting and call physician immediately!

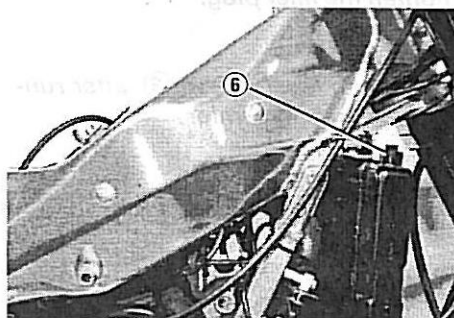
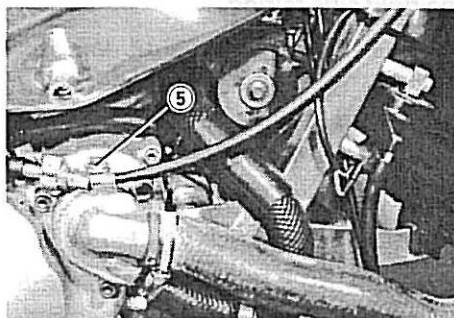
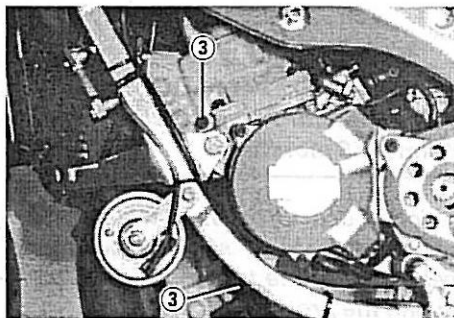
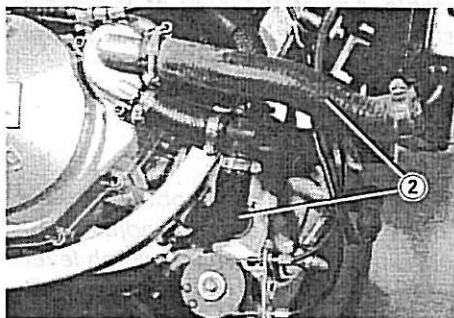
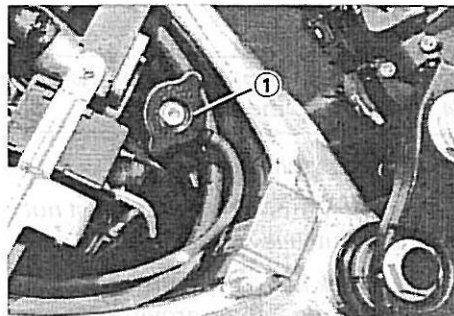
- Flush the radiator with clean water.
- Reassemble radiator and lower cylinder manifolds ② and tighten clamps securely. Reassemble plugs ③ to cylinders.
- Pour the specified coolant up to the radiator inlet hole.
- Loosen the air bleeder bolt ⑤, ⑥ for water pump and for radiator to expel air.
- Attempt to tip the motorcycle to the right side to let the trapped air go out.
- Tighten the bleeder bolts when air has been bled and coolant comes out.

Radiator expel bolt tightening torque:

2 – 3 Nm (0,2 – 0,3 kgm)

Water pump expel bolt tightening torque:

8 – 12 Nm (0,8 – 1,2 kg)



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

- Set the motorcycle on the lateral stand.
- Fill the reservoir tank with coolant until latter is visible through filler hole ①.
- Close the radiator and reservoir tank caps securely.
- After warming up then cooling down the engine, check the coolant level of the reservoir tank.
- Top up if necessary.

Total quantity: 1,9 litres including reservoir tank

NOTE:

For coolant information, refer to "COOLING SYSTEM" section.

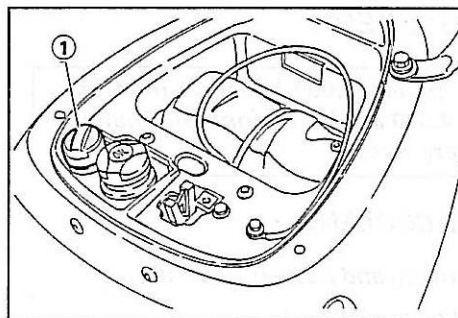
DRIVE CHAIN

Inspect at initially 1.000 (or 4 months) and every 4.000 km (or 8 months). Clean and lubricate every 1.000 km.

Support the motorcycle and turn the rear wheel slowly by hand with the transmission shifted to neutral. Visually check the drive chain for the below-listed possible malconditions.

- Loose pins
- Damaged rollers
- Dry or rusted links
- Kinked or binding links
- Excessive wear
- Improper chain adjustment
- Missing O-ring seals

If any one of these defects are found, the drive chain must be replaced.



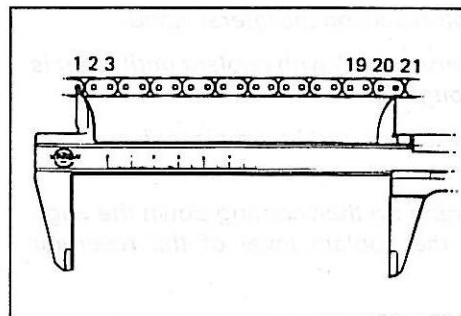
PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

CHECKING

- Loosen axle nut ①.
- Loosen lock nuts ③ or right and left adjusters.
- Stretch chain fully by operating adjusters ②.
- Count out 21 pins (20-pitch) on the chain and measure the distance between the two.

If the distance exceeds following limit, the chain must be replaced.

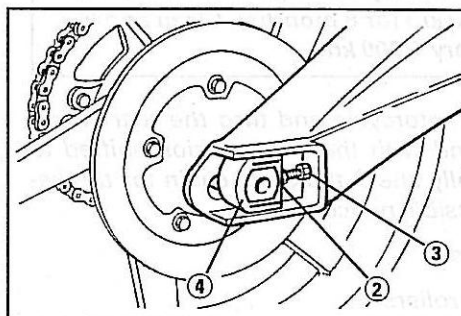
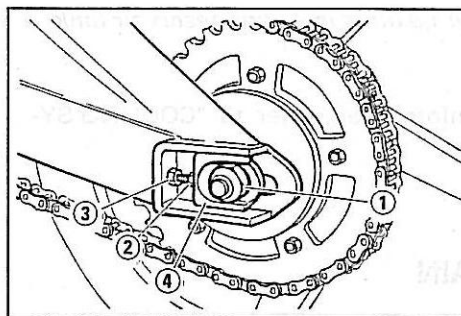
Service limit: 304 mm



ADJUSTING

- Loosen the adjusters until the chain has $25 \div 30$ mm of sag at the middle between engine and rear sprockets.
The reference marks on the fork must correspond on both sides to the front edge of the movable boards ④.
- At the end of the operation, tighten the axle nut and the adjuster lock nuts.
- After tightening, recheck free play.

Rear axle nut tightening torque:
85 – 115 Nm (8,5 – 11,5 kgm)



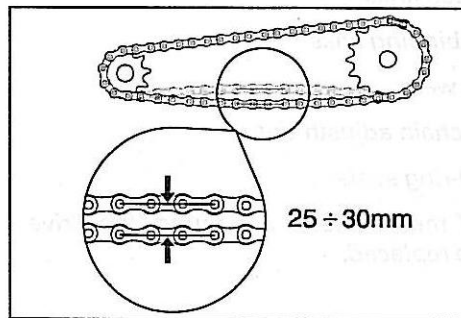
CLEANING AND LUBRICATING

- Wash the chain with kerosene. If the chain tends to rust faster, the intervals must be shortened.

CAUTION:

Do not use trichlene, gasoline or any similar fluids: these fluids have too great a dissolving power for this chain and, what is more important, can spoil the O-rings (or seals) confining the grease in the bush to pin clearance.

- After washing and drying the chain, lubricate with a greasy spray for sealed chains.



CAUTION:

In no case use commercial lubricants that are not specifically for sealed chains: they may damage the O-rings.

CAUTION:

The standard drive chain is DID 520 V6. Aprilia recommends that the above-mentioned standard drive chain be used for the replacement.

PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

BRAKES

*Inspect at initially 1.000 km (or 4 months)
and every 4.000 km (or 8 months).
Replace fluid every year.*

BRAKE FLUID LEVEL

- Keep the motorcycle upright and place the handlebars straight.
- Check that the level is between the MIN and MAX marks on the front and rear brake fluid tank.
- When the level is below the MIN limit, replenish with brake fluid that meets the following specification.

Prescribed fluid: DOT4-SAE S1703.

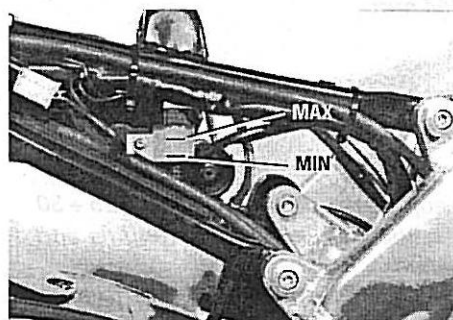
CAUTION:

The brake system of this motorcycle is filled with a glycol-based brake fluid. Do not use or mix different types of fluid such as silicone-based and petroleum-based. Do not use any brake fluid taken from old, used or unsealed containers. Never re-use the brake fluid left over from the last servicing and stored for long periods.

CAUTION:

Brake fluid, if it leaks, will interfere with safe running and immediately discolor painted surfaces.

Check the brake hoses for cracks and hose joints for leakage before riding.

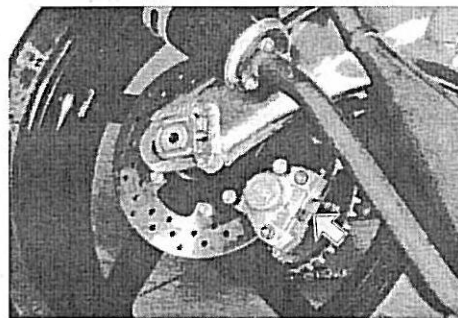


PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

BRAKE PADS

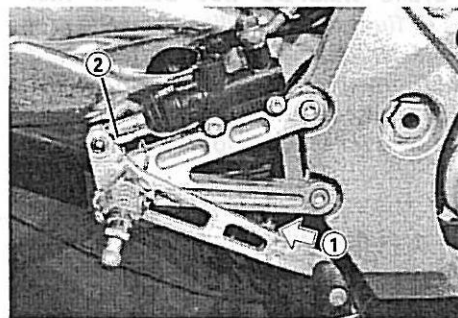
Wearing condition of brake pads can be checked through the slits in the brake caliper. On the rear brake caliper the slit is closed by a chick-on cover which has to be removed (raise the side of the cover with a flat screwdriver).

When the thickness (even if only of a single pad) is down to about 1 mm, replace both pads.



BRAKE PEDAL HEIGHT ADJUSTMENT

- Loosen the lock nut and turn the adjuster screw ① to adjust pedal height. When the operation is over, tighten the lock nut.
- Loosen the lock nut and turn the brake pump adjuster ② to reset the correct pedal idle stroke.
- Once the operation is over, check that the rear wheel does not continue to brake when the brake pedal is released.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

AIR BLEEDING FROM THE HYDRAULIC BRAKE CIRCUIT

Air trapped in the fluid circuit acts like a cushion to absorb a large proportion of the pressure developed by the master cylinder and thus interferes with the full braking performance of the brake caliper. The presence of air is indicated by "sponginess" of the brake lever and also by lack of braking force. Considering the danger to which such trapped air exposes the machine and rider, it is essential that, after remounting the brake and restoring the brake system to the normal condition, the brake fluid circuit be purged of air in the following manner:

- Fill up the master cylinder reservoir to the MAX limit. Replace the reservoir cap to prevent entry of dirt.
- Attach a clean plastic pipe to the caliper bleeder valve ①, and insert the free end of the pipe into a receptacle containing brake fluid.
- Squeeze and release the brake lever several times in rapid succession, and squeeze the lever fully without releasing it. Loosen the bleeder valve by turning it a quarter of a turn so that the brake fluid runs into the receptacle; this will remove the tension of the brake lever causing it to touch the handle-bar grip. Then, close the valve ①, pump and squeeze the lever, and open the valve. Repeat this process until the fluid flowing into the receptacle no longer contains air bubbles.

NOTE:

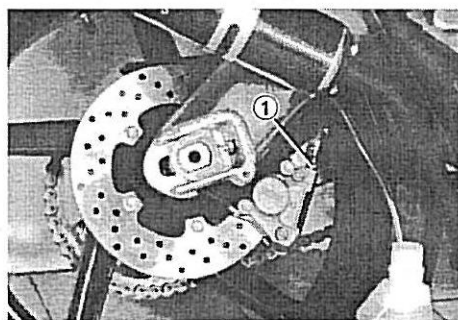
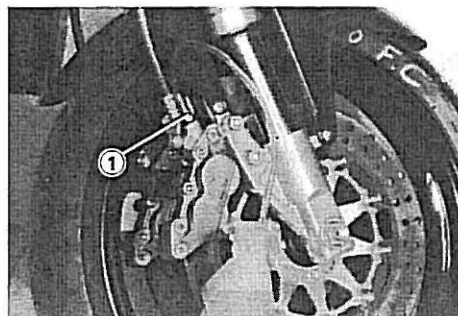
Replenish the brake fluid reservoir as necessary while bleeding the brake system. Make sure that there is always some fluid visible in the reservoir.

- Close the bleeder valve, and disconnect the pipe. Fill the reservoir to the MAX limit.
- Rear brake: the only difference between front and rear are that the master cylinder is actuated by a pedal.

Bleeder valve tightening torque:
12 - 16 Nm (1,2 - 1,6 kgm)

CAUTION:

Handle the brake fluid with care: the fluid reacts chemically with paint, plastics, rubber materials, etc.



TYRES

Inspect at initially 1.000 km (or 4 months) and every 4.000 km (or 8 months). Check tyre pressure every month.

TYRE TREAD CONDITION

Operating the motorcycle with excessively worn tyres will decrease riding stability and consequently invite a dangerous situation. It is highly recommended to replace the tyre when the remaining depth of tyre tread reaches the following specifications.

Tread depth limit

FRONT: 2,0 mm

REAR: 2,0 mm

TYRE PRESSURE

If the tyre pressure is too high or too low, steering will be adversely affected and tyre wear increased. Therefore, maintain the correct tyre pressure for good roadholding or short tyre life will result. Cold tyre inflation pressure is as follows.

Inflation pressure (in bar)

FRONT: 1,9

REAR: 2,2

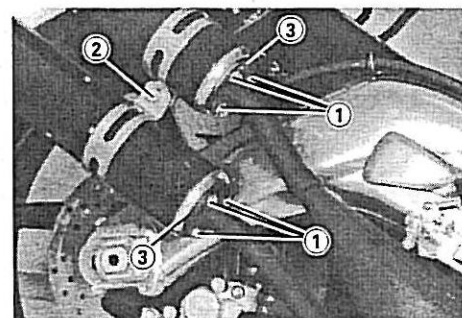
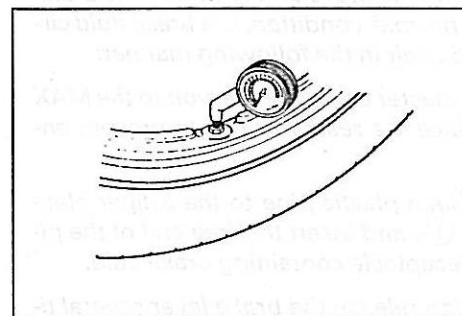
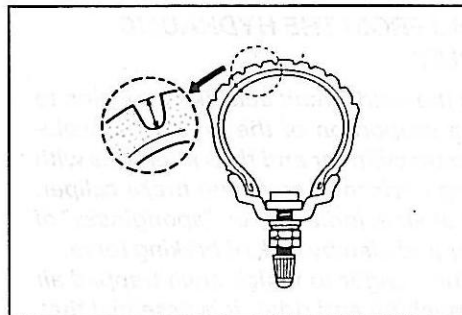
WARNING:

The standard tyres fitted on this motorcycle are 110/70 ZR17" for front and 150/60 ZR17" or 160/60 ZR17" for rear. The use of tyres other than the standard may cause instability. It is highly recommended to use the tyres prescribed by Aprilia.

EXHAUST PIPE SILENCERS

Clear after the first 1.000 km (or 4 months) * and subsequently every 4.000 km (or 8 months)

- To assemble the silencers, unscrew the 3 fastening nuts ① and remove the fastening bolt from the clamps ②.
- For cleaning purpose, use a metal brush to remove carbon deposits through the silencer inlets.
- When reassembling the silencers, spread heat-resistant silicone on both surfaces of the gasket ③ and at the base of the 3 fastening sprockets.



PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

STEERING

**Inspect at initially 1.000 km (or 4 months)
and every 4.000 km (or 8 months).**

Bearings are applied on the steering system for better handling. Steering should be adjusted properly for smooth turning of handlebars and safe running. Too stiff steering prevents smooth turning of handlebars and too loose steering will cause poor stability.

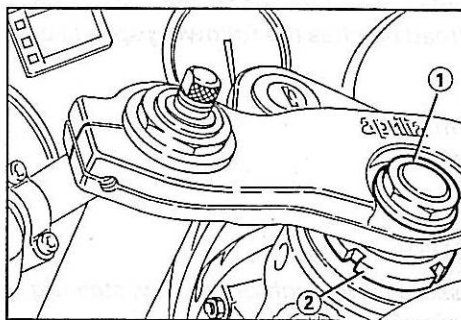
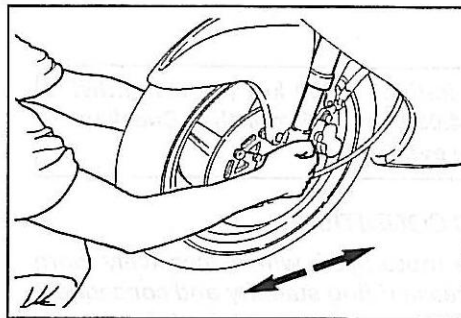
Check that there is no play in the front fork assembly by grasping the lower fork tubes near the axle and pulling forward when the machine is supported with the front wheel off the ground and positioned straight ahead. If play is found, perform steering bearing adjustment.

If it were necessary to adjust free play, loosen nut ① and turn the ring nut ② with the special key. Once the operation has been completed, and after tightening nut ①, recheck the free play.

**Steering head nut tightening torque:
60 - 100 Nm (6,0 - 10,0 kgm)**

WARNING:

After adjusting steering free play, check that handlebar rotation is smooth to avoid damaging the bearings and making the cycle uncontrollable.



FRONT FORK

Inspect every 12.000 km (or 24 months).

Inspect the front forks for oil leakage, scoring and scratches on the outer surface of the inner tubes. Replace any defective parts, if necessary.

REAR SUSPENSION

Inspect every 12.000 km (or 24 months).

Inspect the rear shock absorber for oil leakage and check that there is no play in the swingarm assembly.

CHASSIS BOLTS AND NUTS TIGHTENING

Tighten at initially 1.000 km (or 4 months) and every 4.000 km (or 8 months).

The nuts and bolts listed below are important safety parts. They must be retightened when necessary to the specified torque with a torque wrench.

CHASSIS NUT AND SCREW TIGHTENING TORQUES		
Item	Nm	kgm
Steering stem head nut	60 - 100	6,0 - 10,0
Handlebars set screw (M6)	6 - 10	0,6 - 1,0
Front fork upper clamp screw	25	2,5
Front fork lower clamp screw	25	2,5
Front fork cap bolt	20	2,0
Front axle shaft	80	8,0
Front axle clamp screws	10	1,0
Handlebars mounting bolt	15 - 25	1,5 - 2,5
Front brake master cylinder mounting bolt	5 - 8	0,5 - 0,8
Front caliper mounting bolt	45 - 55	4,5 - 5,5
Front and rear caliper housing bolt	25 - 29	2,5 - 2,9
Front brake caliper hose union bolt	17 - 20	1,7 - 2,0
Air bleeder valve (front and rear)	12 - 16	1,2 - 1,6
Front and rear disc bolt (with medium Loctite® thread restrainer)	15 - 25	1,5 - 2,5
Swingarm pin	85 - 110	8,5 - 11,0
Swingarm pin adjuster bush	contact + 1/4 turn of bush	
Rear shock absorber mounting nut (upper)	80	8,0
Rear shock absorber mounting bolt (lower)	45 - 50	4,5 - 5,0
Rear shock absorber connecting rod (upper and lower) fastening nuts	90	9,0
Chassis double connecting rod pin nut	90	9,0
Rear brake caliper (to the support) fastening screws	25	2,5
Rear brake caliper housing bolt	8 - 12	0,8 - 1,2
Rear axle nut	85 - 115	8,5 - 11,5
Rear sprocket nuts	20 - 30	2,0 - 3,0
Front footrest bolt	35	3,5
Rear brake master cylinder hose union bolt	13 - 17	1,3 - 1,7
Rear brake caliper hose union bolt	17 - 20	1,7 - 2,0
Front engine fastening screw	50	5,0
Upper engine fastening screw	50	5,0
Lower engine fastening screw	25	2,5

MOTORE

ENGINE

MOTOR

3

ENGINE

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ENGINE

ENGINE COMPONENTS REMOVABLE WITH ENGINE IN PLACE

The parts listed below can be removed and reinstalled without removing the engine from the frame. Refer to the page listed in the section for removal and reinstallation instructions.

ENGINE LEFT SIDE

- Engine sprocket and drive chain
- Oil pump
- Magneto rotor
- Pick-up coil
- Neutral indicator switch

ENGINE CENTER

- Carburetors
- Radiator
- Muffler
- Exhaust valve actuator
- Cylinder head
- Cylinder and exhaust valve
- Piston
- Crankshafts
- Upper crankcase

ENGINE RIGHT SIDE

- Clutch cover
- Water pump
- Clutch
- Gearshift shaft
- Transmission assembly
- Primary drive and driven gears

ENGINE

ENGINE REMOVAL AND REINSTALLATION TO CHASSIS

ENGINE REMOVAL

Before taking the engine out of the frame, wash the engine with a steam cleaner, and drain transmission oil and cooling solution etc.

The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

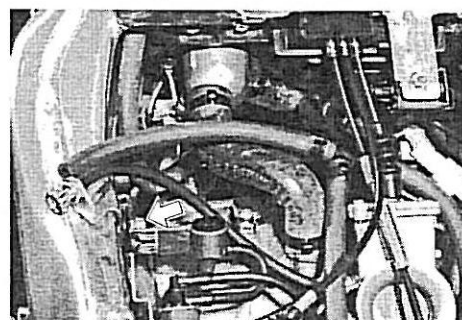
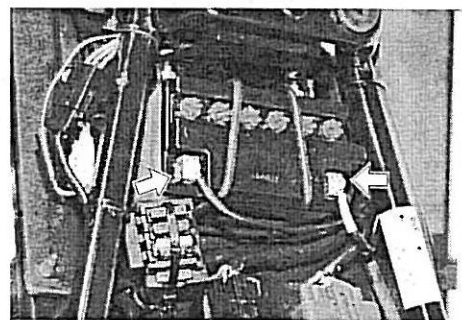
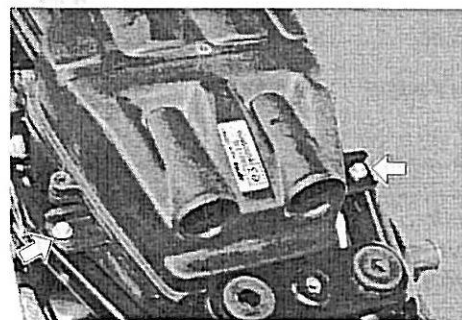
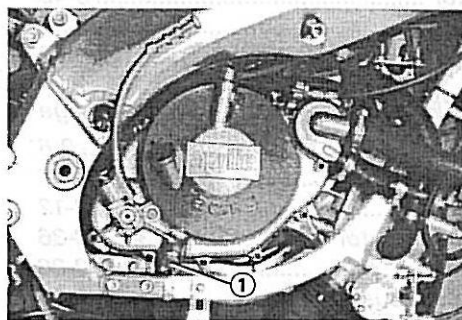
- Remove the fairing.
- Remove driver's seat.
- Turn the fuel cock to the OFF position.
- Remove the fuel tank.
- Place a container under the engine and remove the oil drain plug and filler plug to drain out transmission oil.

① Transmission oil drain plug

- Remove the air cleaner case screws.

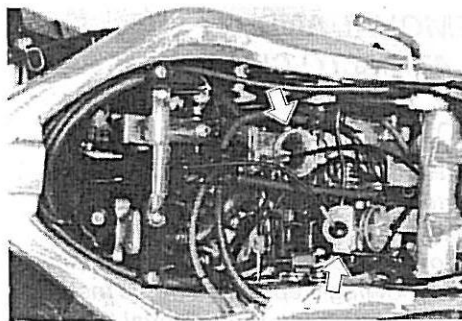
- Remove the battery (−) and (+) lead wires.

- Remove the idle adjustment bracket screws.
- Shift the hose clip sideways and disconnect the intake pulse control hoses.

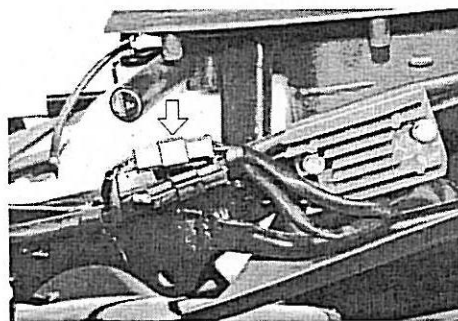


ENGINE

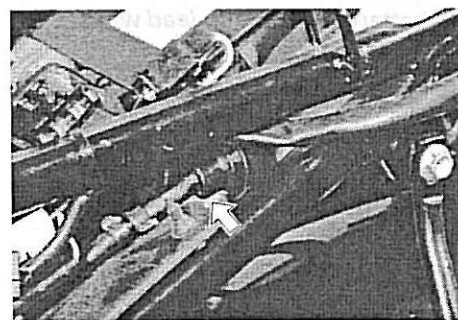
- Loosen the carburettor clamp screws.
- Move the air cleaner case rearward, and remove the carburettors.



- Loosen the clamps and disconnect the following lead wires.
 - Neutral indicator switch lead
 - Magneto connector
 - Regulator/rectifier lead.
- Disconnect the spark plug caps from the spark plugs.
- Disconnect the other lead wires.
- Detach the gearbox breather hose.



- Shift the hose clip sideways and disconnect the oil hose.

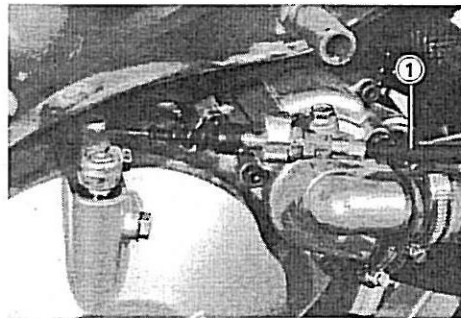


- Unclamp the radiator hoses at engine side and remove the radiator from the chassis.

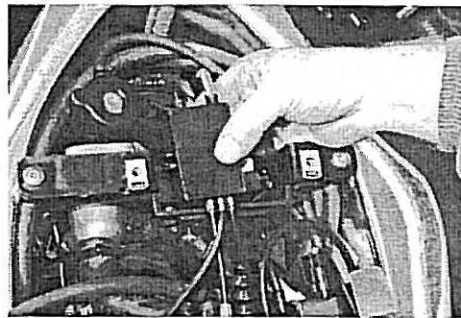
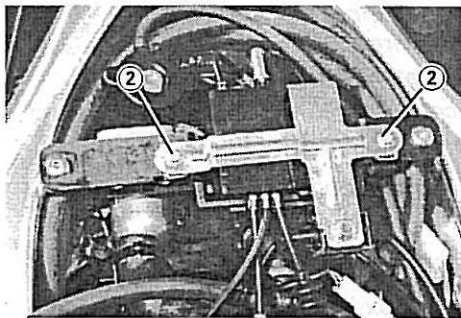


Radiator fastening screw tightening torque:
7–9 Nm (0,7–0,9 kgm)

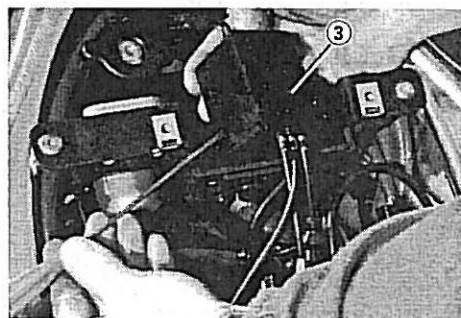
- Disconnect the clutch cable ①.



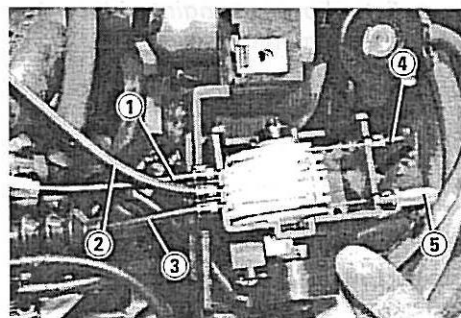
- Remove the splitting box bracket screws ②.



- Remove the splitting box cap ③ by levering with a screwdriver.

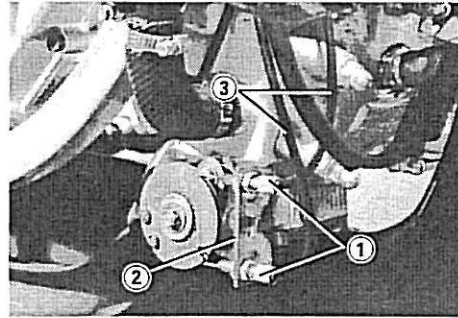


- Disconnect the oil pump control cable ①.
- Disconnect the carburettor cables ② and ③.
- Disconnect the actuator cable ④.
- Disconnect the throttle cable ⑤.

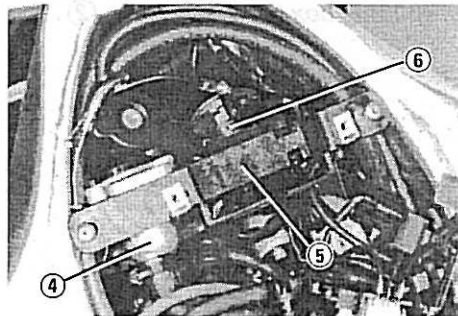


ENGINE

- Loosen the exhaust valve cable adjusters ①.
- Remove the exhaust valve cables bracket ②.
- Remove the exhaust valve cables ③ from the pulley.
- Repeat on the other exhaust valve.



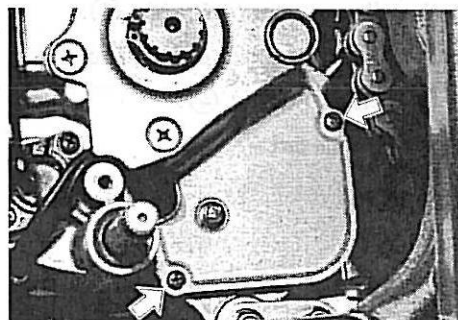
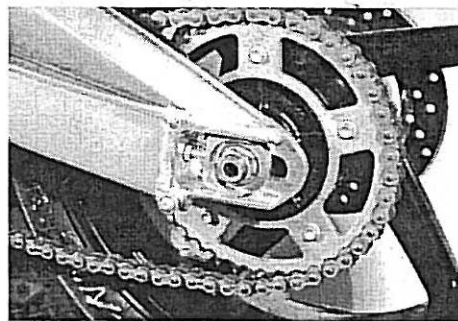
- Remove the thermostat case ④.
- Remove the electric parts holder ⑤ from the frame.
- Remove the actuator assembly ⑥.



- Remove the sprocket cover.
- Remove the gear shift lever.

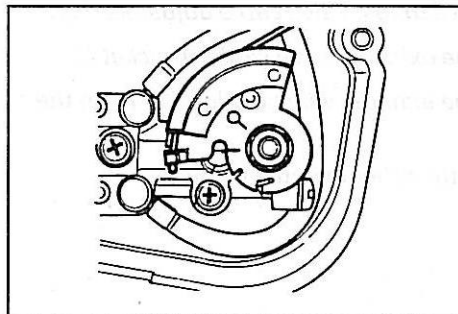


- Loosen the rear axle nut and drive chain adjusters.
- Push the rear wheel forward or remove the rear wheel, and disengage the drive chain from the rear sprocket.
- Disengage the drive chain from the engine sprocket.
- Remove the engine sprocket from the drive shaft using the snap ring pliers.
- Remove the oil pump cover.

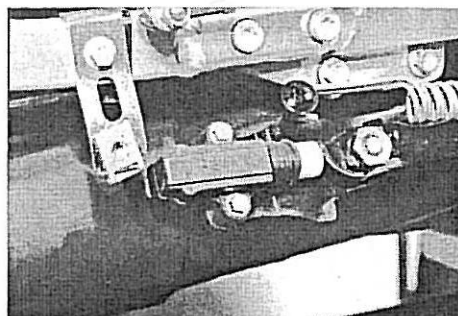


ENGINE

- Slightly pry the tab on the oil pump lever to remove the control cable.



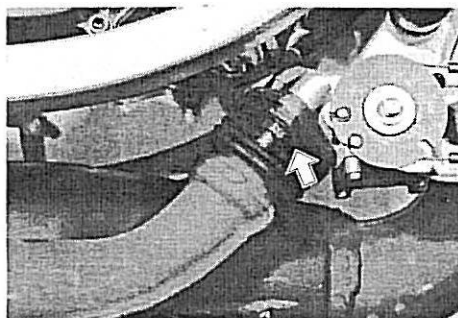
- Remove the side stand switch.



- Remove the right and left mufflers by unscrewing muffler mounting bolts and exhaust pipe clamp nuts.

NOTE:

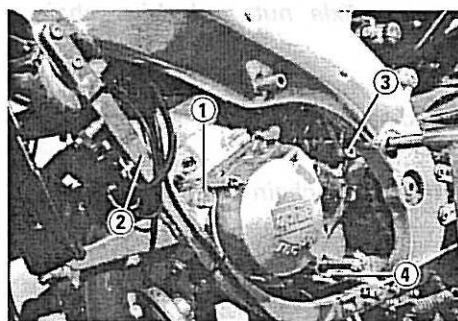
When reinstalling the mufflers, always use a new exhaust pipe gasket.



- Remove the front engine mounting bolt ①.
- Disassemble the chassis cradle ②.
- Remove the engine mounting bolts ③ and ④.

CAUTION:

Care should be taken not to drop the engine accidentally when the engine mounting bolts are removed.

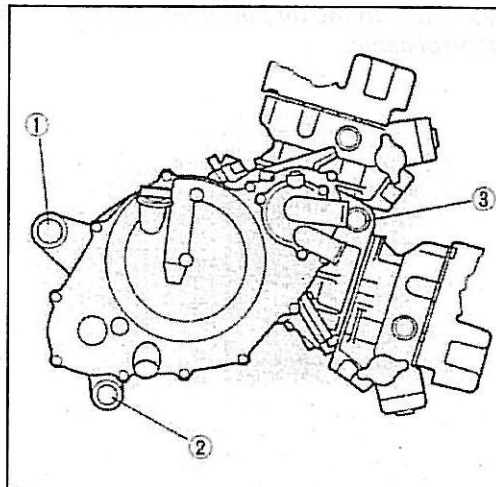


ENGINE

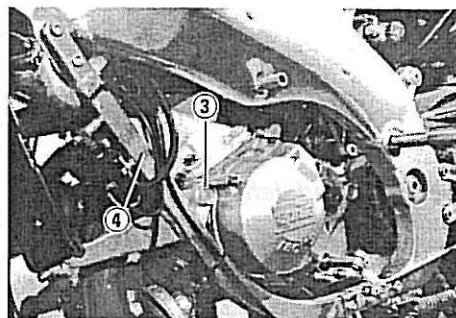
ENGINE REINSTALLATION

Reinstall the engine in the reverse order of engine removal.

- When remounting the engine, engage the drive chain to the sprocket and mount the engine sprocket to the drive shaft.
- Position the engine assembly on the frame and insert the rear mounting bolt ① then the under mounting bolt ②.



- Attach the cradle ④ on the frame and insert the engine front mounting bolt ③.
- Tighten the cradle/chassis attaching screws temporarily.
- When all the fasteners are positioned properly, tighten them to the specified torque.



Tightening torques:

Front bolt ③ : 50 Nm (5,0 kgm)

Inside bolt ② : 25 Nm (2,5 kgm)

Outside bolt ① : 50 Nm (5,0 kgm)

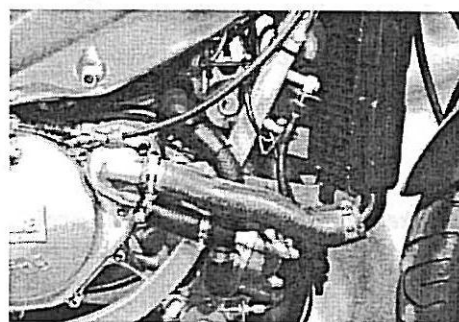
Transmission oil drain plug:

20 – 25 Nm (2,0 – 2,5 kgm)

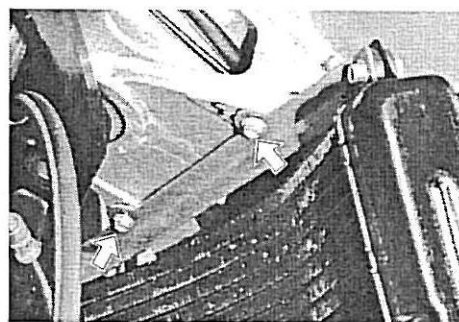
Chassis cradle screws:

22 – 28 Nm (2,2 – 2,8 kgm)

- Install the water hoses.
- Secure the water hoses with clamp properly.

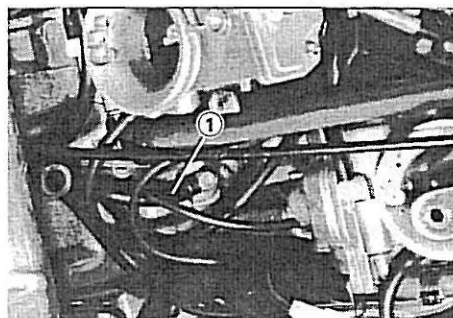


- Install the radiator.
- Install the water hoses, to the radiator.
- Secure the water hoses with clamp properly.

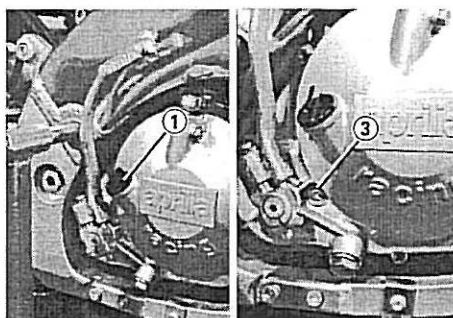


ENGINE

- Connect the transmission oil overflow hose ①.



- Pour 0,7 litres (after engine overhaul) of semi-synthetic 4-stroke engine oil (specifications SAE 20W/50-A.P.I. SG-CCMC G-4) into the engine through the filler plug ①.
Check the level of the oil by removing the screw ③.



- Reassemble the gear lever to the correct position, checking that the pedal is in the most suitable position for use. If necessary, adjust the position with the special adjuster.

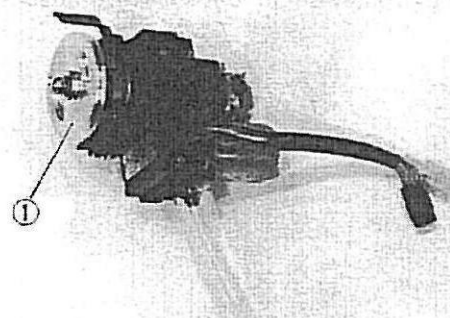
- After reinstalling the engine, connect the harness, hoses and cables properly by following the appropriate sections and adjust to parts below to the prescribed values.

- Clutch cable
- Throttle cables
- Starter cable
- Idling adjustment
- Coolant filler
- Exhaust valve
- Oil pump control cable
- Oil pump bleeder.

EXHAUST VALVES ACTUATOR MOTOR

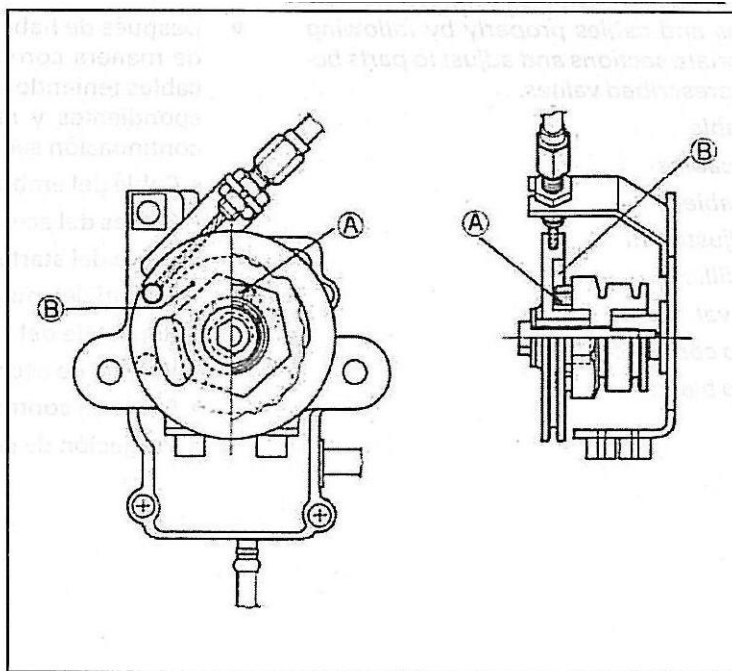
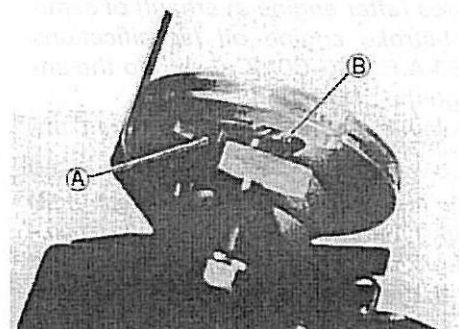
OIL PUMP PULLEY

The oil pump pulley ① is separated from the actuator pulley.



OPERATION OF OIL PUMP

When the actuator motor pulley turns, the lug ① on the actuator motor pulley pushes the oil pump pulley groove ② (the oil pump is operated by the oil pump pulley when the exhaust valve is over half opening condition).

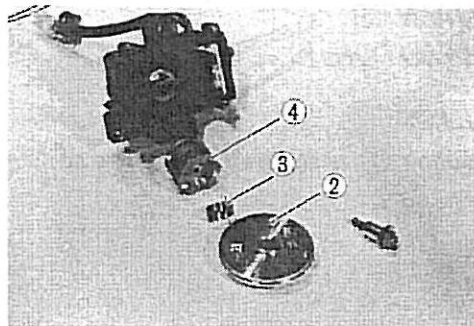


PULLEY DISASSEMBLY

Remove the oil pump pulley by removing the bolt ① while holding the actuator motor pulley with an adjuster wrench.

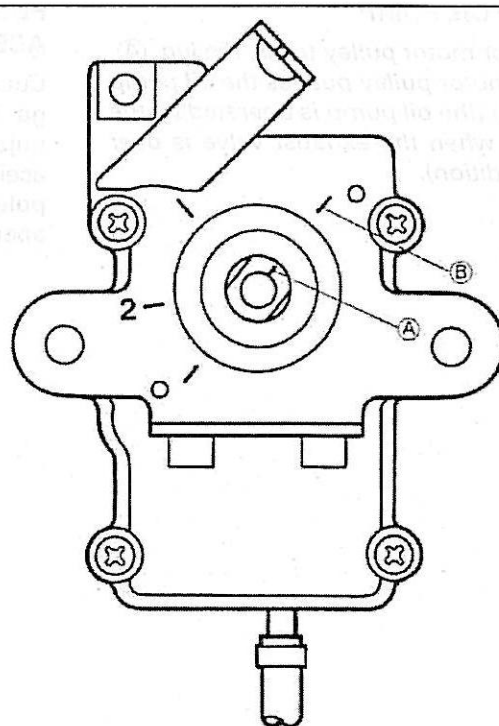


- Remove the oil pump pulley ②, spring ③, and actuator motor pulley ④ from the actuator body.

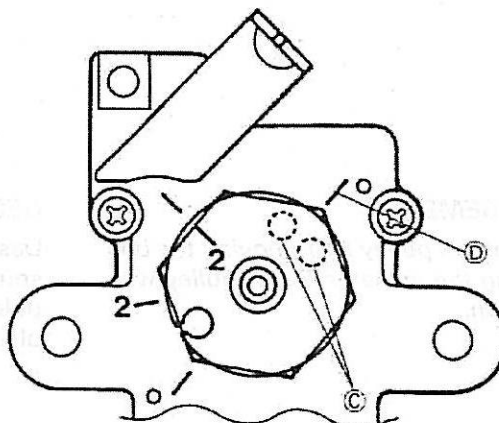


PULLEY REASSEMBLY

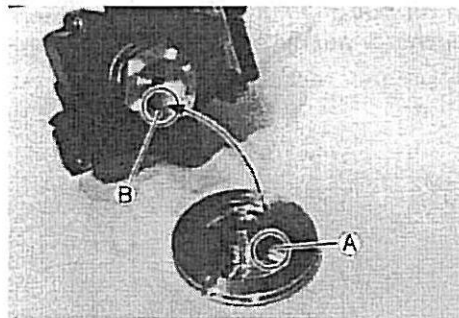
- Align the index lines ① and ②.



- Align cable ends ③ sideways with index ④ on the bracket.

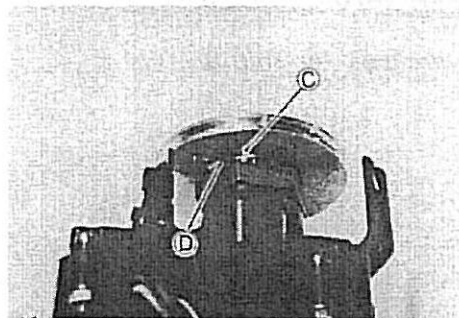


- Install the ends of the spring into the hole (A) in the oil pump pulley and hole (B) in the actuator pulley.



- Set the groove (C) in the oil pump pulley to the lug (D) on the actuator pulley.
- Apply LOCTITE® N° 221 on the fastening screw and tighten.

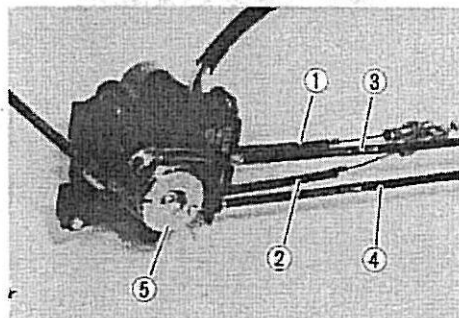
Pulley screw tightening torque:
4 – 6 Nm (0,4 – 0,6 kgm)



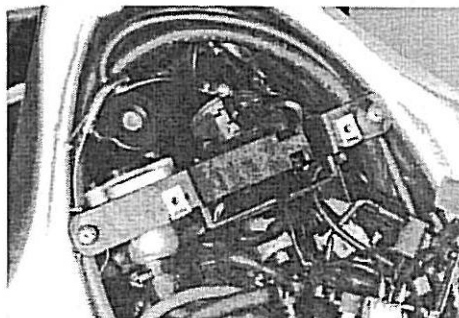
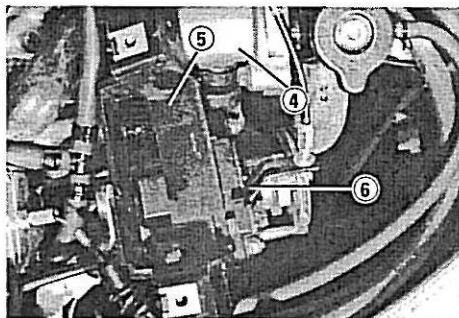
ACTUATOR AND CABLES ASSEMBLY

- Connect all the cables to the actuator pulley (5) properly.

- Cable (1) $L = 230 \text{ mm}$
- Cable (2) $L = 220 \text{ mm}$
- Cable (3) $L = 580 \text{ mm}$
- Cable (4) $L = 530 \text{ mm}$
- Oil pump cable



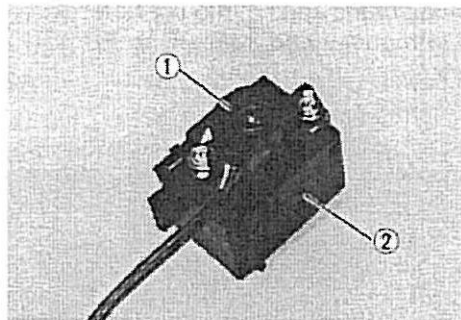
- Install the actuator assembly (6) to the electric parts holder.
- With the actuator mounted, install the electric part holder (5) on the frame.
- Install the thermostat case (4).



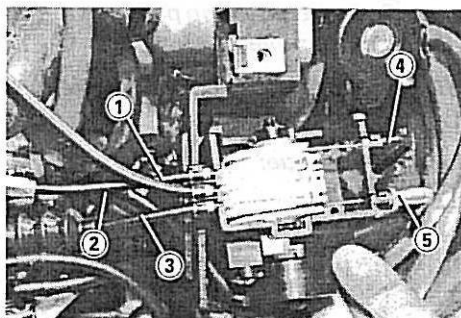
- Install the splitting box ②.

CAUTION:

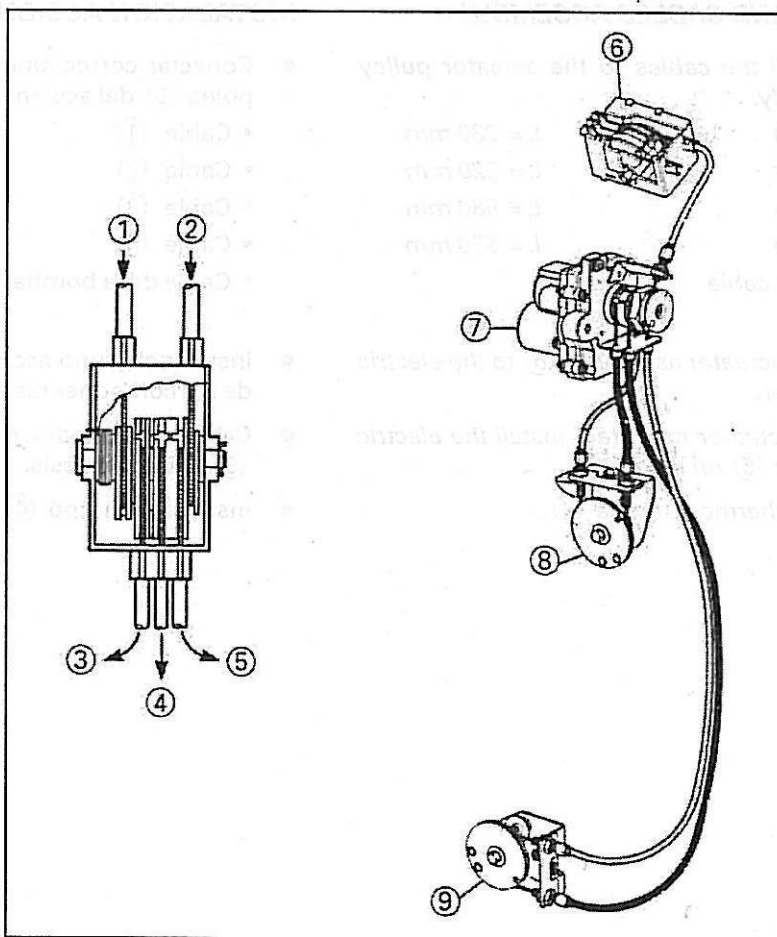
Do not remove the throttle sensor ① from the splitting box ②. This component is pre-set at the factory with very specialized equipment.



- Connect the cables:
 - Right carburettor cable (R) ③
 - Left carburettor cable (L) ①
 - Throttle control cable ⑤
 - Actuator cable ④
 - Oil pump cable ②
- Cover the splitting box properly with its cap.

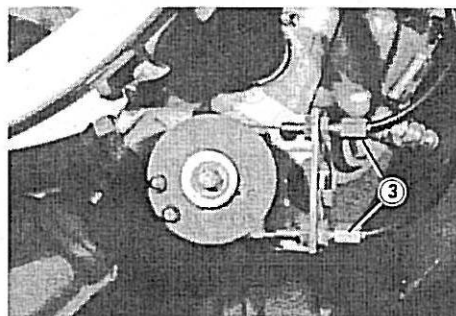
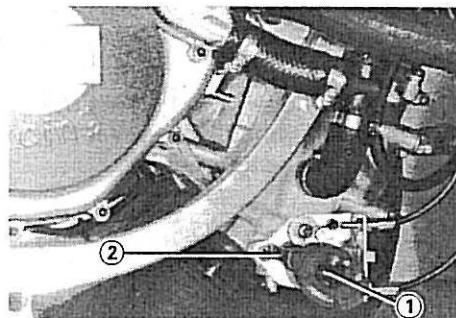


- ① Actuator pulley cable
- ② Throttle control cable
- ③ Oil pump cable
- ④ Left carburettor cable
- ⑤ Right carburettor cable
- ⑥ Splitting box
- ⑦ Exhaust valves actuator
- ⑧ Left valve pulley
- ⑨ Right valve pulley



ENGINE

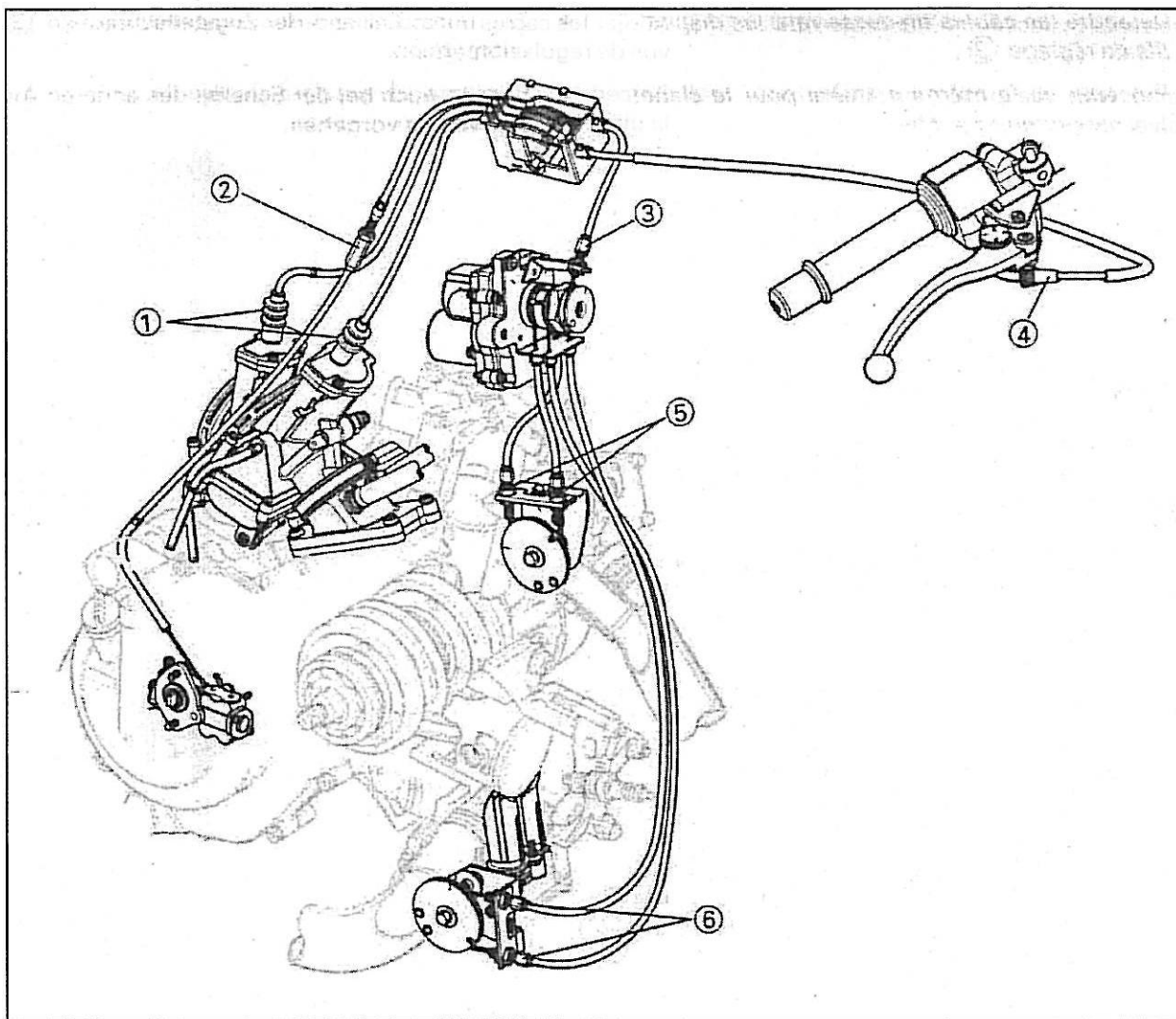
- Connect the exhaust valve control cables to the pulleys.
- Hitch the spring end ② to the pulley lever ① and tighten the pulley mounting screw.
- Slacken the cable by loosening the cable adjusters ③.
- Do the same with the pulley on the other exhaust valve.



EXHAUST VALVE CABLES ADJUSTMENT

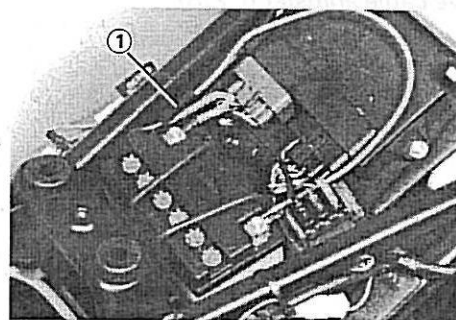
ADJUSTER DEVICES

- ① Adjuster throttle cables on carburetors
- ② Oil pump cable adjuster
- ③ Actuator motor cable adjuster
- ④ Throttle cable control adjuster



CABLES ADJUSTMENT PROCEDURE

- Turn "ON" the ignition switch.
- Engine kill switch is in "RUN" position.
- Connect the free lead wire ① (Grey) near the right side of the battery to the battery \ominus terminal.
- * Actuator slightly moves.



- In this condition, turn "OFF" the ignition switch.
- Disconnect the lead wire from the battery \ominus terminal.
- * Actuator does not move.

- Loosen the lock nuts and turn the exhaust valve cable adjusters ① and ②, until the index line A on the exhaust valve pulley aligns with the index line B on the bracket.

For left cylinder exhaust valve cable (L):

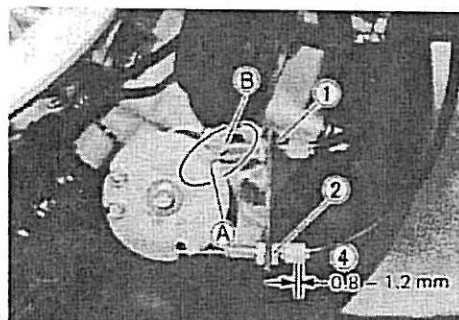
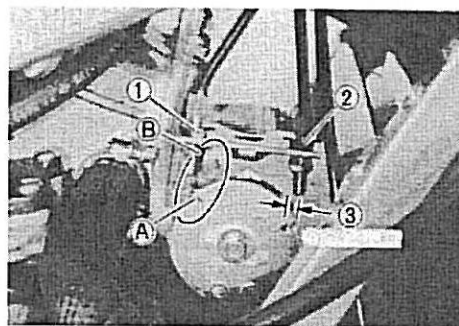
- Give the cable slack ③ as measured by deflection when the inner cable is lightly pushed sideways by finger.

For right cylinder exhaust valve cable (R):

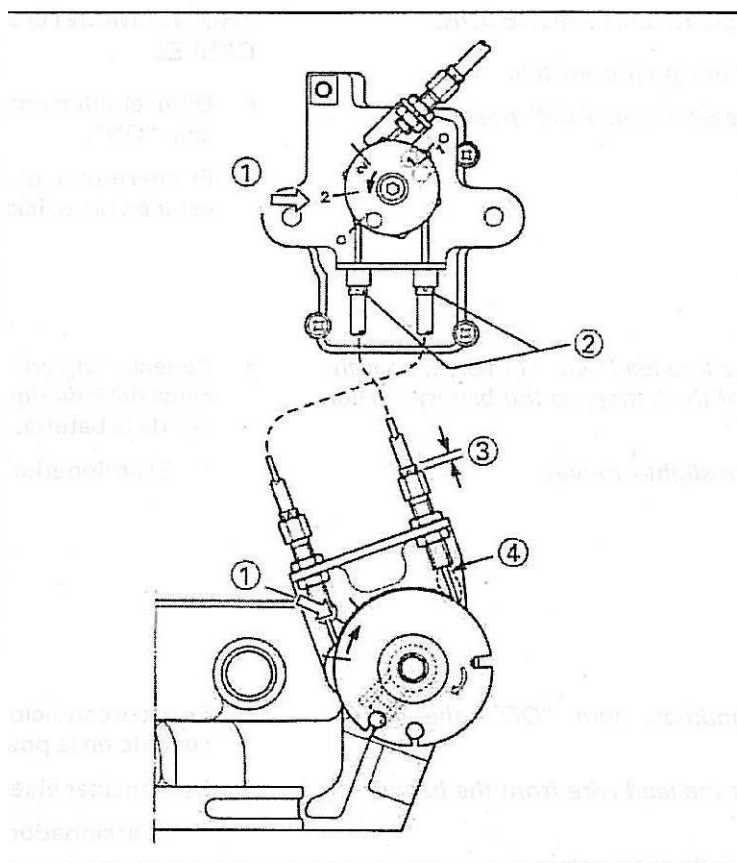
- Give the cable play ④, pulling the sheath with the fingers.
- Tighten the lock nuts.

Lateral cable free play ③ : approx. 3,5 mm

Cable play ④ : 0,8 – 1,2 mm



- ① Inspected position
- ② Fit securely
- ③ For right cylinder 0,8 – 1,2 mm
- ④ For left cylinder, the lateral cable free play is approx. 3,5 mm



ACTUATOR AND EXHAUST VALVES FUNCTION CHECK

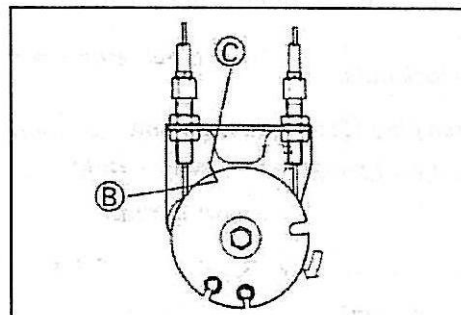
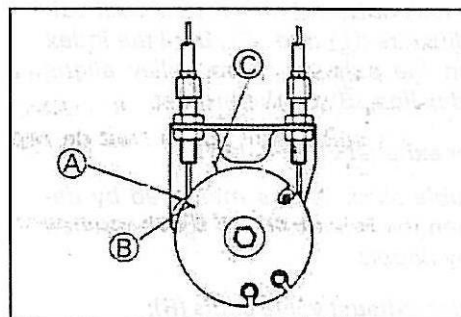
NOTE:

The ignitor checker can be used for this check.

- When the ignition switch is turned ON, the actuator slowly turns until it reaches the full close position ① (from which the operation begins). The mark ② on the pulley aligns with full close mark ① on the bracket.

③ = Full open mark

- Start the engine and raise the revolutions to more than 9.000 ÷ 9.500 rpm and check that the actuator pulley returns to the full open position ③. With the actuator held in this position, the exhaust valve pulley index line should be approximately at the full open mark ③ on the bracket.



OIL PUMP/ACTUATOR CABLE ADJUSTMENT

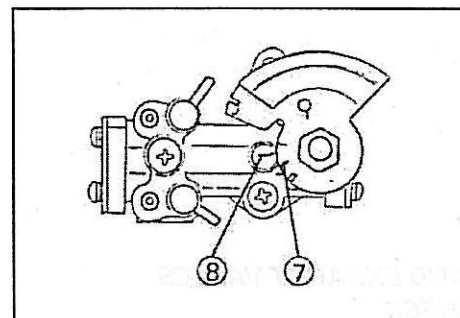
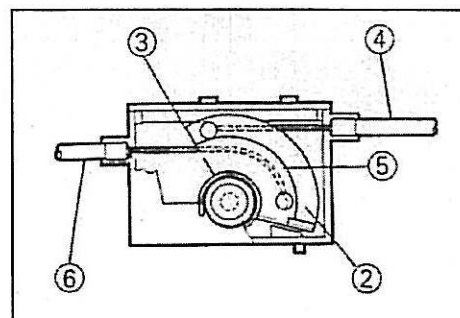
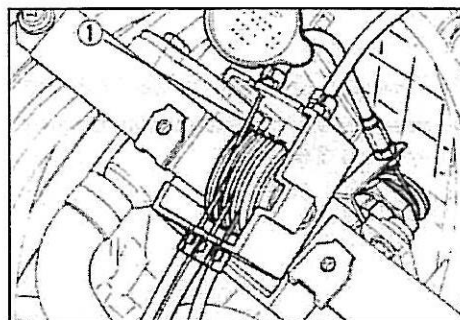
- Verify that the actuator pulley adjustment is properly made.
- Verify that the oil pump cable ④ is properly adjusted relative to the throttle cable (adjusted at the 1/2 opening).
- Verify that the throttle cable is not tensioned.
- Turn the actuator cable adjuster ① to pull the cable and stop it at the position where the oil pump cable pulley ② begins to move. At this position, set the actuator cable adjuster and tighten the lock nut.

CAUTION:

This adjustment must be made when the splitting box is positioned in the actual location.

NOTE:

- ③ Actuator cable play: 0 mm
- ④ Oil pump cable
- ⑤ Actuator pulley cable
- ⑥ Actuator cable
- The oil pump lever line ⑦ must come approximately to the line ⑧ on the body when the engine is revved over 9.500 rpm.



ENGINE DISASSEMBLY

- Remove the kick starter lever.

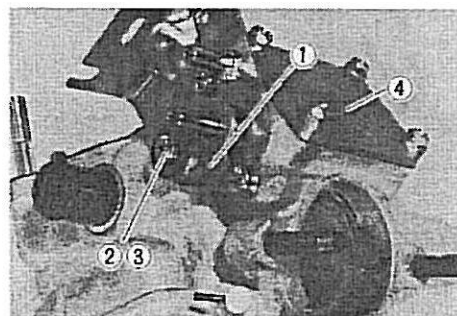
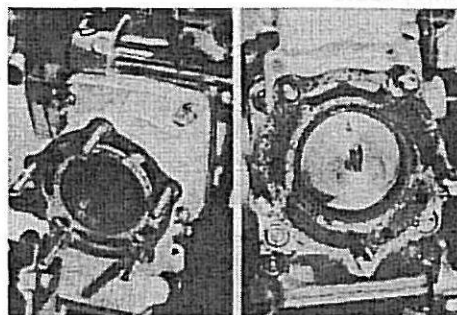
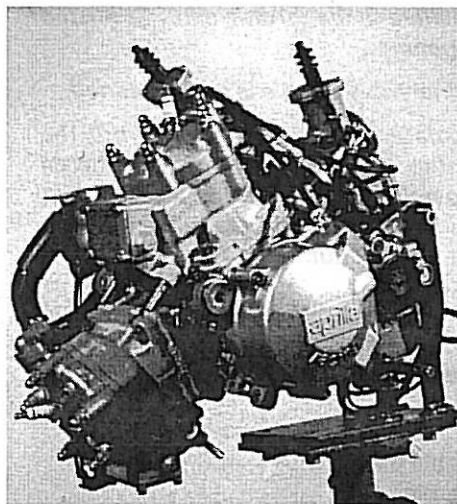
Tightening torque: 18 – 28 Nm (1,8 – 2,8 kgm)

- Remove the cylinder heads.

- Remove the cylinders.

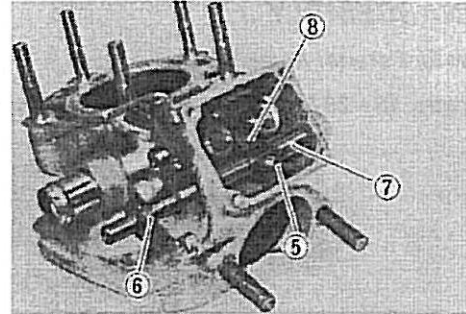
- Remove the exhaust valve pulley ①.

- Remove the exhaust valve lever set screw ② and washer ③.
- Remove the exhaust valve pulley lever ①.
- Remove the cover ④ from the cylinder.

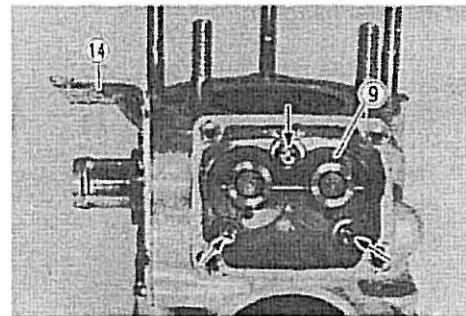


ENGINE

- Loosen the exhaust valve shaft arm screw ⑤.
- Pull out the shaft ⑥.
- Remove the spacer ⑦.
- Remove the exhaust valve shaft arm ⑧.

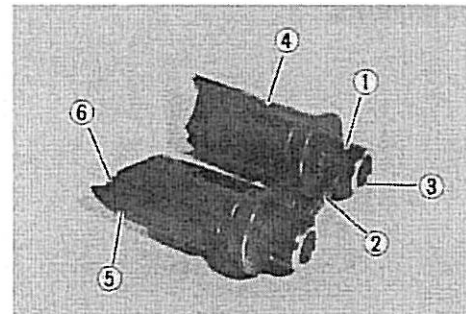


- Slide out the exhaust valve assembly ⑨.



- Remove the following parts:

- ① Spring
- ② Pin
- ③ Spacer
- ④ Valve guide
- ⑤ No. 1 valve
- ⑥ No. 2 valve



- Remove the bracket ⑭.
- Remove the oil seal ⑮.

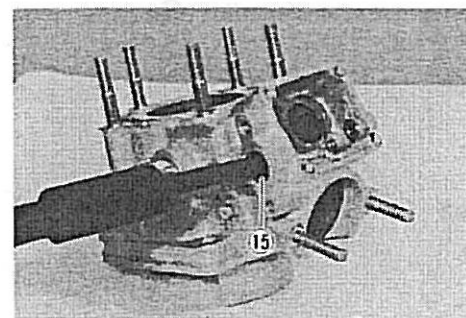
Bush remover: 8600392

NOTE:

Disassemble the Right cylinder in the same way as the Left.

CAUTION:

Do not confuse the disassembled parts from the Left and Right cylinders.



ENGINE

- Place a cloth beneath the piston so as not to drop the parts in the crankcase, and remove the circlip.

- Remove the piston, piston pin bearing and thrust washers.

Piston pin pulley: 8600388

NOTE:

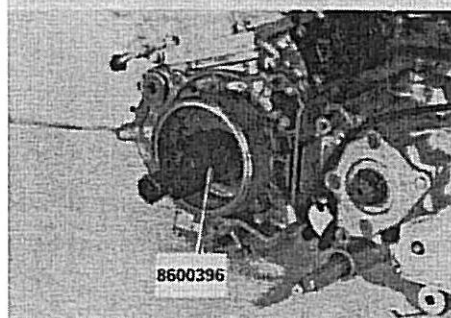
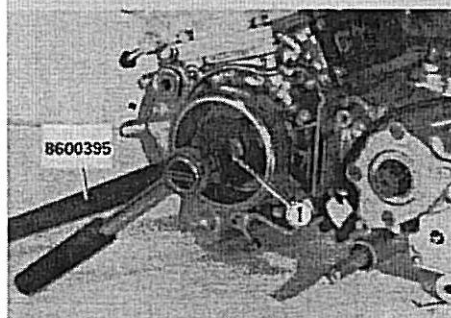
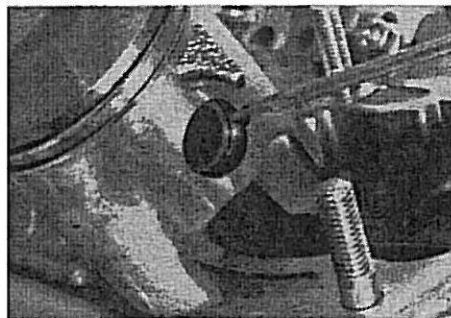
Inscribe the corresponding cylinder No. on the piston crown.

- Remove the magneto rotor nut ①, holding the rotor with the special tool.

Rotor holder: 8600395

- Remove the rotor with the special tool.

Rotor remover: 8600396



ENGINE

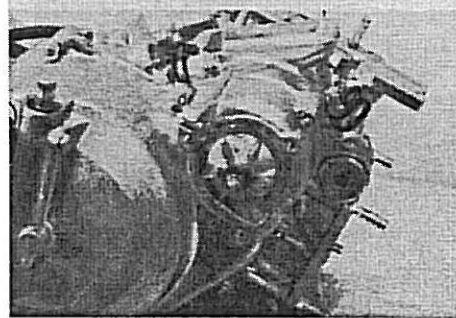
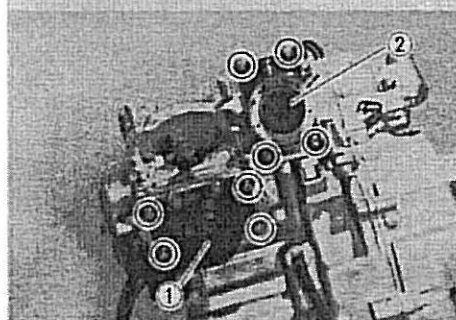
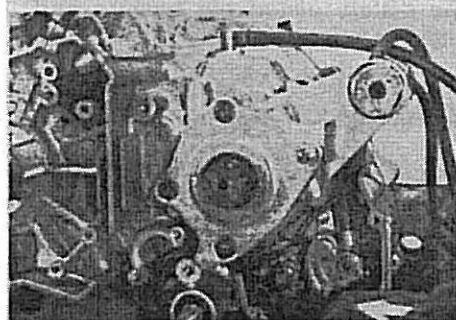
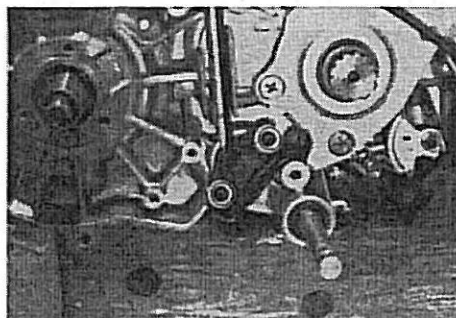
- Remove the circlip from the drive shaft with snap ring pliers.

- Remove the oil pump.
- Remove the neutral switch, O-ring, switch contact and spring.

- Remove the intake pipes ① and ②.
- Remove the reed valves.

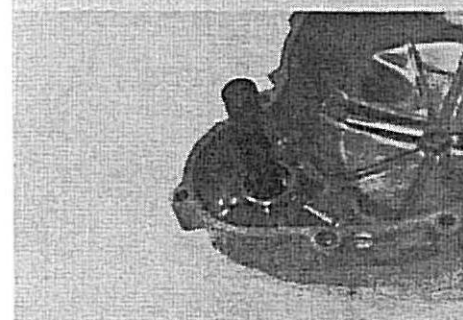
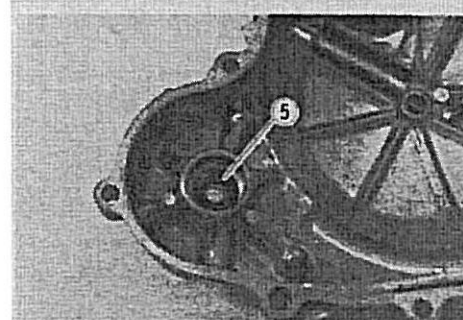
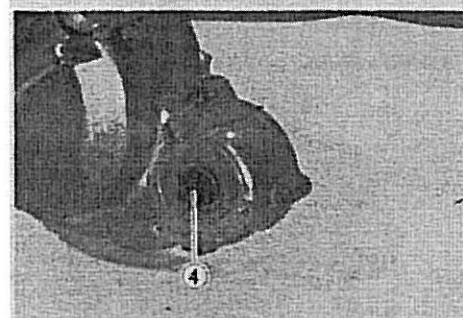
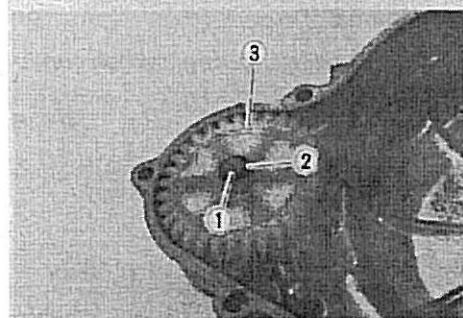
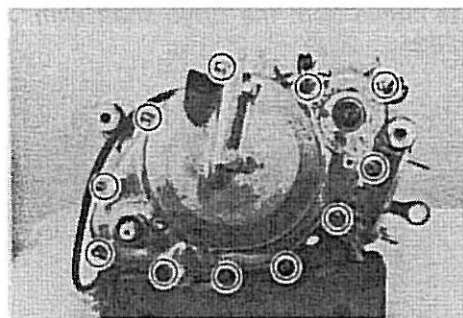
- Remove the water pump case.

- Remove the impeller.



- Remove the clutch cover and gasket.
- Remove the water pump driven gear circlip ①.
- Remove the wave washer ②.
- Remove the water pump driven gear ③.
- Remove the pin and washer.
- Remove the water pump shaft ④.
- Remove the water pump shaft oil seal ⑤.
- Remove the mechanical seal.

Bearing installer: 8600393



- Remove the clutch springs and pressure plate with clutch release rack.

Conrod holder: 8600387

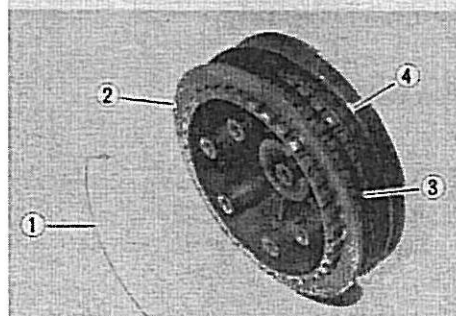
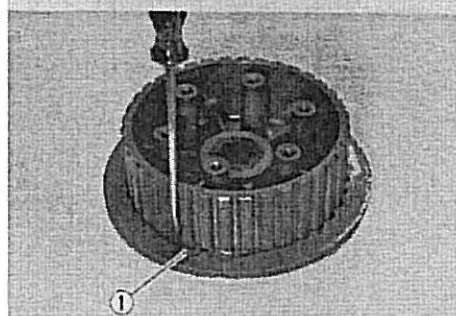
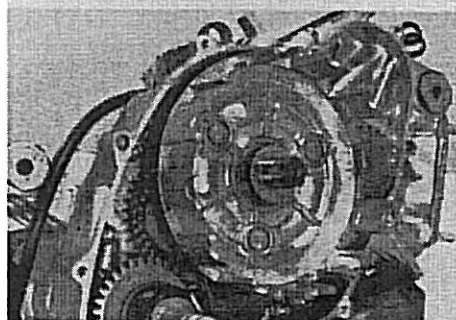
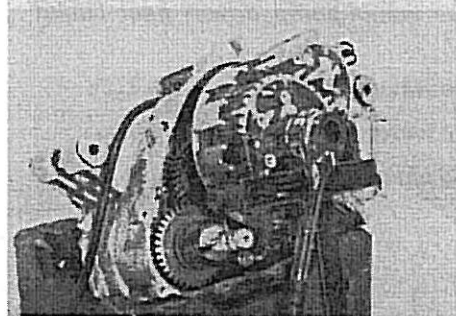
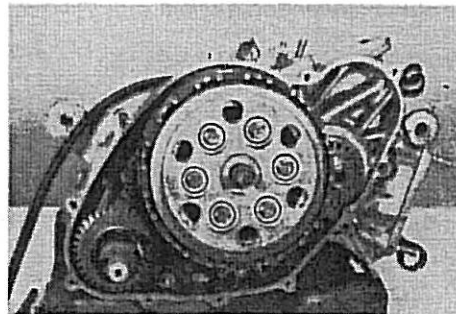
- Flatten the clutch sleeve hub nut lock washer with a chisel.
- Hold the clutch sleeve hub securely with a clutch sleeve hub holder and loosen the hub nut with a socket wrench.

Clutch sleeve hub holder: 8600391

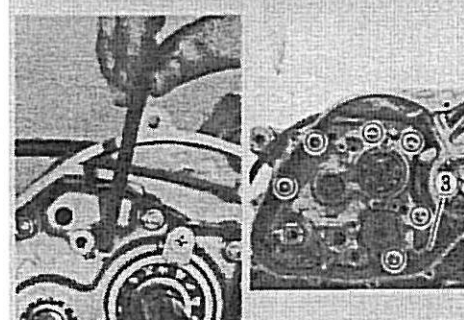
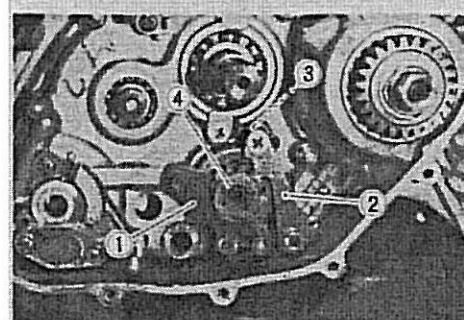
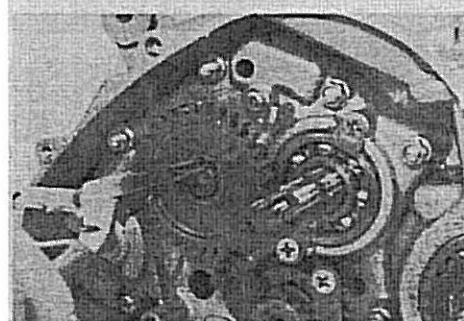
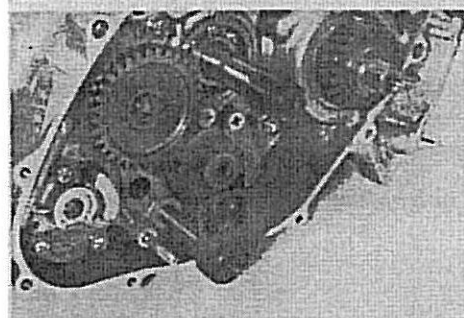
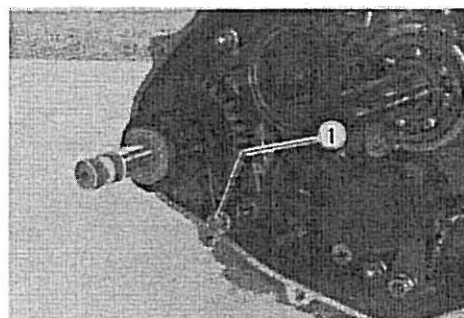
- Remove the clutch sleeve hub, thrust washer and primary driven gear.

- Remove the clutch sleeve hub assembly and disassemble the following parts:

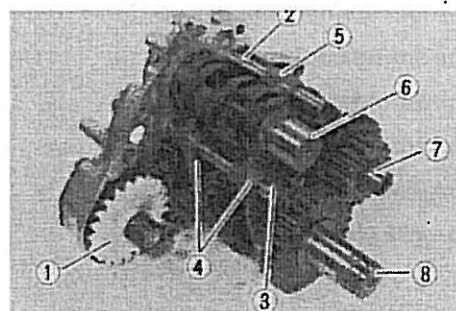
- ① Ring
- ② Driven plate No. 2
- ③ Wave washer
- ④ Wave washer seat



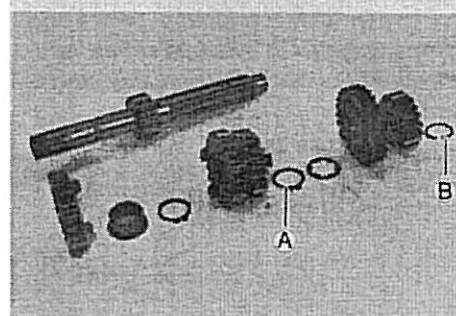
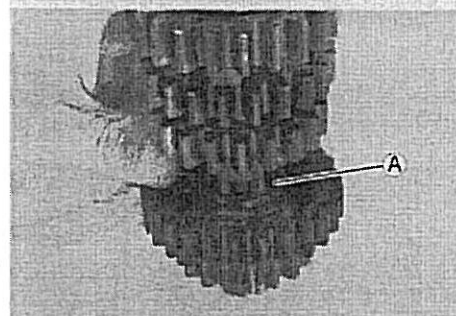
- Remove the kick spring stopper nut ①.
 - Remove the spring hook.
 - Remove the spring guide.
 - Remove the spring.
 - Remove the kick gear.
 - Remove the kick shaft.
-
- Remove the gearshift shaft.
-
- Remove the circlip with the special pliers and detach the flat washer or wave washer, whichever is fitted. Then, draw out the kick starter idle gear and washer.
-
- Remove the pawl lifter ①, cam guide ②, cam stopper ③ and driven gear ④.
-
- Remove the transmission oil pipe.
 - Loosen the nuts of the transmission gearcase.



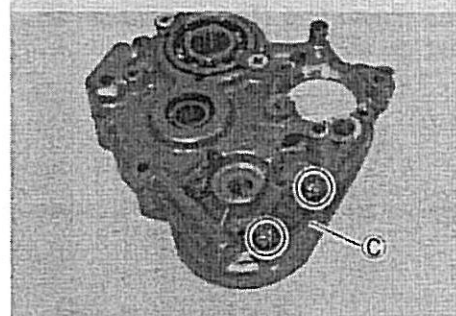
- Remove the oil pump driven gear ①.
- Pull out the gearshift fork shafts ② and ③, and remove the gearshift forks ④ and ⑤.
- Pull out the gearshift cam shaft ⑥.
- Remove the countershaft ⑦ and drive shaft ⑧.
- Disassemble the gears following the instructions below.



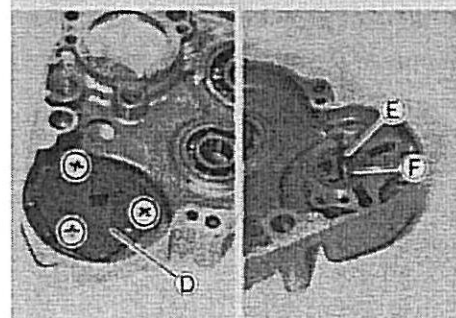
- Countershaft gears: to disassemble the 2nd drive gear, the ring (B) should be removed after the circlip (A).



- Remove the oil pump strainer (C).



- Remove the oil pump cover (D).
- Pull off the pump shaft (E) and pin (F).



NOTE:

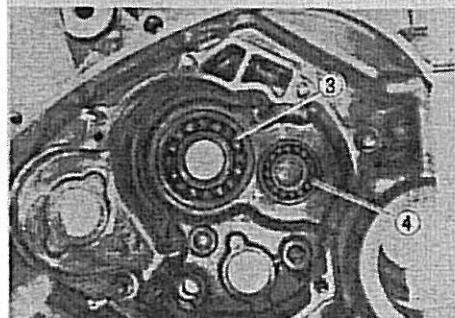
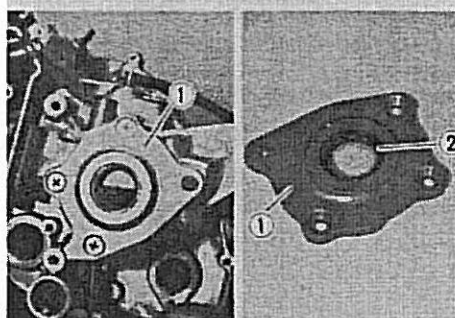
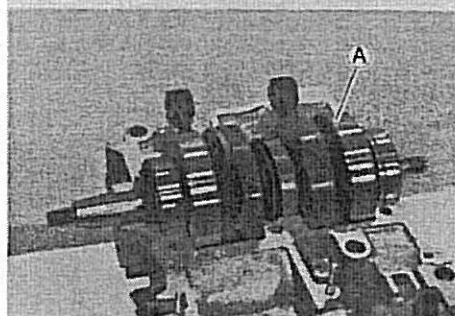
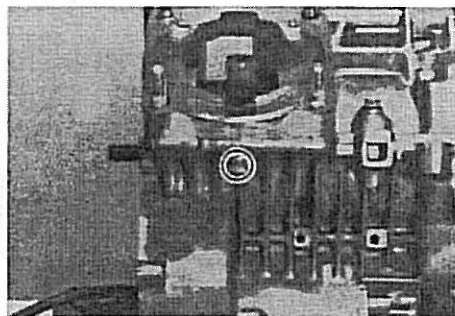
When loosening the bolts, proceed with smaller diameter bolts first. Also, loosen them evenly little by little in a diagonal fashion.

- Separate the crankcase halves evenly at front and at rear.

Crankcase disassembling tool: 8600389

- Remove the crankshaft (A) from the crankcase.

- Remove the countershaft bearing retainer (1).
- Remove the oil seal (2) from the retainer.
- Carefully force out the drive shaft left bearing (3).
- Remove the countershaft left bearing (4) after slightly heating the crankcase.



ENGINE COMPONENTS INSPECTION AND SERVICING

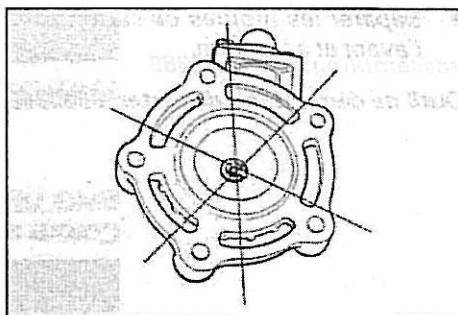
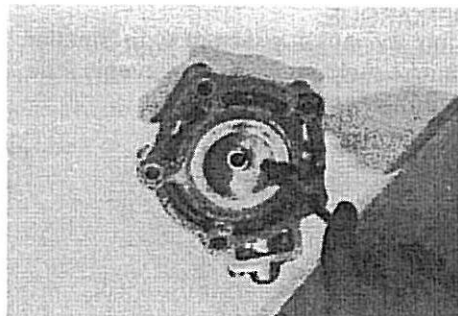
CYLINDER HEAD

Remove the carbon and clean the cylinder head. Check for scratches on the mating surface. Check the gasketed surface of the cylinder head for distortion with a straightedge gauge or faceplate and thickness gauge, taking a clearance reading at several places indicated.

If the higher of the values recorded exceeds the limit indicated, replace the head.

Service limit: 0,1 mm

If the highest reading at any portion of the straightedge does not exceed the limit, rework the surface by rubbing it against emery paper (of about # 400) laid flat on the surface plate in a lapping manner. The gasketed surface must be smooth and perfectly flat in order to secure a tight joint. A leaky joint can be the cause of reduced power output and increased fuel consumption.



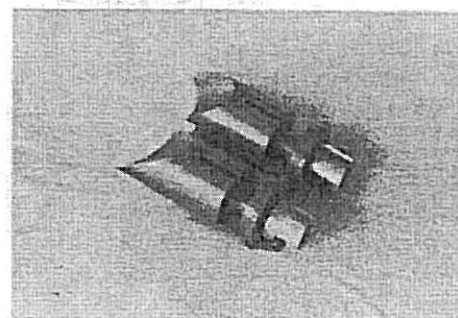
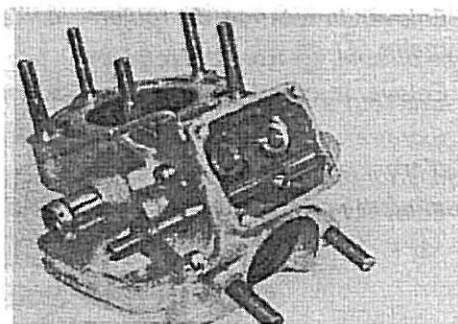
CYLINDER AND EXHAUST VALVE

Move the exhaust valve by hand and check that it rotates smoothly.

Remove the exhaust valves from the respective cylinders.

Decarbon the exhaust port, exhaust valves and the upper part of the cylinder, taking care not to damage the cylinder liner surface.

Inspect the exhaust valve and cylinder sliding surface for nicks, scratches, wear or other damage.



ENGINE

CYLINDER LINER

Inspect the cylinder liner for nicks, scratches or other damage.

PISTON

DECARBONING

Decarbon the crown of the piston and piston ring grooves. After cleaning the grooves, fit the rings and rotate them in their respective grooves to be sure that they move smoothly.

Carbon in groove is liable to cause the piston ring to get stuck in the groove, and this condition will lead to reduced engine power output.

A piston whose sliding surface is badly grooved or scuffed due to overheating must be replaced.

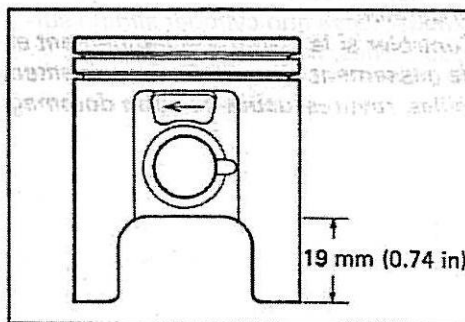
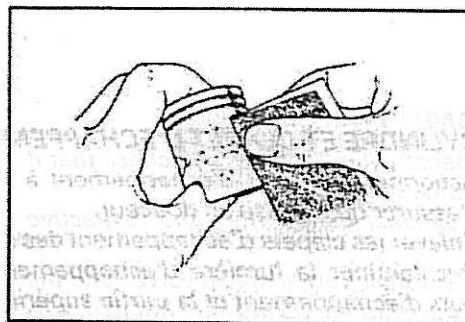
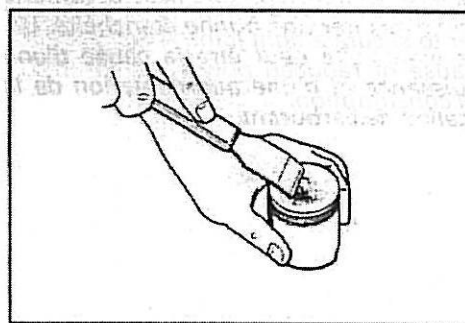
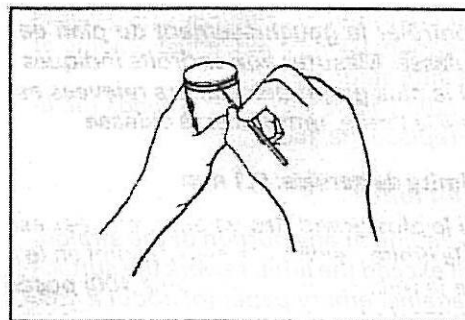
- Shallow grooves or minor scuff can be removed by grinding with emery paper of about # 400.

PISTON DIAMETER

Using a micrometer, measure the piston outside diameter at the place 19 mm from the skirt end as shown in the illustration.

If the measurement is less than the limit, replace the piston with a new one.

Service limit: 55,880 mm



ENGINE

PISTON-CYLINDER CLEARANCE

As a result of the above measurement, check that the piston to cylinder clearance does not exceed the limit shown below.

Service limit: 0,120 mm

PISTON PIN BORE

Using a caliper gauge, measure the piston pin bore inside diameter.

If reading exceeds the following service limit, replace the piston with a new one.

Service limit: 16,036 mm

PISTON PIN OUTSIDE DIAMETER

Using a micrometer, measure the piston pin outside diameter at the three positions indicated.

Service limit: 15,980 mm

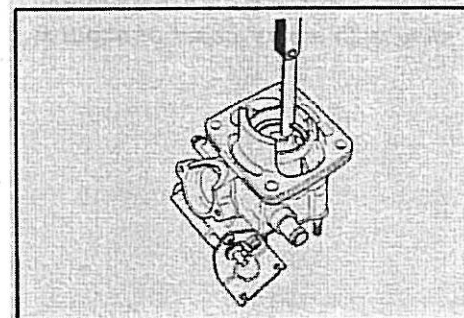
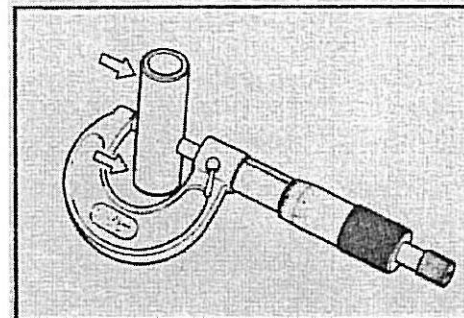
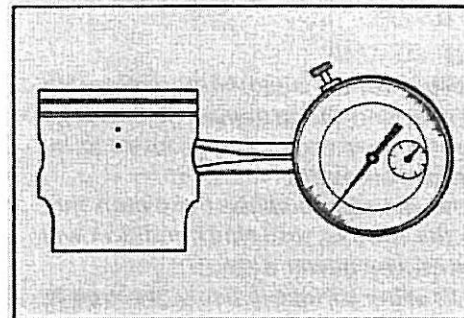
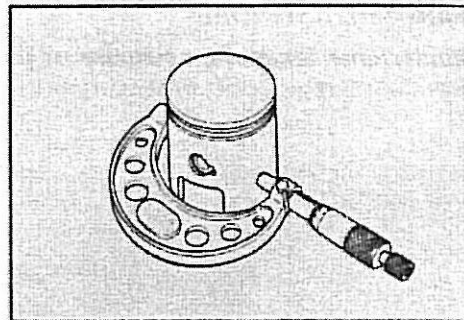
PISTON RINGS

PISTON RING END GAP

Check each ring for cutting clearance, reading the gap with a thickness gauge as shown in the illustration. If the cutting clearance is found to exceed the limit, indicated below, replace it with a new one.

The cutting clearance of each ring is to be measured with the ring fitted squarely into the cylinder bore and held at the least worn part near the cylinder bottom, as shown in the illustration.

Service limit: 0,70 mm



PISTON RING FREE CUTTING CLEARANCE

As the piston ring wears, its end gap increases reducing engine power output because of the resultant blowby through the enlarged gap. Here lies the importance of using piston rings with cutting clearance within the limit.

Measure the piston ring free cutting clearance to check the spring tension.

Service limit (top ring): 4,0 mm

Service limit (2nd ring): 4,8 mm

PISTON RING TO GROOVE CLEARANCE

Fix the piston ring in the piston ring groove, measure the ring side clearance with the thickness gauge while matching the sliding surface of piston and ring.

Standard clearance

Top ring: 0,02 - 0,06 mm

2nd: 0,02 - 0,06 mm

NOTE:

Top ring and 2nd ring differ in the shape.

Be sure to bring the "T"-marked side to top when fitting them to the piston.

① Top ring

② 2nd ring

③ Expander ring

BEARINGS

Wash the bearing with cleaning solvent and lubricate with motor oil before inspecting.

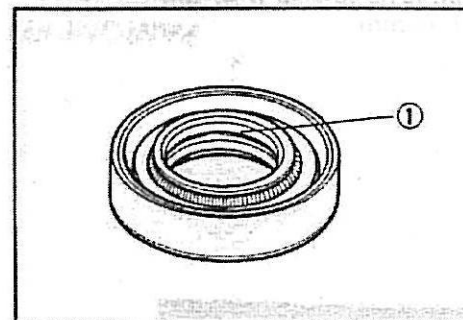
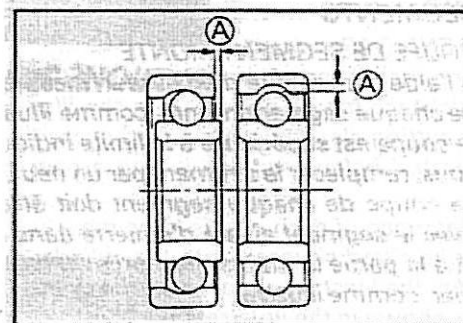
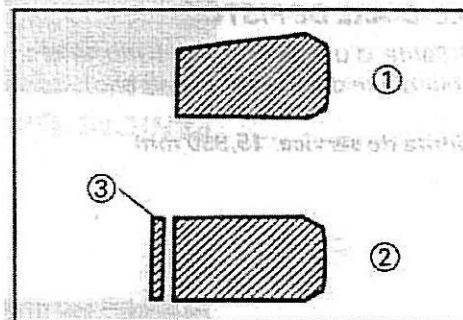
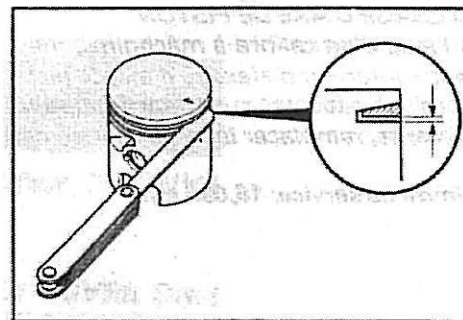
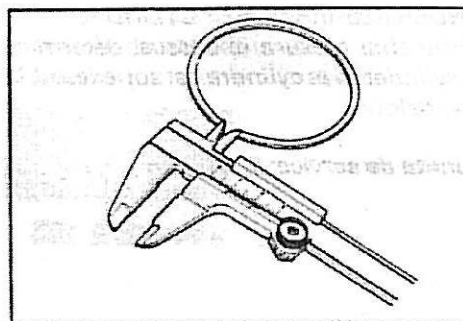
Turn the inner race and check to see that it turns smoothly.

If it does not turn lightly, quietly and smoothly, or if noise is heard, the bearing is defective and must be replaced with a new one.

Ⓐ Clearance

OIL SEALS

Damage to the lip ① of the oil seal may result in leakage of the fuel-air mixture or oil. Inspect for damage and be sure to replace damaged oil seals with new ones.



CRANKSHAFT

CRANKSHAFT RUNOUT

Support crankshaft on "V" blocks, with the dial gauge rigged to read the runout as shown.

Service limit: 0,05 mm

Excessive crankshaft runout is often responsible for abnormal engine vibration. Such vibration shortens engine life.

CONDITION OF BIG END BEARING

Turn the crankshaft with the conrod to feel the smoothness of rotary motion in the big end. Move the rod up and down while holding the crankshaft rigidly to be sure that there is no rattle from the big end.

Wear on the big end of the conrod can be estimated by checking the movement of the small end of the rod. This method can also check the extent of wear on the parts in contact with the conrod's big end.

If wear exceeds the limit, conrod, crank pin and crank pin bearing should all be replaced.

Service limit: 3,0 mm

CONROD SMALL END BORE I.D.

Using a caliper gauge, measure the conrod small end diameter.

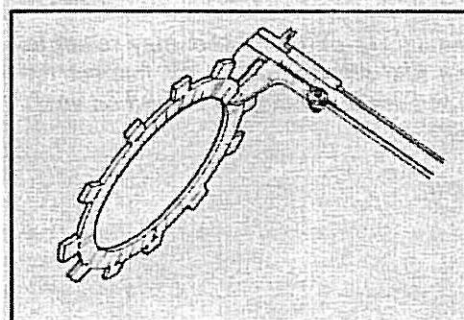
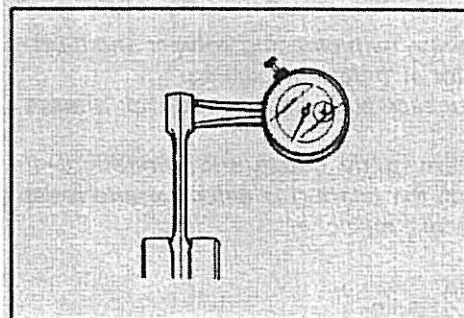
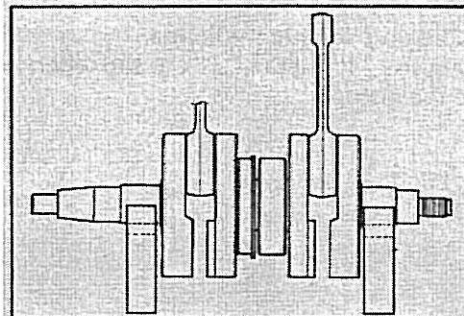
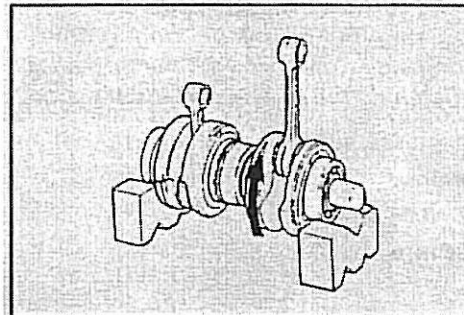
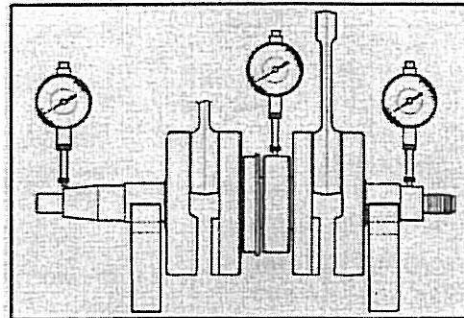
Service limit: 20,047 mm

CLUTCH

CLUTCH PLATES

Clutch plates in service remain oily as they are lubricated with oil. Because of this condition, both drive and driven plates are subject to little wearing action and therefore last much longer. Their life depends largely on the quality of oil used in the clutch and also on the way the clutch is operated.

Checking thickness



These plates are expendable; they are meant to be replaced when found worn down or distorted to the respective limit: use a caliper to check thickness and a thickness gauge and surface plate to measure distortion.

Distortion limit

Service Limit	Drive plate	Driven plate
Thickness	2,69 mm	–
Distortion	–	0,1 mm
Claw width	15,3 mm	–

Checking claw width

CLUTCH SPRING FREE LENGTH

Measure the free length of each coil spring with vernier calipers to compare the elastic strength of each with the specified limit. Replace all the springs that are not within the limit.

Clutch spring free length

Service limit: 34,77 mm

CLUTCH BEARING

Inspect clutch bearing for any abnormality, particularly cracks, upon removal from the clutch, to decide whether it can be reused or should be replaced. Smooth engagement and disengagement of the clutch depends much on the condition of this bearing.

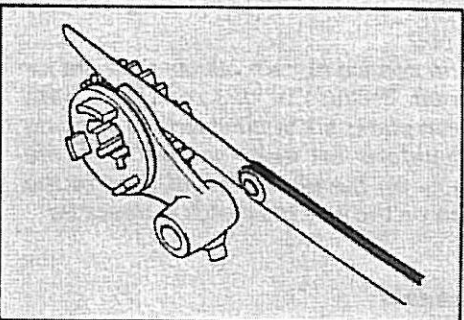
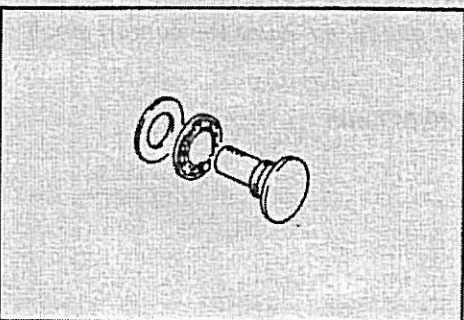
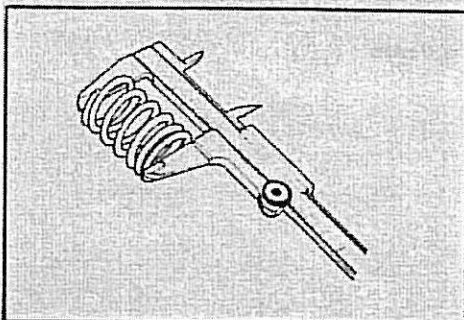
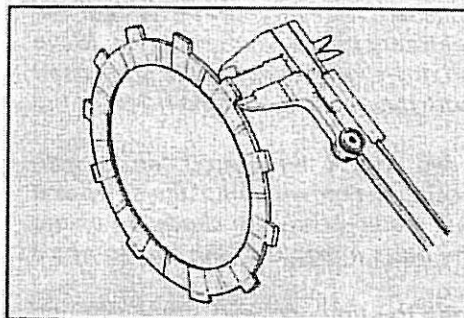
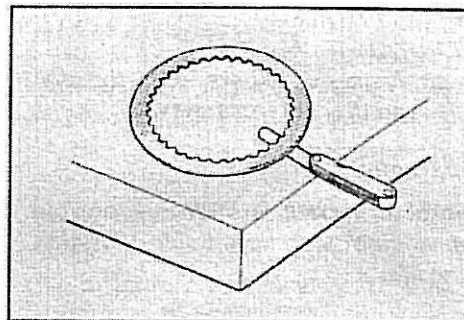
NOTE:

Thrust washer is located between the pressure plate and thrust bearing.

GEARSHIFT FORK CLEARANCE

Using a thickness gauge, check the shifting fork clearance in the groove of its gear.

This clearance for each of the three shifting forks plays an important role in the smoothness and positiveness of shifting action. Each fork has its prongs fitted into the annular groove provided in its gear.



In operation, there is sliding contact between the fork end and gear and, when a shifting action is initiated, the fork pushes the gear axially.

Too much a clearance is, therefore, liable to cause the meshed gears to disengage.

If the clearance checked is noted to exceed the limit specified, replace the fork or its gear, or both.

Shift fork-groove clearance:

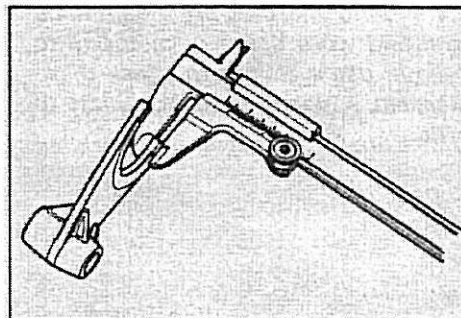
Service limit: 0,5 mm

Shift fork groove width

Standard	No. 1 & No. 2	4,0 - 4,1 mm
	No. 3	5,5 - 5,6 mm

Shift fork thickness

Standard	No. 1 & No. 2	3,8 - 3,9 mm
	No. 3	5,3 - 5,4 mm



ENGINE REASSEMBLY

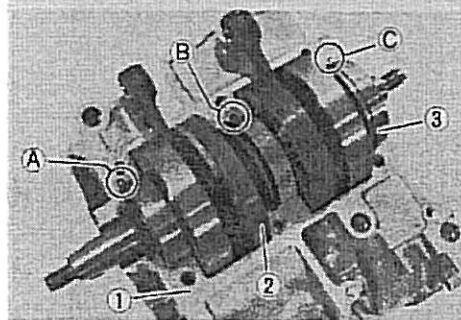
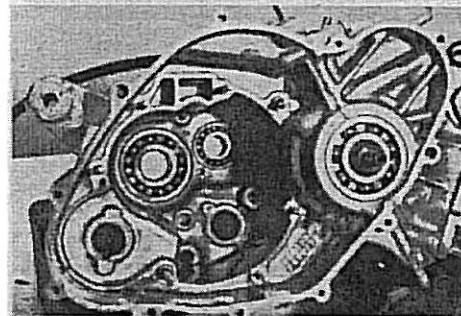
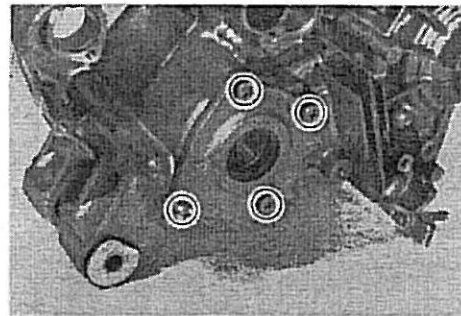
This engine is reassembled by carrying out the steps of disassembly in the reverse order, but there are a number of steps which demand special descriptions or precautionary measures.

NOTE:

Apply engine oil to each running and sliding part before reassembling.

- Apply a little grease to the oil seal lip.
- Install the drive shaft bearing retainer together with the gasket.
- When tightening the screws, apply **THREE BOND No. 1215** to threads.

THREE BOND No. 1215: 8600403



- Position the crankshaft ② in the crankcase lower half ①. Fit the bearing locating pins ④, ⑤ and ⑥ at the mating face as shown. Also, insert the O-ring ③ into the crankcase groove properly.

CAUTION:

Position the oil seal squarely to the crankshaft.

- Apply oil to the bearings.

NOTE:

Keep the crankcase mating surface clean, free from oil.

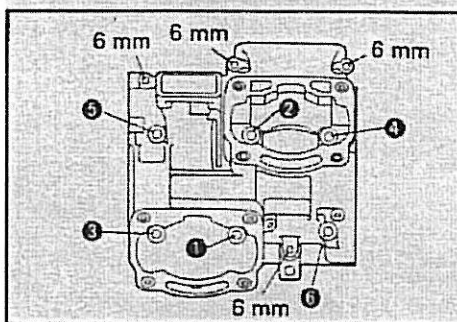
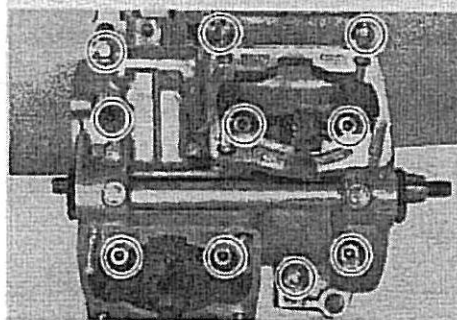
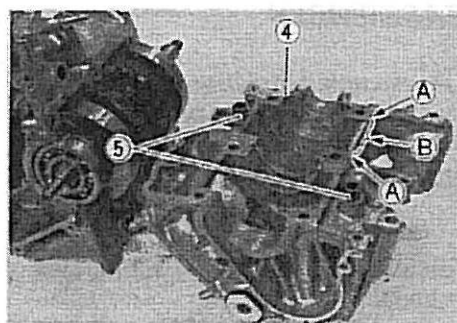
ENGINE

- Coat the crankcase upper half mating surface ④ with THREE BOND No. 1215.

NOTE:

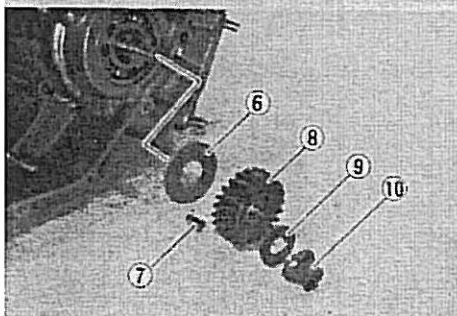
- * THREE BOND No. 1215 should be coated evenly and continuously.
- * Care should be taken not to apply THREE BOND No. 1215 so thick as to block the oil passage ①.
- * Do not coat THREE BOND No. 1215 in the area shown as ②.
- Press in the dowel pin ⑤ by hand.
- Position the upper crankcase half properly and tighten the bolts. When tightening, proceed with larger diameter bolts, then smaller bolts. With the same diameter bolts in one group, tighten them evenly in a diagonal fashion.

Crankcase bolt tightening torque	8 mm	Initial tightening	12 - 16 Nm (1,2 - 1,6 kgm)
		Final tightening	20 - 24 Nm (2,0 - 2,4 kgm)
	6 mm		9 - 13 Nm (0,9 - 1,3 kgm)



- Assemble the following parts:
primary drive gear washer ⑥; key ⑦; primary drive gear ⑧; lock washer ⑨ and primary drive gear nut ⑩

Tightening torque: 60 - 80 Nm (6 - 8 kgm)



- Tightening the nut ⑩ with the crankshaft locked with the special tool.

Conrod holder: 8600387

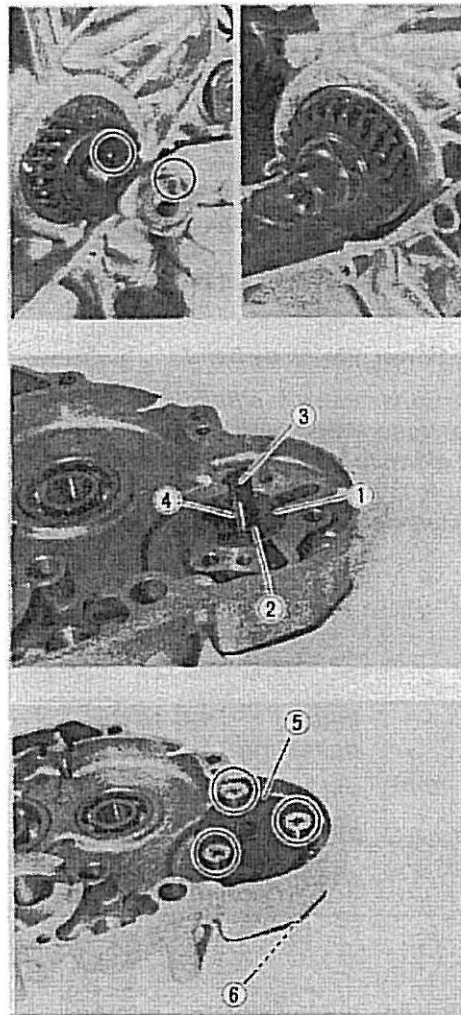
- Bend the washer (9) to prevent the nut from loosening.

NOTE:

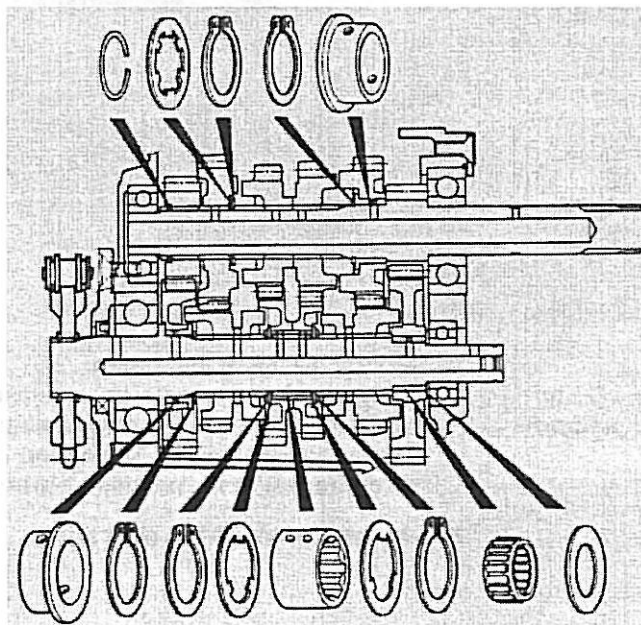
Check that the crankshaft rotates smoothly by hand.

- *Assemble the following oil pump parts:*

trochoid oil pump outer rotor ①; trochoid oil pump inner rotor ②; pump shaft ③; pin ④ (to be installed as shown in the photograph); oil pump cover ⑤ and oil strainer ⑥.

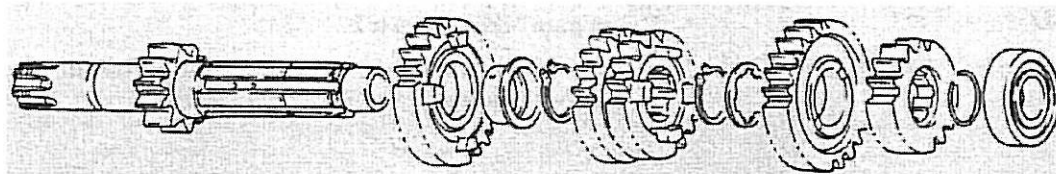


TRANSMISSION GEARS AND RELATED PARTS

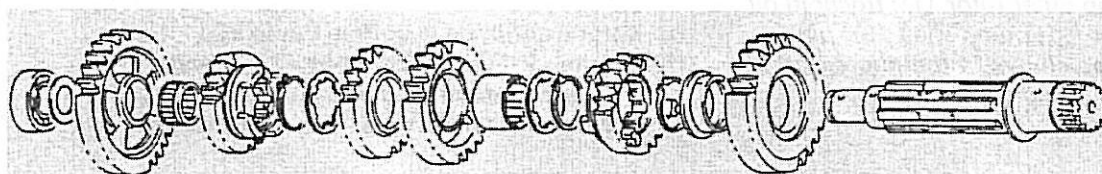


ENGINE

COUNTERSHAFT



DRIVESHAFT ZERO SECONDARIO



COUNTERSHAFT

- Assemble the countershaft gears. The circlip **(B)** locating the 2nd drive gear **(A)** in position should be fitted before the circlip **(C)** is fitted in the shaft groove.
- When mounting circlip, pay attention to the direction of the circlip. Fit it to the side where the thrust is as shown in the figure with the rounded side against the gear surface.

① Thrust

② Sharp edge

NOTE:

Always use a new circlip.

CAUTION:

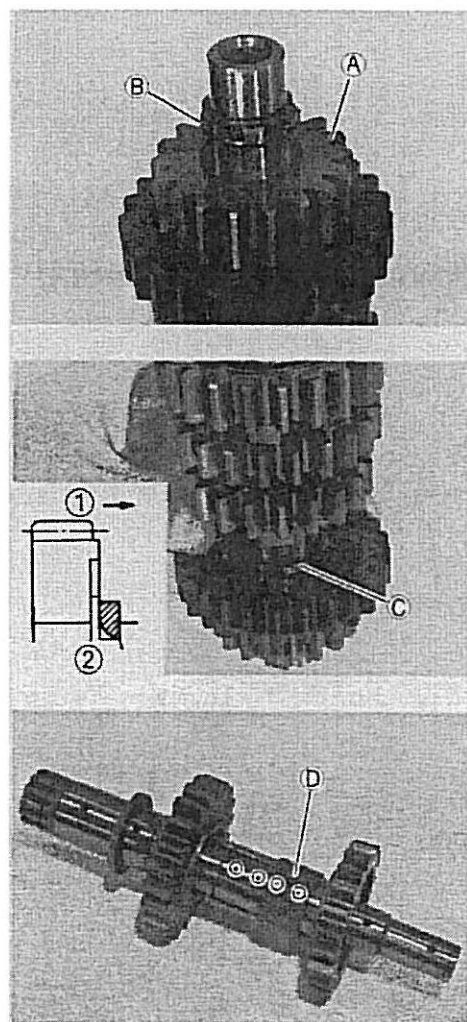
Never reuse a circlip after a circlip has been removed from a shaft. A used circlip should be discarded and a new circlip must be installed.

When installing a new circlip, care must be taken not to expand the end gap larger than required to slip the circlip over the shaft.

After installing a circlip, always insure that it is completely seated in its groove and securely fitted.

DRIVESHAFT

- Slide the bushing **(D)** over the shaft with its oil holes aligned with the driveshaft oil holes.



- Assemble the drive shaft gears, countershaft gears and the following shifter parts on the transmission case:
shifting cam shaft ①; shifting forks ② & ③;
shifting fork ④ and shifting fork shafts ⑤ & ⑥.

NOTE:

The three forks ②, ③ and ④ are different one from the other.

Fork ④'s shape makes it easily distinguishable from the other two.

To distinguish forks ② and ③, pay particular attention to the following points:

- * Fork ③ (positioned on the chain sprocket side) has a painted yellow stamp dot and both faces of the hole machined.
- * Fork ② has only one face machined whereas the other is rough.
- * If both forks ② and ③ have an unmachined hole surface, they may be assembled indifferently. In this case there is no painted stamp.

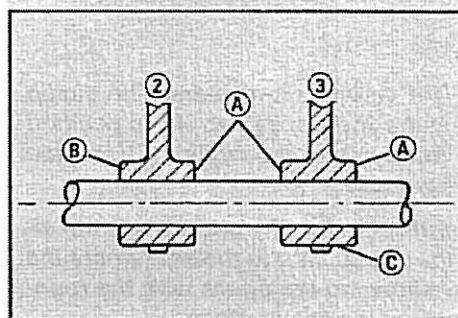
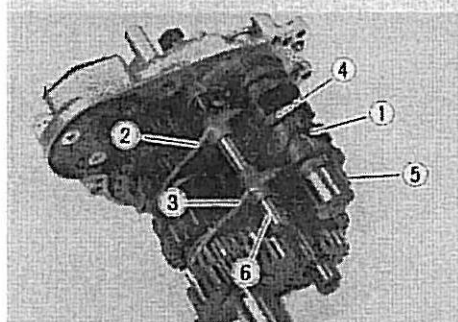
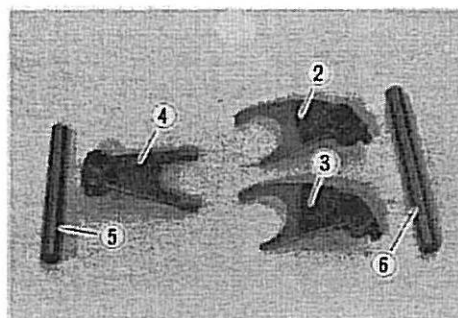
CAUTION:

If it is necessary to replace fork ③ and/or the 6th secondary gear, bear in mind that the pieces are not interchangeable.

It is thus necessary to check that fork ③ and 6th secondary gear codes mate as shown in the table.

- Ⓐ Machined surface
- Ⓑ Unmachined surface
- Ⓒ Painted yellow dot
- ② ③ Forks

Gear type	Forks	6th secondary gear
A	①cod. 8600329	Cod. 8600304
	② ③cod. 8600328 (one face unmachined)	
B	①cod. 8600329	Cod. 8600405
	②cod. 8600328 (one face unmachined)	
	③cod. 8600404 (both faces machined)	



- Ⓐ Superficie lavorata
- Ⓑ Superficie non lavorata
- Ⓒ Bollino di vernice gialla
- ② ③ Forchette

ENGINE

- Fit the springs ②, pins ③ and pawls ④ on the shifting cam driven gear ①.
- The pawl shape is not symmetrical. Install the wider width side facing the gear as shown.

- Insert the counter shaft bearing retainer ⑤ and shifting cam driven gear subassembly into the shifting cam shaft.

Apply **LOCTITE® 221**

- Install the gearshift pawl filter ⑥.
- Install the gearshift cam stopper ⑦ and spring ⑧.

Tightening torque: 15 – 23 Nm (1,5 – 2,3 kgm)

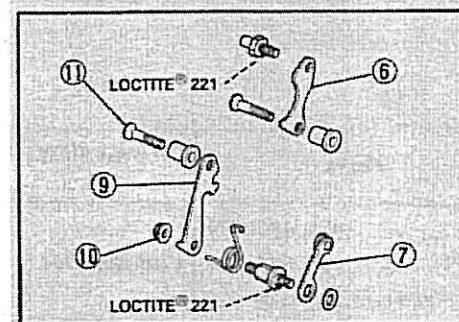
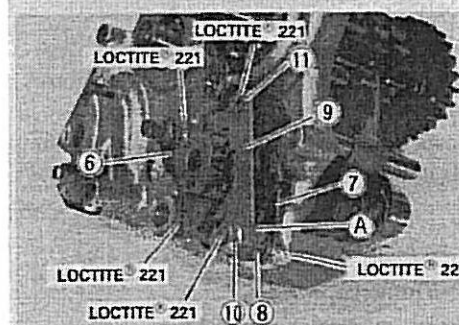
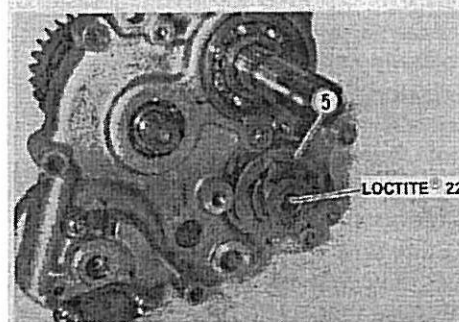
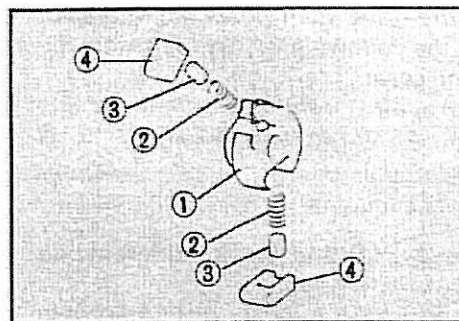
- With the spring hook **A** hitched on the shifting cam guide ⑨, install the guide by first tightening the nut ⑩ lightly and then tighten the screw ⑪.
- All threads must be secured with thread lock cement.

Apply **LOCTITE® 221**

NOTE:

Verify that all gears and shifting parts function smoothly as designed by manually operating the mechanism.

- Install the oil pump gear ⑫.



- Install the transmission subassembly into the crankcase.
- Care must be taken at this time not to cause damage on the oil seal lip by the drive shaft being inserted ⑬.

- Insert the oil pump spacer ⑭.
- Apply oil to the spacer.

- Tighten all the nuts ① and ② except for ③ which is tightened after the kick starter shaft is installed.

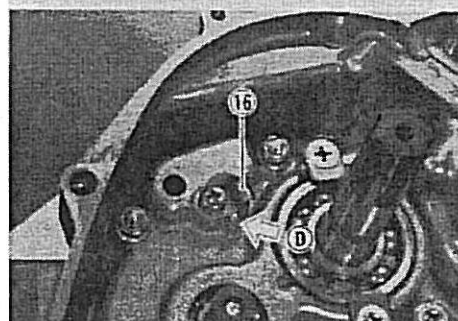
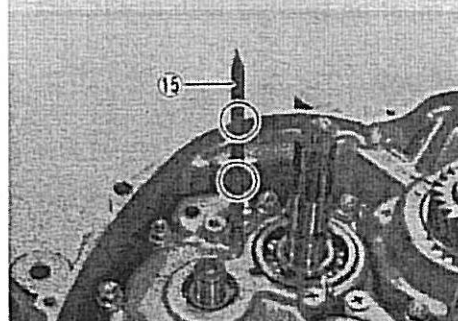
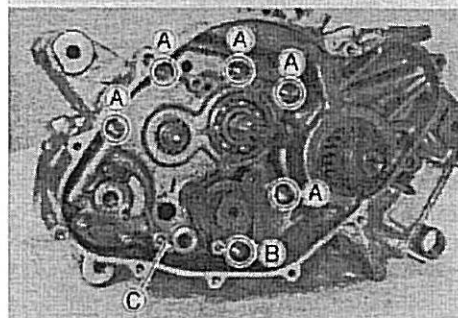
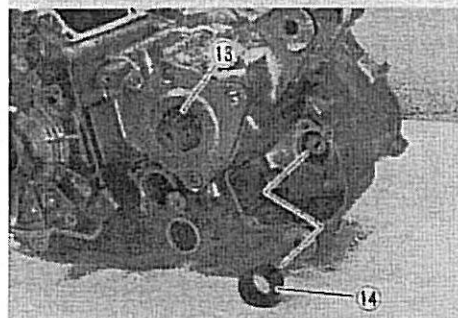
Tightening torque: 8 – 12 Nm (0,8 – 1,2 kgm)

- Insert the oil guide ⑮.
- Install the oil guide stopper ⑯.

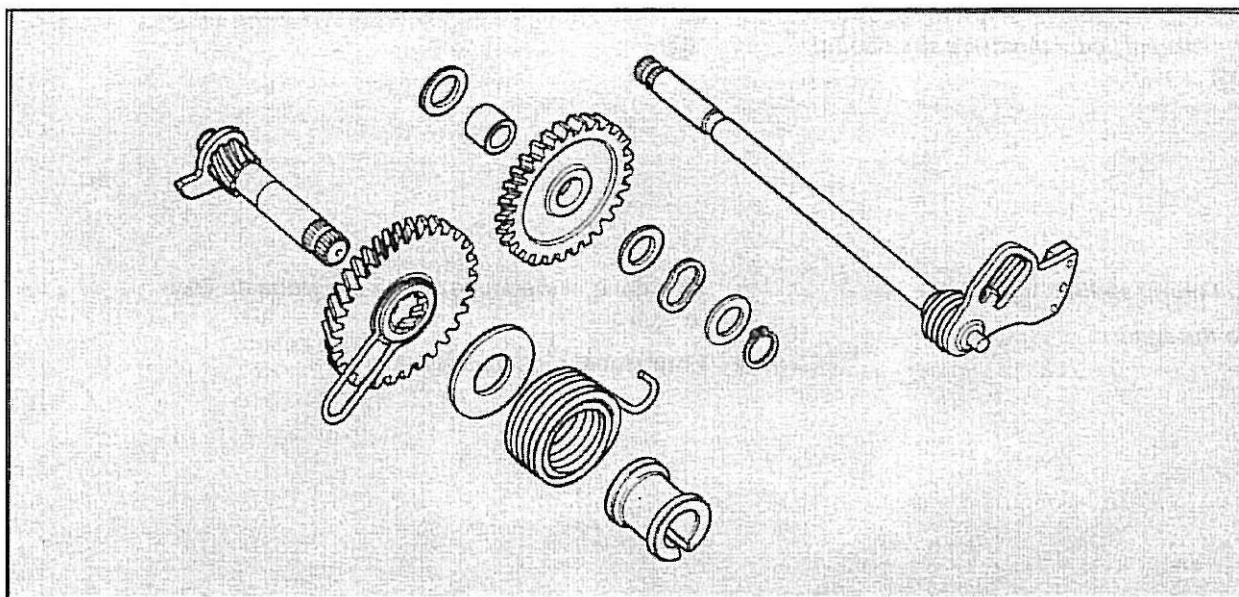
NOTE:

When inserting the oil guide, be sure that the open end faces inside, with the oil dump holes facing downwards.

It is possible to check that the oil pipe is in the right position by marking sure that hole ④ in the part of the pipe which sticks out faces towards the bearing.

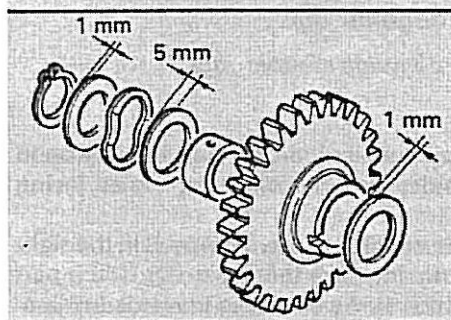
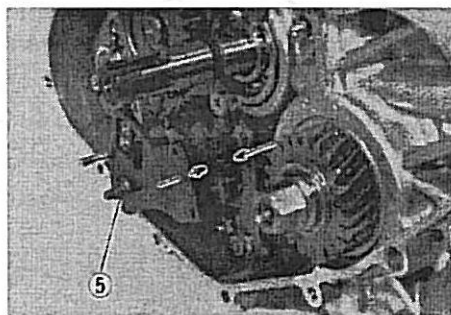


KICK STARTER

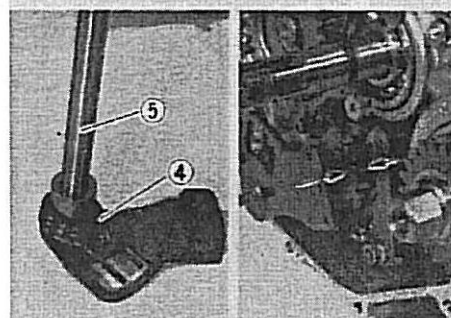


- Install the kick starter idler gear together with washers, bushing, spring washer and circlip as shown.
- Install the kick starter shaft stopper. Thread lock should be applied to the screw threads.

Apply **LOCTITE® 221**

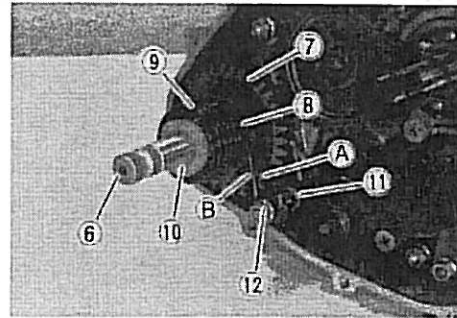


- Fit the return spring (4) on the gearshift shaft (5).
- Insert the gearshift shaft and engage its gear with the driven gear so that the center teeth of these two gears mesh as shown.

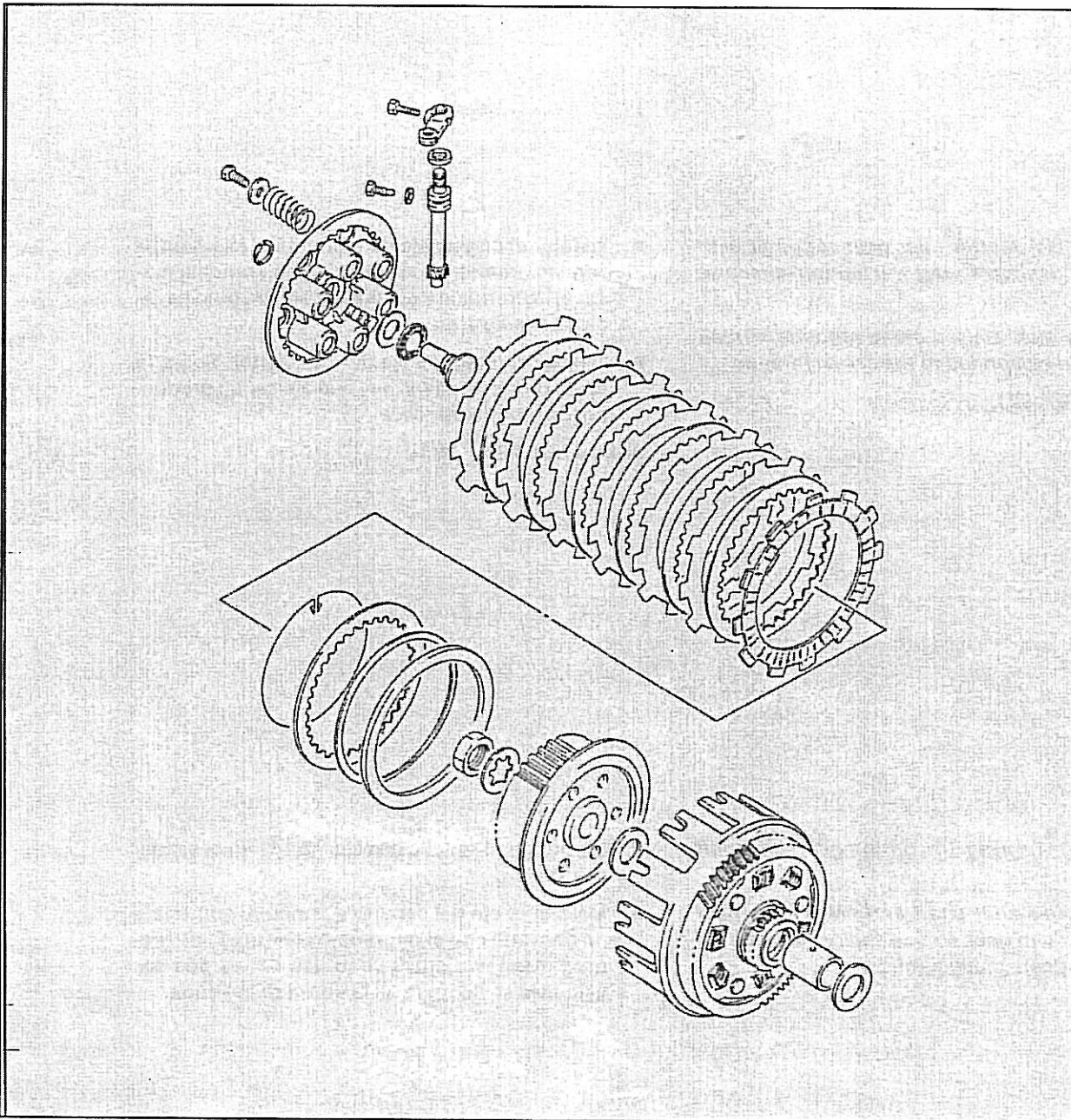


ENGINE

- Install the following parts:
kick starter shaft ⑥; kick starter gear ⑦;
washer ⑧; spring ⑨; spring guide ⑩ and
spacer ⑪.
- Fit the kick starter gear spring hook (A) to the
spacer ⑪.
- Also fit the kick starter gear spring hook (B) to
the spacer ⑪.
- Tighten the kick starter spring stopper nut
⑫.



CLUTCH



- Install the following clutch housing parts: washer ①; clutch housing ②; spacer ③ and washer ④.

NOTE:

The washer ① is 3 mm thick and washer ④ is 2 mm thick.

- Prepare the clutch sleeve hub subassembly ⑤ using the following parts: wave washer seat ⑥; wave washer ⑦; clutch driven plate No. 2 ⑧ and ring ⑨.

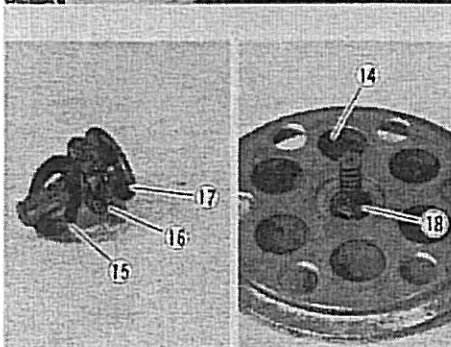
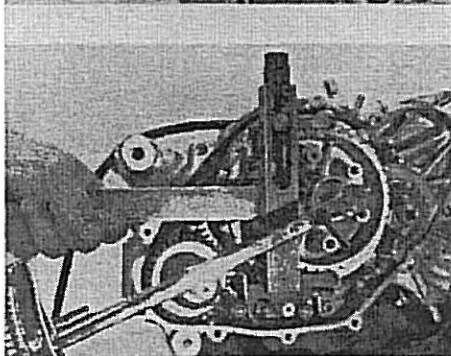
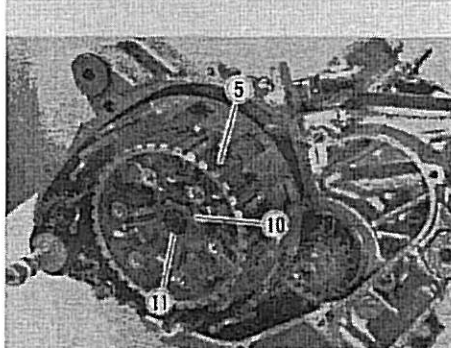
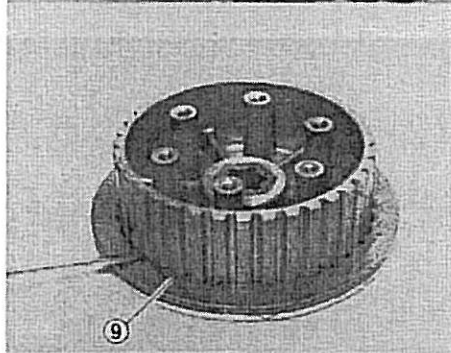
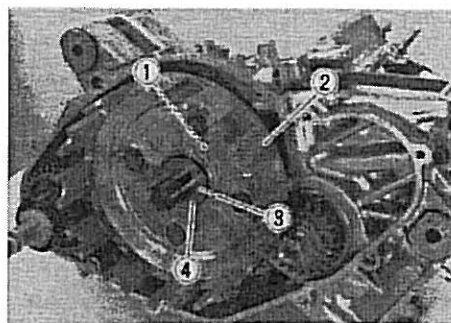
- Install the clutch sleeve hub subassembly ⑤ using lock washer ⑩ and nut ⑪.

- When tightening the nut ⑪, lock the sleeve hub rotation with special tool.

Tightening torque: 40 – 60 Nm (4,0 – 6,0 kgm)

Clutch sleeve hub holder: 8600391

- Bend the washer to prevent the nut from loosening.
- Install alternately a clutch drive plate and a driven plate in the clutch housing. Oil all the plates.
- Prepare the pressure plate subassembly using the following parts: washer ⑮; bearing ⑯; release rack ⑰ and circlip ⑱.



ENGINE

- Position the pressure plate subassembly (14) and springs (19) and tighten the bolts to specification.

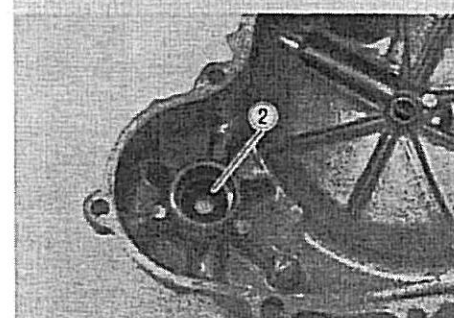
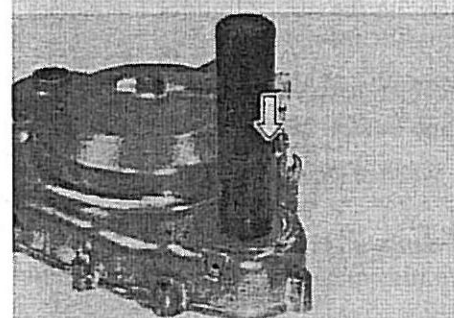
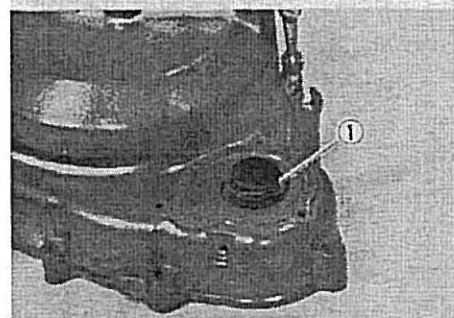
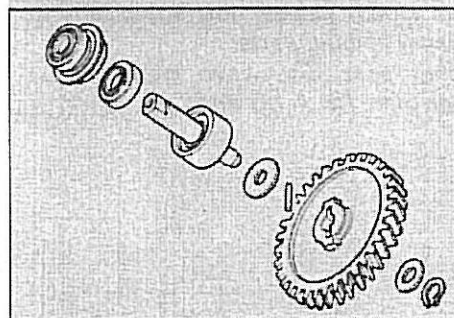
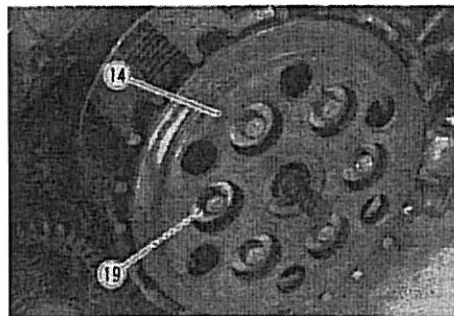
Tightening torque: 8 - 12 Nm (0,8 - 1,2 kgm)

- Apply **THREE BOND No. 1215** to the water pump mechanical seal housing (1) and press in the clutch cover with the special tool.

THREE BOND No. 1215 : 8600403

Bearing installer: 8600390

- Install the oil seal (2).



ENGINE

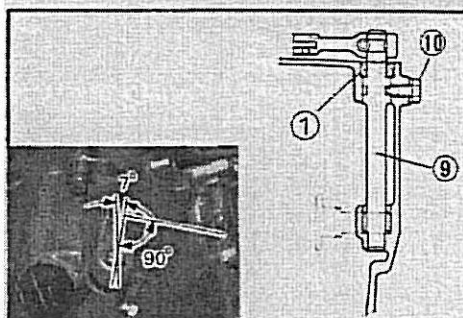
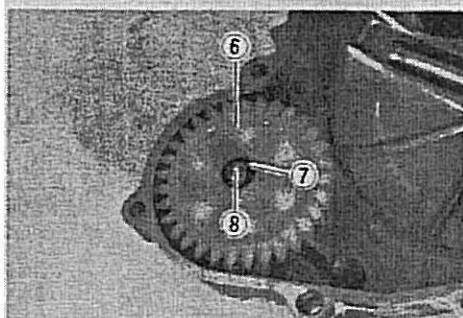
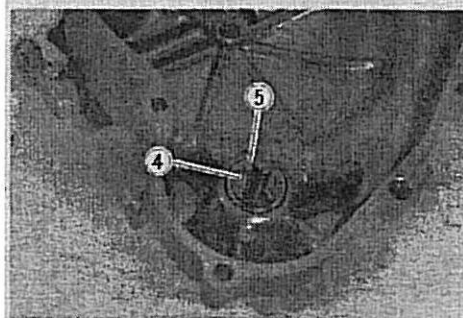
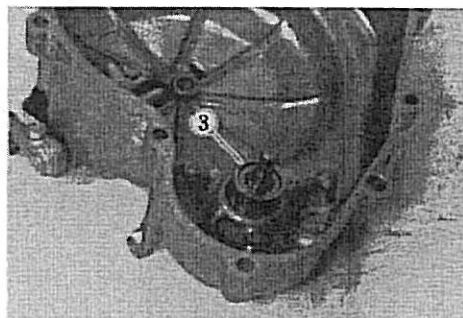
- Insert the water pump shaft assembly ③.
- At this time, use care not to bend the oil seal lip.

Bearing installer: 8600393

- Assemble the following parts on the pump shaft:
washer ④; pin ⑤; water pump gear ⑥;
spring washer ⑦ and circlip ⑧.

- Insert the clutch release pinion ⑨ into the clutch cover and tighten the stopper bolt ⑩.

① Oil seal



ENGINE

- Apply **THREE BOND** No. 1215 to the crankcase mating surface at the areas **(A)**, each 20-30 mm in length.

NOTE:

- * When assembled, position the clutch release rack so that the teeth face the release pinion.
- * Fit the clutch cover subassembly to the crankcase so that the water pump gear and clutch release rack engage properly with the respective gears in the crankcase.

Tightening torque: 6 – 10 Nm (0,6 – 1,0 kgm)

- In position **(B)** the clamp must be assembled with the screw.

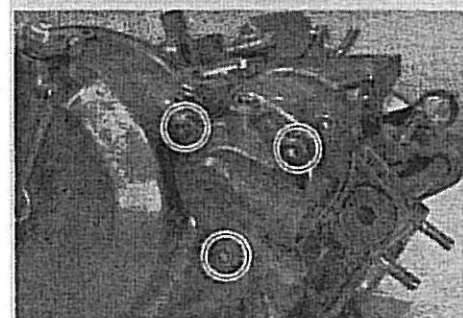
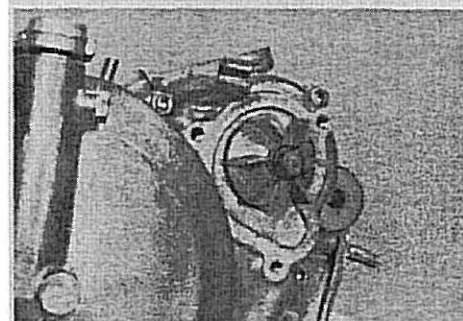
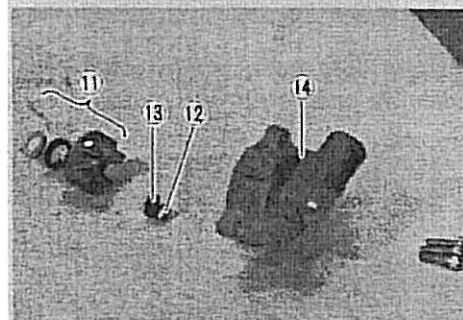
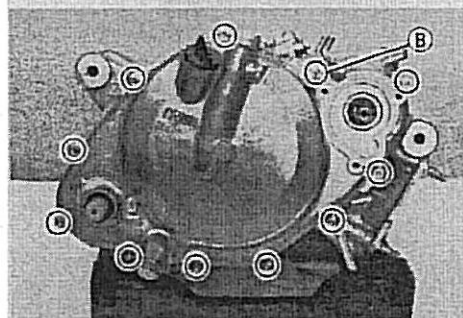
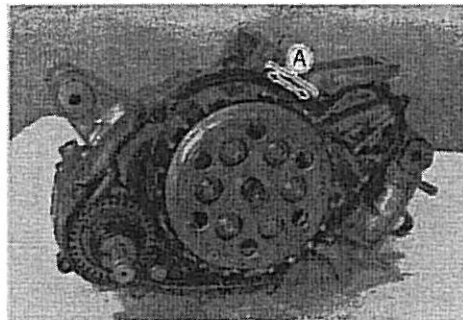
- Position the impeller **(11)** on the shaft.
- When installing the mechanical seal, make sure that the painted mark faces inside. Also, apply soapsuds for initial lubrication.
- Using the bolt, wave washer **(12)** and gasket washer **(13)**, tighten the impeller.

Tightening torque: 7 – 9 Nm (0,7 – 0,9 kgm)

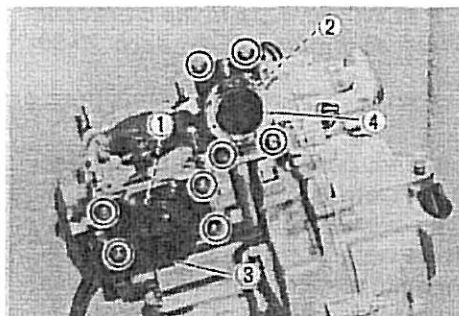
- The gasket should be positioned with its sealing face contacting the impeller.

- Install the water pump case **(14)**.

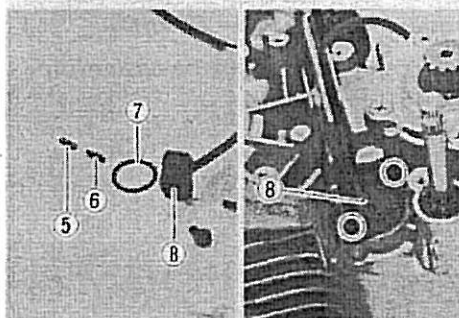
Tightening torque: 6 – 10 Nm (0,6 – 1,0 kgm)



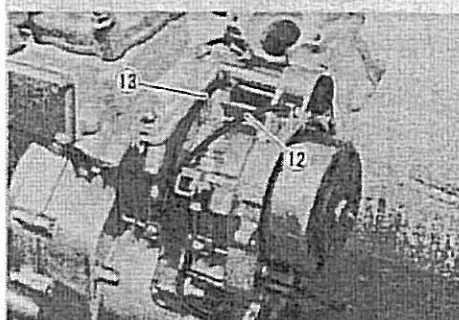
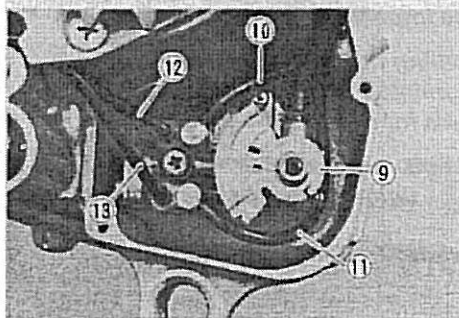
- Install the left and right reed valve assemblies ① and ② on the crankcase.
- Install the intake pipes ③ and ④.
- The clamp should be installed together with the screw.



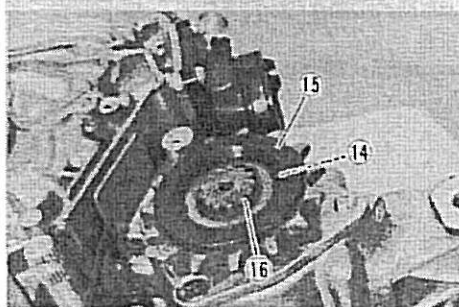
- Assemble the following parts on the case: spring ⑤; contact piece ⑥; O-ring ⑦ and switch body ⑧.
- After the switch body is tightened, route the lead wire through the clearance.
- Secure the lead wire with the clamp located on the intake pipe.



- Install the oil pump ⑨ on the engine.
- Connect the oil hoses ⑩ and ⑪ to cylinders as shown.
- Secure the hose with clamp at the connection.
- Connect the oil hoses ⑫ and ⑬ to crankcase as shown.



- Fit the circlip ⑭ on the drive shaft.
- Mount the sprocket ⑮.
- Secure the sprocket with the circlip ⑯.



NOTE:

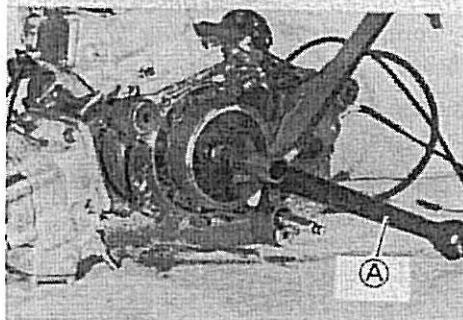
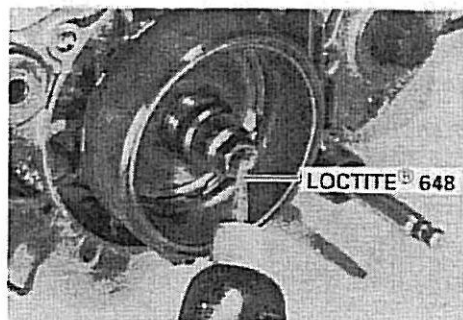
- Position the circlip with the rounded edge against the surface of the sprocket.

- Wipe off all traces of oil from the tapered portion of the rotor and also the crankshaft.
- Apply LOCTITE® 648 to the nut and tighten it to the specified torque.

Tightening torque: 75 – 85 Nm (7,5 – 8,5 kgm)

Rotor holder (A) : 8600395

Apply LOCTITE® 648



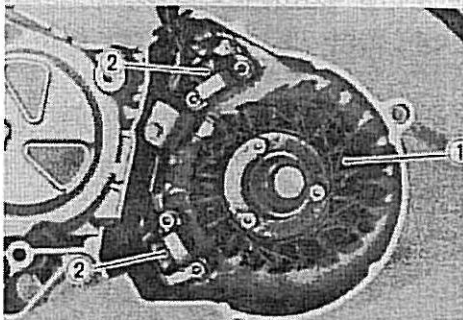
- Apply LOCTITE® 221 to the pick-up coil and stator bolts, and tighten them to the specified torque.

① Stator coil

② Signal generator (pick-up)

Tightening torque: 6 – 10 Nm (0,6 – 1,0 kgm)

Apply LOCTITE® 221

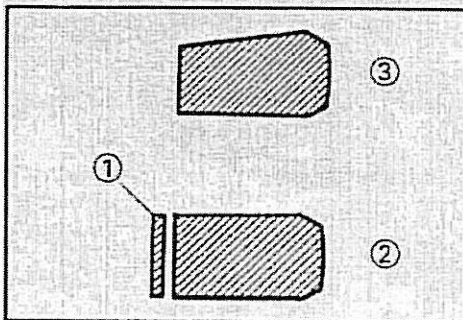


- Mount the piston rings in the order of expander ring, 2nd ring and top ring.

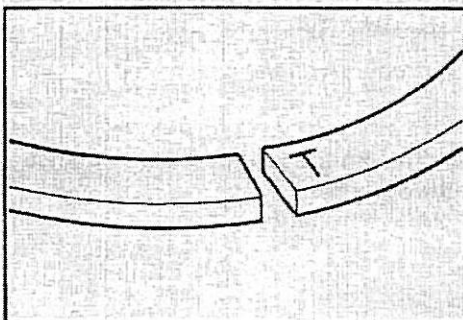
① Expander ring

② 2nd ring

③ Top ring

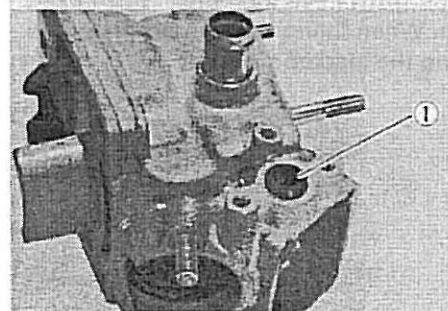
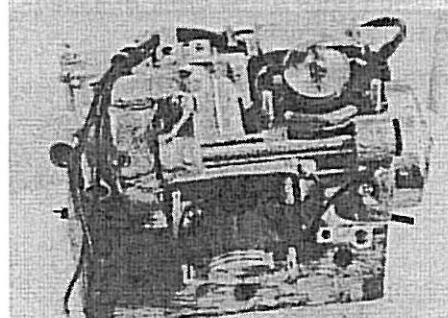
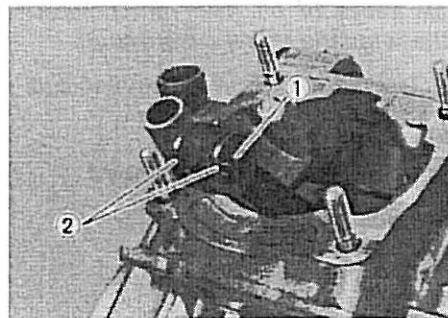


- Top and 2nd rings have the letter "T" marked on the side. When fitting them to the piston be sure to bring the marked side to top.

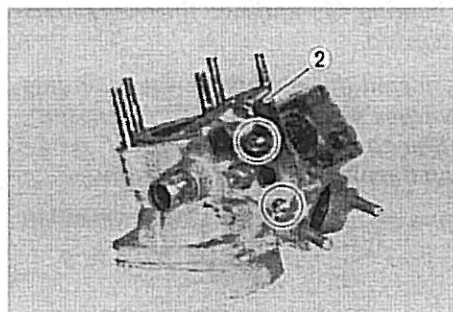


ENGINE

- Install the bearing ① and two thrust washers ② to the conrod.
- Be sure to install the pistons in the cylinders from which they were taken out in disassembly, and refer to the letter marks, "1" e "2" inscribed on the piston during assembly.
- Apply engine oil to the conrod and crankshaft bearings.
- The arrow mark on the piston crown points to the exhaust port side.
- The pin circlip should be mounted in such a position that the mating ends of the circlip do not coincide with the groove portion ③ of the piston.
- Before inserting the piston in the cylinder, be sure to apply oil to the outer surface of the piston ring grooves.
- It is extremely important that, when the piston is fed into the cylinder, each ring in place should be so positioned as to hug the locating pin.
- Install new gaskets and positioning pins properly.
- Press in the oil seal ①. Apply oil to the lip part of oil seal.

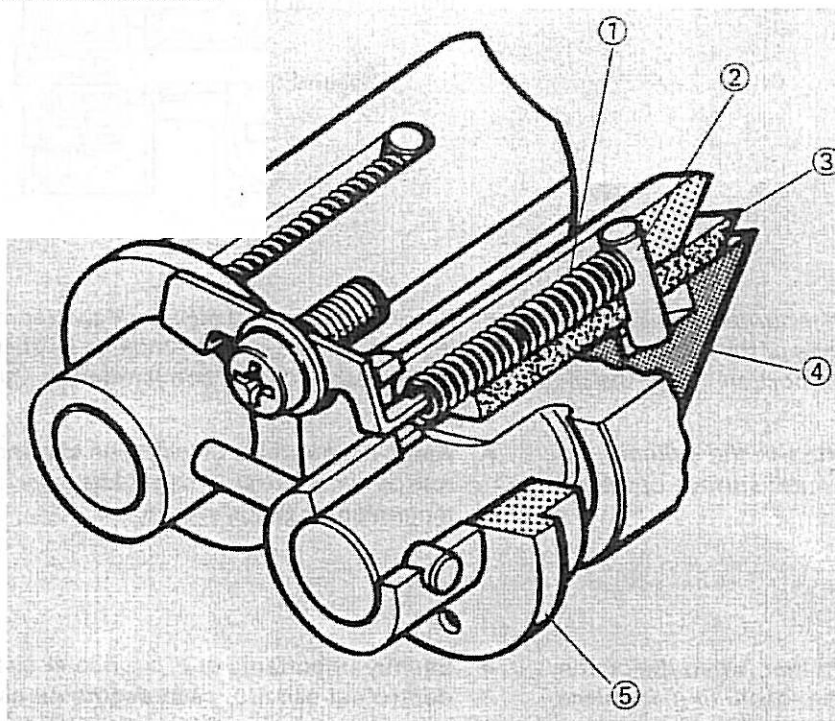


- Install the oil seal retainer ②.



EXHAUST VALVE REASSEMBLY

- ① Spring
- ② Stopper
- ③ No. 2 valve
- ④ No. 1 valve
- ⑤ Valve guide

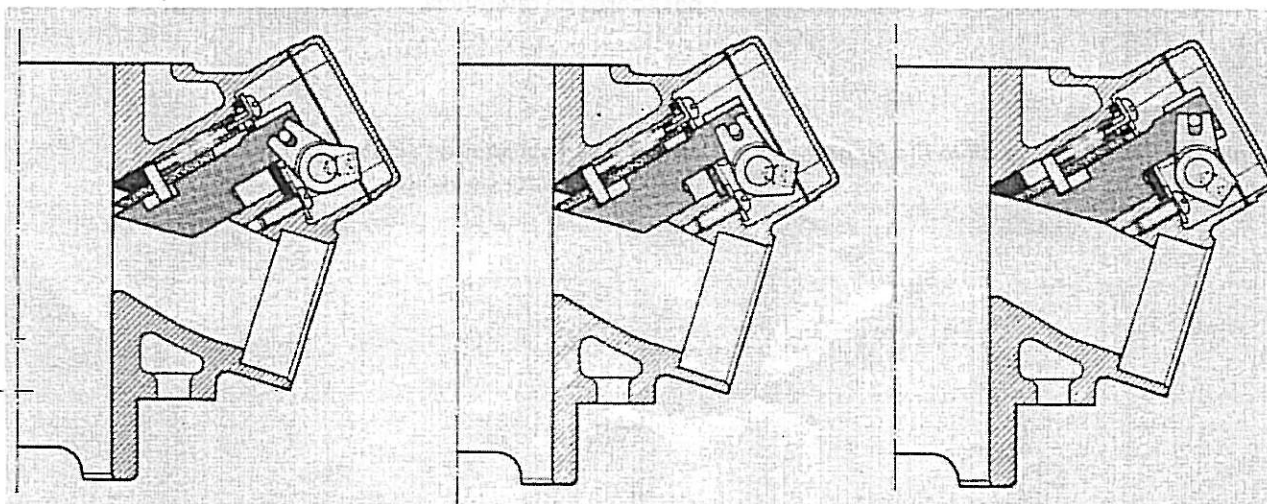


OPERATION

A Low speed range

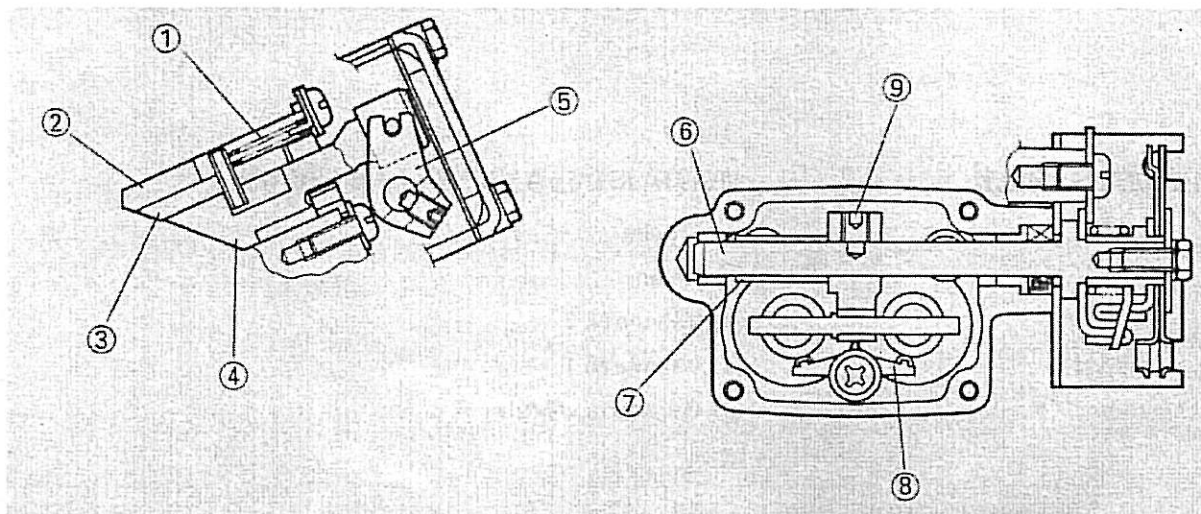
B Middle speed range

C High speed range



ENGINE

- | | | |
|---------------|-------------------|------------------|
| ① Spring | ④ No. 1 Valve | ⑦ Spacer |
| ② Valve guide | ⑤ Valve shaft arm | ⑧ Spring stopper |
| ③ No. 2 Valve | ⑥ Valve shaft | ⑨ Lock screw |



- Apply LOCTITE® 221 to the lock screw ⑨ and tighten it.

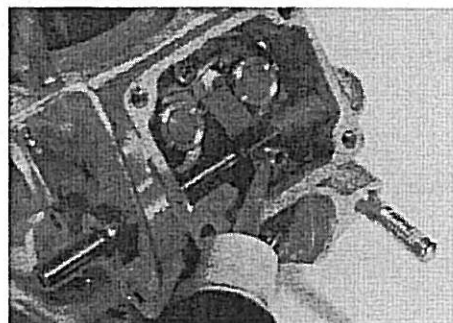
Tightening torque: 8 – 12 Nm (0,8 – 1,2 kgm)

Apply LOCTITE® 221

- Set the exhaust valve lever (A) onto the valve shaft (B).

- Apply LOCTITE® 221 to the exhaust valve lever set screw.

Apply LOCTITE® 221



ENGINE

- Install the cylinder cover.
- Position the cylinder gasket ① on the crank-case.
- Apply oil to the piston and cylinder sliding surfaces.

NOTE:

Make sure that each piston ring end gap position is properly matching the locating pin.

- Push in the dowel pin ② into the cylinder by hand.
- Install the cylinder over the piston slowly and carefully so as not to damage the piston ring.
- Position the head gasket ③ on the cylinder.

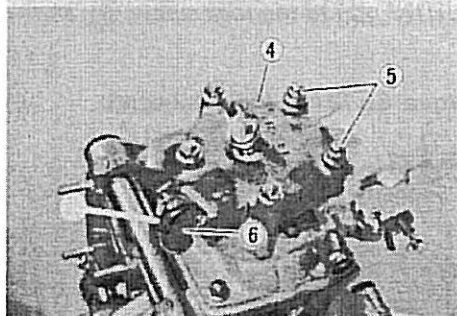
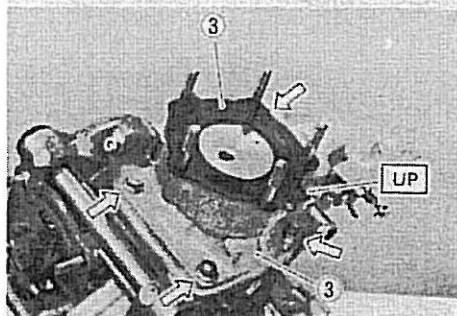
Tightening torque: 23 – 27 Nm (2,3 – 2,7 kgm)

- Install the cylinder head ④. On the five stud bolts the copper washer and the cap nut ⑤ should be fitted.
- Install the water pipe elbow connector ⑥.

Tightening torque: 23 – 27 Nm (2,3 – 2,7 kgm)

NOTE:

Carry out the same procedures to assemble the Left cylinder parts (L).



SISTEMI DI ALIMENTAZIONE E LUBRIFICAZIONE

FUEL AND LUBRICATION SYSTEM

SISTEMAS DE ALIMENTACION Y LUBRICACION

4

FUEL AND LUBRICATION SYSTEM

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FUEL TANK AND FUEL

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WITH THROTTLE GRIP	
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CARBURETTOR AIR

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STARTER CABLE 4-13

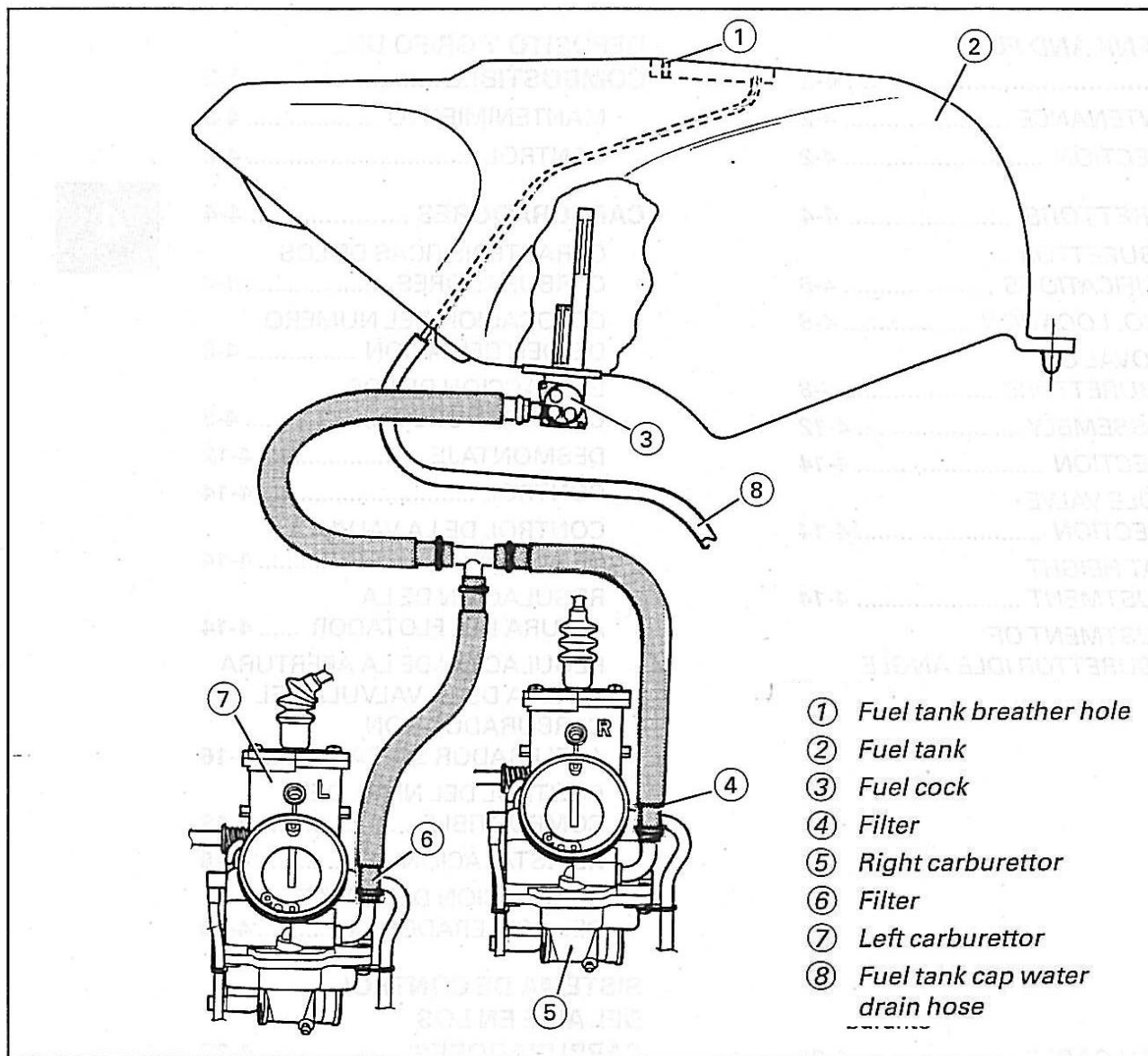
OIL PUMP 4-13

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FUEL TANK AND FUEL COCK

The fuel tank is equipped with a tank cap, a fuel cock and a fuel filter. The tank cap has an air vent which allows gasoline to flow to the carburetors smoothly. The fuel cock construction is as shown in the illustrations. The fuel cock has three positions, OFF, ON and RES, each of which can be se-

lected by operating the cock lever. With the lever in ON position (normal), the main passage opens. With the lever in RES position, an auxiliary passage opens for supplying reserve fuel. With the lever in the OFF position, both of the passages are closed.



MAINTENANCE

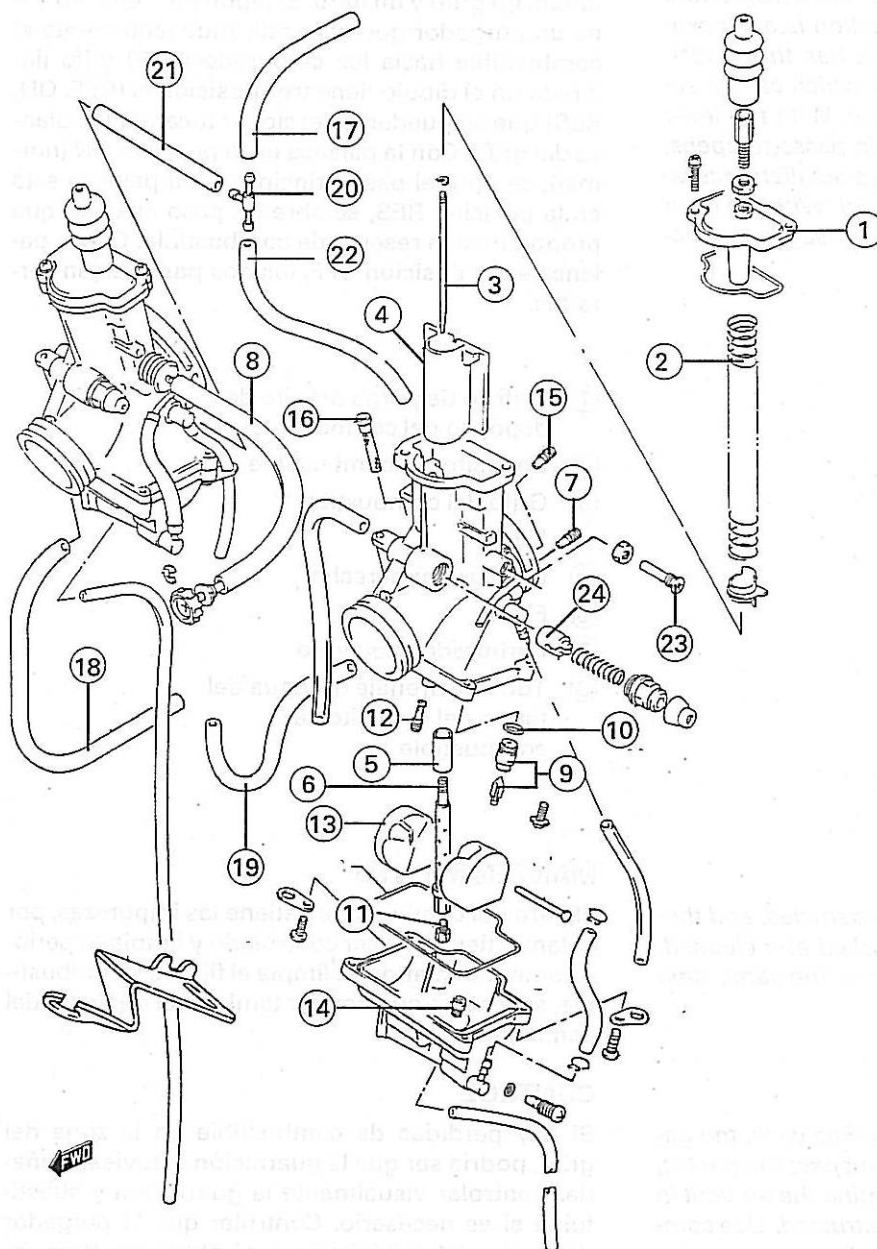
The fuel filter will collect foreign particles, and therefore must be periodically checked and cleaned. The fuel tank should be cleaned at the same time the fuel filter is being cleaned.

INSPECTION

If the fuel leaks from around the fuel cock, the gasket may be damaged. Visually inspect the gasket, and replace it if necessary. Examine the air vent in the fuel tank cap to see if it is obstructed. Use compressed air to clean an obstructed vent.

CARBURETTORS

- ① Cap
- ② Spring
- ③ Jet needle
- ④ Throttle valve
- ⑤ Ring
- ⑥ Needle jet
- ⑦ Pilot air jet
- ⑧ Right throttle valve stop adjuster
- ⑨ Needle valve
- ⑩ O-ring
- ⑪ Main jet
- ⑫ Pilot jet
- ⑬ Float
- ⑭ Power jet
- ⑮ Main air jet
- ⑯ Filter
- ⑰ Pilot air hose L = 80 mm
- ⑱ Main air hose L = 350 mm
- ⑲ Main air hose L = 350 mm
- ⑳ Joint
- ㉑ Right pilot air hose L = 100 mm
- ㉒ Left pilot air hose L = 175 mm
- ㉓ Left throttle valve stop screw
- ㉔ Starter plunger



FUEL AND LUBRICATION SYSTEM

CARBURETTOR

ITEM	SPECIFICATIONS	
	Standard	Catalysed version
Carburettor type	MIKUNI TM 34SS	
Bore size	34 mm	
I.D. Number	23D4	
Idle rpm	1.300 ± 150 rpm	
Fuel level	7,1 ± 0,5 mm	
Float height	8 ± 1,0 mm	
Main jet (M.J.)	L: #270, R: #280	
Jet needle (J.N.)	6GH8-55-3	
Needle jet (N.J.)	0 - 8	0 - 9
Cut-away (C.A.)	1,5 mm	
Pilot jet (P.J.)	#27,5	#20
By-Pass (B.P.)	0,6 mm	
Pilot outlet (P.O.)	0,6 mm	
Valve seat (V.S.)	2,5 mm	
Starter jet (G.S.)	#45	
Power jet No. 1	L:#55, R:#35	
Power jet No. 2	0,7 mm	
Air screw (A.S.)	-	
Throttle cable play	0,5 - 1 mm	

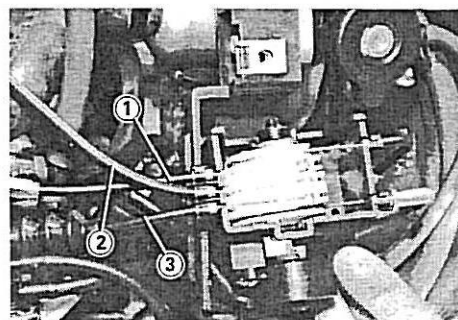
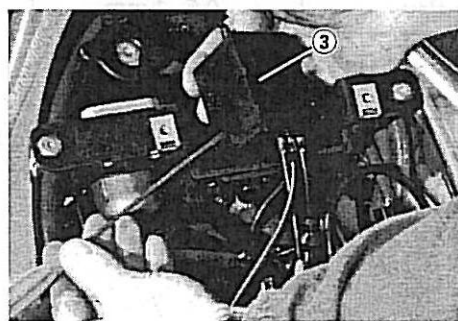
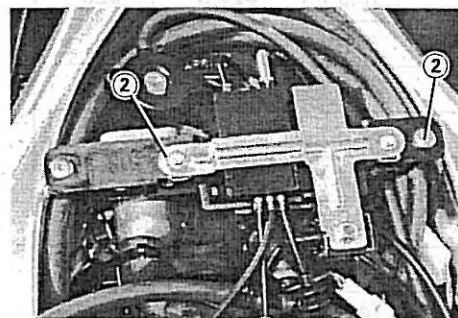
I.D. NO. LOCATION

Each carburettor has I.D. Number ① stamped on the body to identify to its specifications.

REMOVAL OF CARBURETTORS

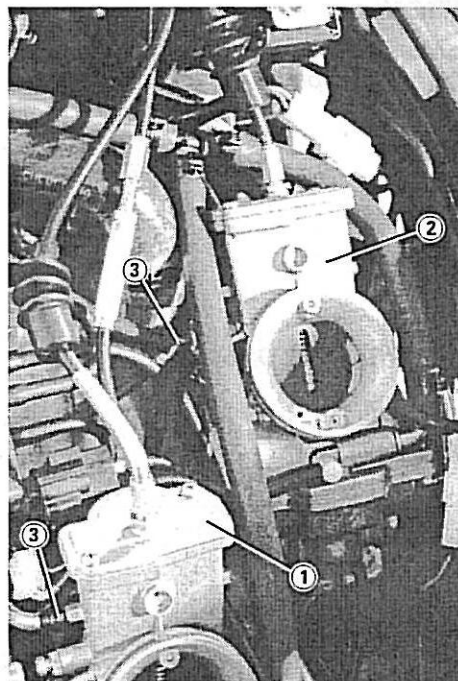
- Remove the fairing.
 - Remove the driver's seat.
 - Remove the fuel tank.
 - Remove the air cleaner case.
-
- Remove the screws ② and the splitting box cap ③.

- Remove the throttle cables ② and ③ and oil pump cable ①.

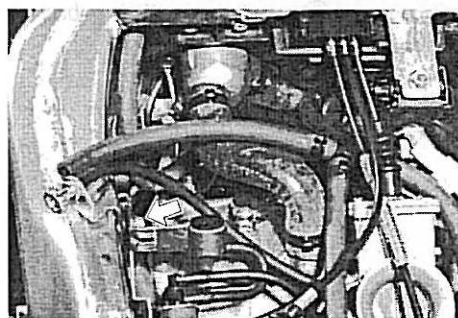


FUEL AND LUBRICATION SYSTEM

- Remove the carburetors ① and ② and pull out the overflow hoses.
- Remove the starter cables ③.

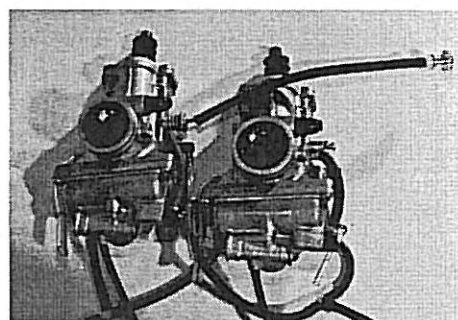


- Remove the idle adjustment knob bracket bolt.



NOTE:

When disconnecting the throttle cables and choke cable, it is necessary to remove the carburettor top caps and starter plunger.



DISASSEMBLY

- Remove the carburettor cap and take out the throttle valve ① and return spring ②.

- Remove the throttle cable ③.

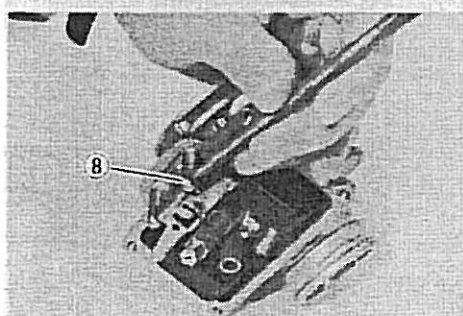
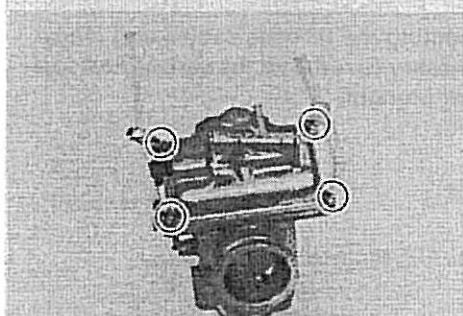
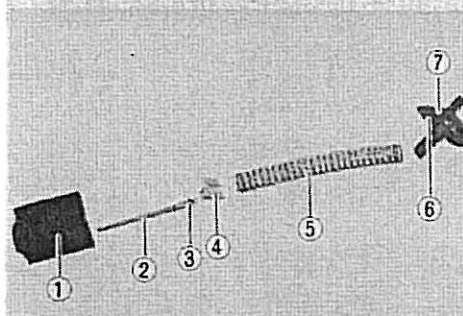
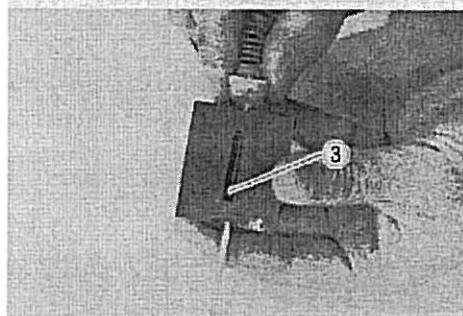
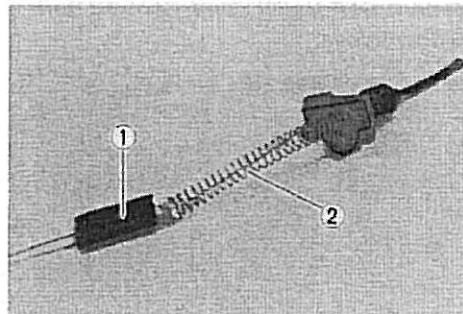
- ① Throttle valve
- ② Jet needle
- ③ E-ring
- ④ Ring
- ⑤ Return spring
- ⑥ O-ring
- ⑦ Cap

- Remove the float chamber screws.

- Remove the float pin ⑧ and float.

CAUTION:

When removing the float pin, be careful not to damage the carburettor body.



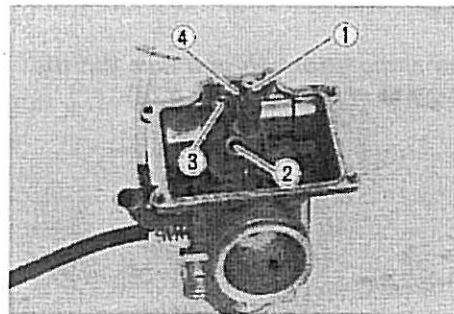
FUEL AND LUBRICATION SYSTEM

- Remove the main jet ① and take out the needle jet from the bore side.
- Remove the pilot jet ②.
- Remove the needle valve retainer screw ③ and take out the needle valve ④.

INSPECTION

Check following items for any damage or clogging.

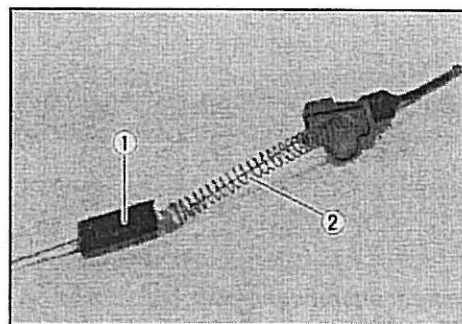
- * Pilot jet
- * Main jet
- * Main air jet
- * Needle valve jet air bleeding holes
- * Float
- * Needle valve O-ring
- * Gasket and O-ring
- * Pilot outlet and by-pass hole
- * Fuel pipe O-rings
- * Power jet
- * Air jet



NEEDLE VALVE INSPECTION

If foreign matter is caught between the valve seat and the needle, gasoline will continue flowing and cause it to overflow. If the seat and needle are worn beyond the permissible limits, similar trouble will occur. Conversely, if the needle fits properly, gasoline will not flow into the float chamber. Clean the float chamber and float parts with gasoline. If the needle is worn as shown in the illustration, replace it together with the valve seat. Clean the fuel passage in the mixing chamber with compressed air.

A = Incorrect B = Correct



A = Da sostituire

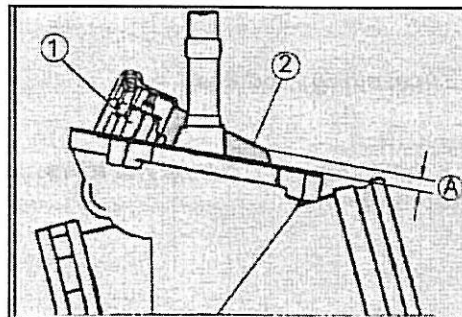
B = Corretto

FLOAT HEIGHT ADJUSTMENT

- Place the carburettor body upside down and lift up the float by hand.
- Gradually lower the float and observe the clearance between the float tongue and the end of the needle valve.
- Stop lowering the float and hold it when the tongue just begins to contact the end of needle valve.
- Measure the float height (A) from the float chamber body closure surface.

Float height (A) : $8 \pm 1,0$ mm

① Float valve ② Float



① Valvola del galleggiante
② Galleggiante

ADJUSTMENT OF CARBURETTOR IDLE ANGLE WITH THROTTLE GRIP RELEASED

(Carburettor synchronization)

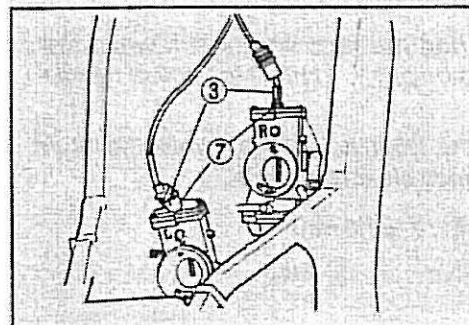
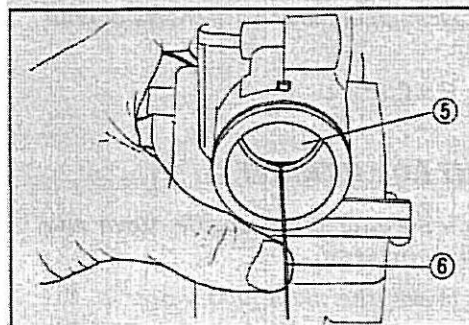
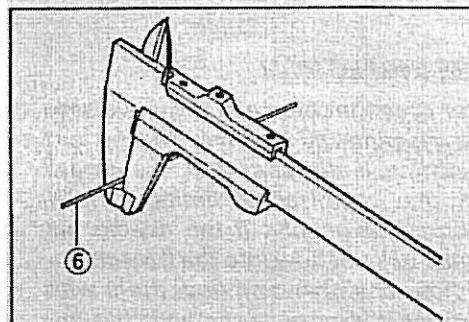
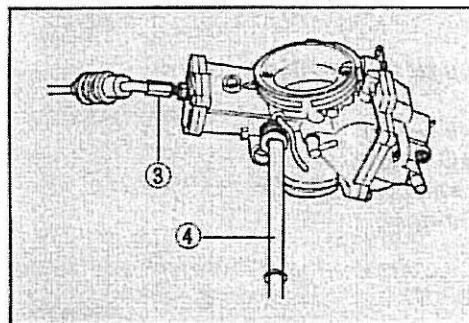
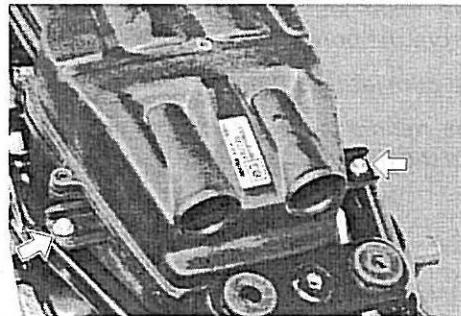
- Remove the driver's seat and the fuel tank.
- Remove the air cleaner case.
- Remove the throttle cables from the splitting box.
- Remove the carburetors.
- Loosen the lock nut and turn in the cable adjuster ③.
- Turn back the throttle stop screw knob ④ on the right carburettor (R) to lower the throttle valve ⑤ to the full close position.
- Likewise, tighten the throttle stop screw on the left carburettor (L) after loosening the lock nut.
- Adjust the throttle valve idle position by turning the knob (right carburettor) or the screw (left carburettor) so that the minimum clearance between the throttle valve ⑤ and the bore comes to the specification. Use a piece of 0,7 mm wire ⑥ or a drill bit for checking the clearance.

Throttle valve clearance: 0,7 mm

- Install both carburetors to the engine.
- Adjust the cable slack of right and left carburettor turning each cable adjuster to 0,5 – 1,0 mm.

Cable slack: 0,5 – 1,0 mm

- Tighten each lock nut ⑦.

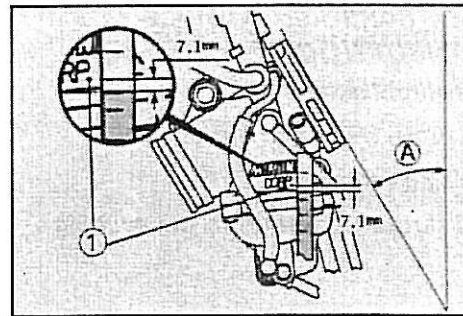


FUEL LEVEL INSPECTION

- Remove carburettor drain plug and install the fuel measurement gauge.
- Incline the carburettor forward at an angle of 30° from vertical line when measured at the bore end face.
- Set the fuel level gauge vertically and measure the fuel level from the reference point (protrusion).

Distance **A** : $7,1 \pm 1,0$ mm

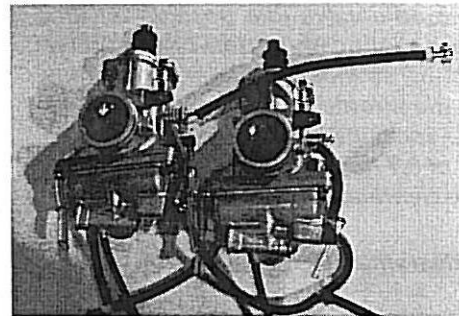
- ① Fuel level mark



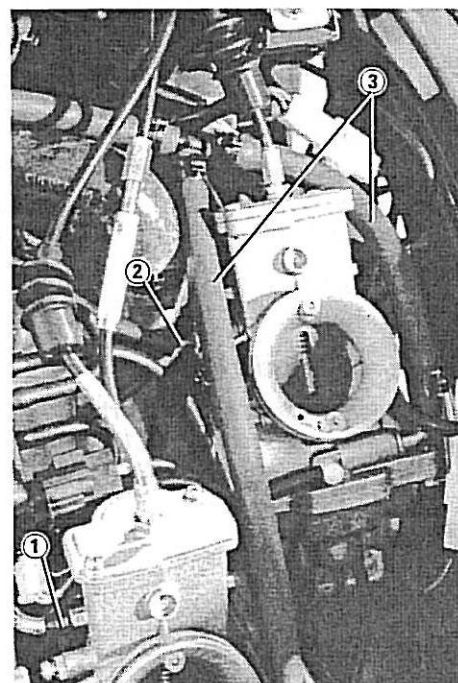
① Riferimento livello carburante

REMOUNTING

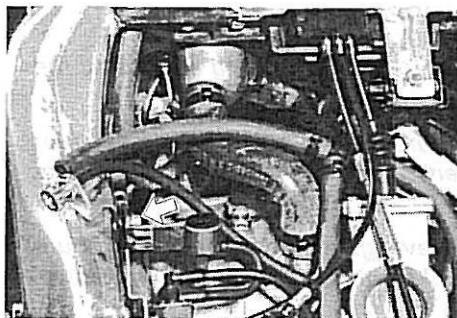
- Reassemble the carburettor components, performing disassembly operations in reverse order.



- Install the choke plungers ① and ②.
- Position the right and left carburettors properly and tighten their clamp screws.
- Connect the fuel hoses ③.
- Connect the drain hoses.



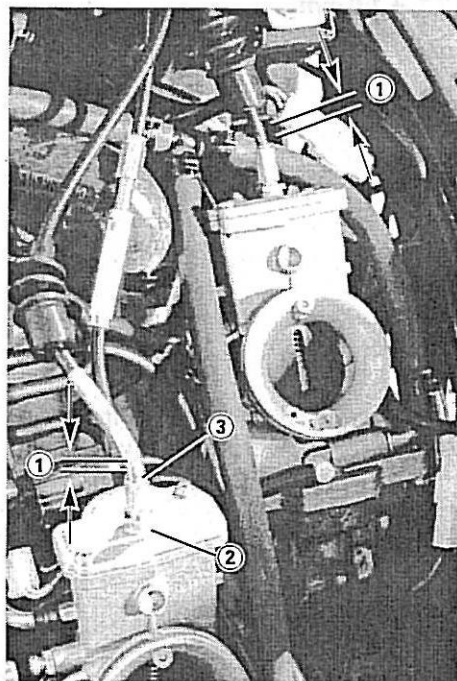
- Install the idle adjuster knob bracket.



THROTTLE CABLE ADJUSTMENT

- See adjustment procedure on page 2-16.
- Adjust the cable slack ① of right and left carburetors to 0,5 – 1,0 mm.
- Loosen the lock nut ② of carburettor and turn in or out the adjuster ③ of the carburettor until the specified clearance is obtained.
- After adjusting, tighten the lock nut.

Throttle cable free play on carburettor:
0,5 – 1,0 mm

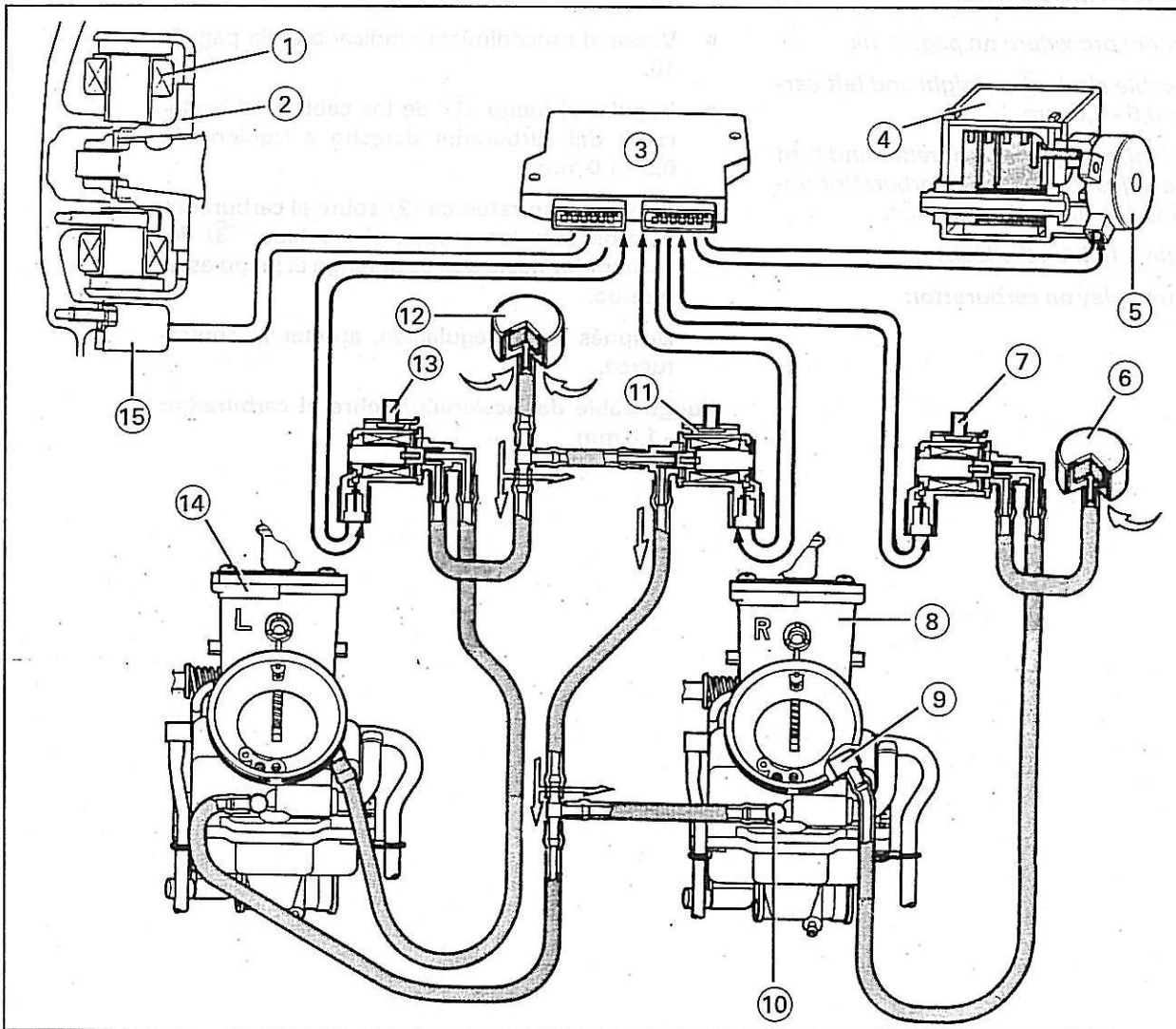


CARBURETTOR AIR CONTROL SYSTEM

DESCRIPTION

The carburettor uses a flat slide type throttle valve which helps make main bore air flow immediate and provide better fuel atomisation, ensuring quicker engine response. This carburettor is in its air control system which supplies electronically controlled auxiliary air through the pilot air and main air passages. This control is performed by

the control unit which receives the throttle sensor and engine revolution input signals. And after processing these signals, the unit outputs an ON/OFF signal to supply the engine with the optimum amount of air through the main air and pilot air solenoides.

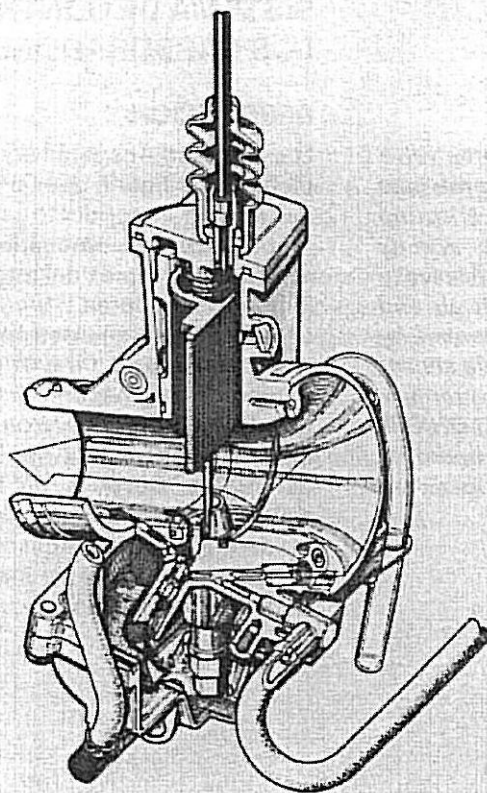


- | | | |
|--------------------------------|----------------------------------|---------------------------------------|
| ① Stator coil | ⑥ Air suction cleaner | ⑪ Pilot air solenoid |
| ② Magnet rotor | ⑦ Main air solenoid | ⑫ Air suction cleaner |
| ③ Control unit | ⑧ RH carburettor | ⑬ Main air solenoid |
| ④ Throttle cable splitting box | ⑨ Leading into main air passage | ⑭ LH carburettor |
| ⑤ Throttle sensor | ⑩ Leading into pilot air passage | ⑮ Pick-up coil
(Impulse generator) |

FUEL AND LUBRICATION SYSTEM

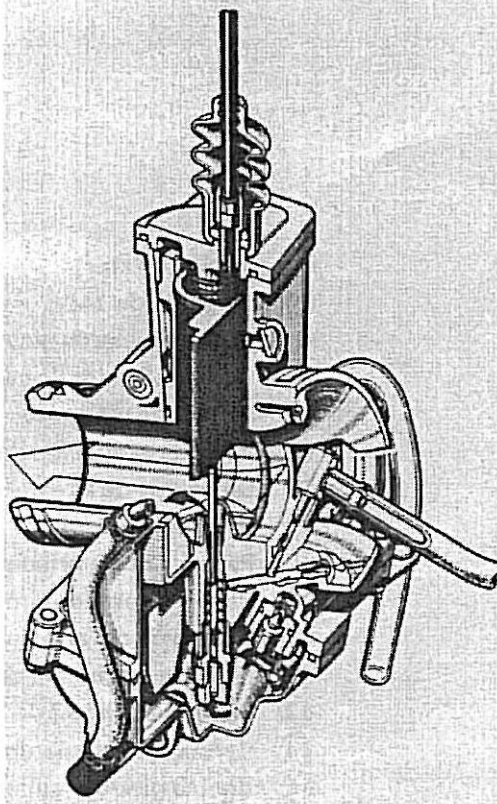
PILOT AIR PASSAGE

- ① Air
- ② Fuel/Air mixture
- ③ Fuel



MAIN AIR PASSAGE

- ① Air
- ② Fuel/Air mixture
- ③ Fuel



STARTER CABLE

- Refer to page 2-18 for adjustment procedure.

- Regulate actuator, throttle and oil pump cables (see pages 2-16 and 3-34).

OIL PUMP

BLEEDING AIR FROM THE OIL PUMP CIRCUIT

Whenever evidence is noted of some air having leaked into the oil pipe from the oil tank in a machine brought in for servicing, or if the oil pump has to be removed for servicing, before returning the machine to the user be sure to carry out an air bleeding operation on the oil pump in place.

To bleed the air, hold the machine in standstill condition. Loosen the screw ① to let out the air and after making sure that the trapped air has all been bled, tighten the screw good and hard.

CHECKING OIL PUMP

Check the pump for capacity by measuring the amount of oil the pump draws during the specified interval.

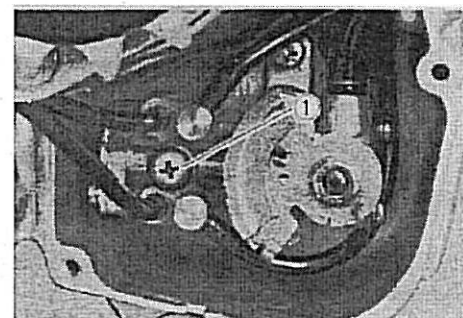
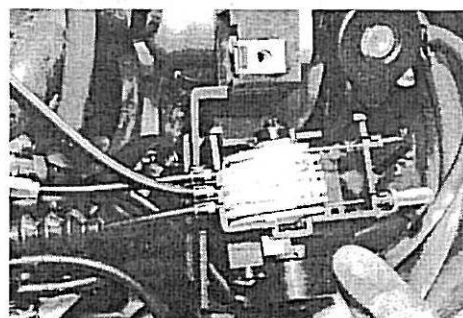
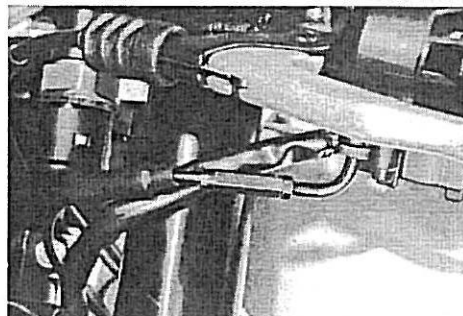
- Check a millimetre-gauged container filled with specified engine oil to the pump suction hose.
- Start the engine and run at 2.000 rpm.
- Holding engine speed at the same 2.000 rpm, move the pump lever up to the fully open position and hold for 2 minutes. In these conditions, the quantity of oil extracted from the millimetre-gauged container should be 4,8 - 6,0 ml.

Oil discharge amount:

4,8 - 6,0 ml at 2.000 rpm (for 2 minutes)

NOTE:

Adjust both throttle and oil pump control cables' play after replacing the oil pump.



IMPIANTO DI RAFFREDDAMENTO

COOLING SYSTEM

SISTEMA DE REFRIGERACION

5

COOLING SYSTEM

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COOLING SOLUTION	5-2
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INSPECTION	5-3
COOLANT SENSOR AND TEMPERATURE GAUGE	5-4
INSPECTION	5-4
REASSEMBLY	5-4

COOLING SYSTEM

DESCRIPTION

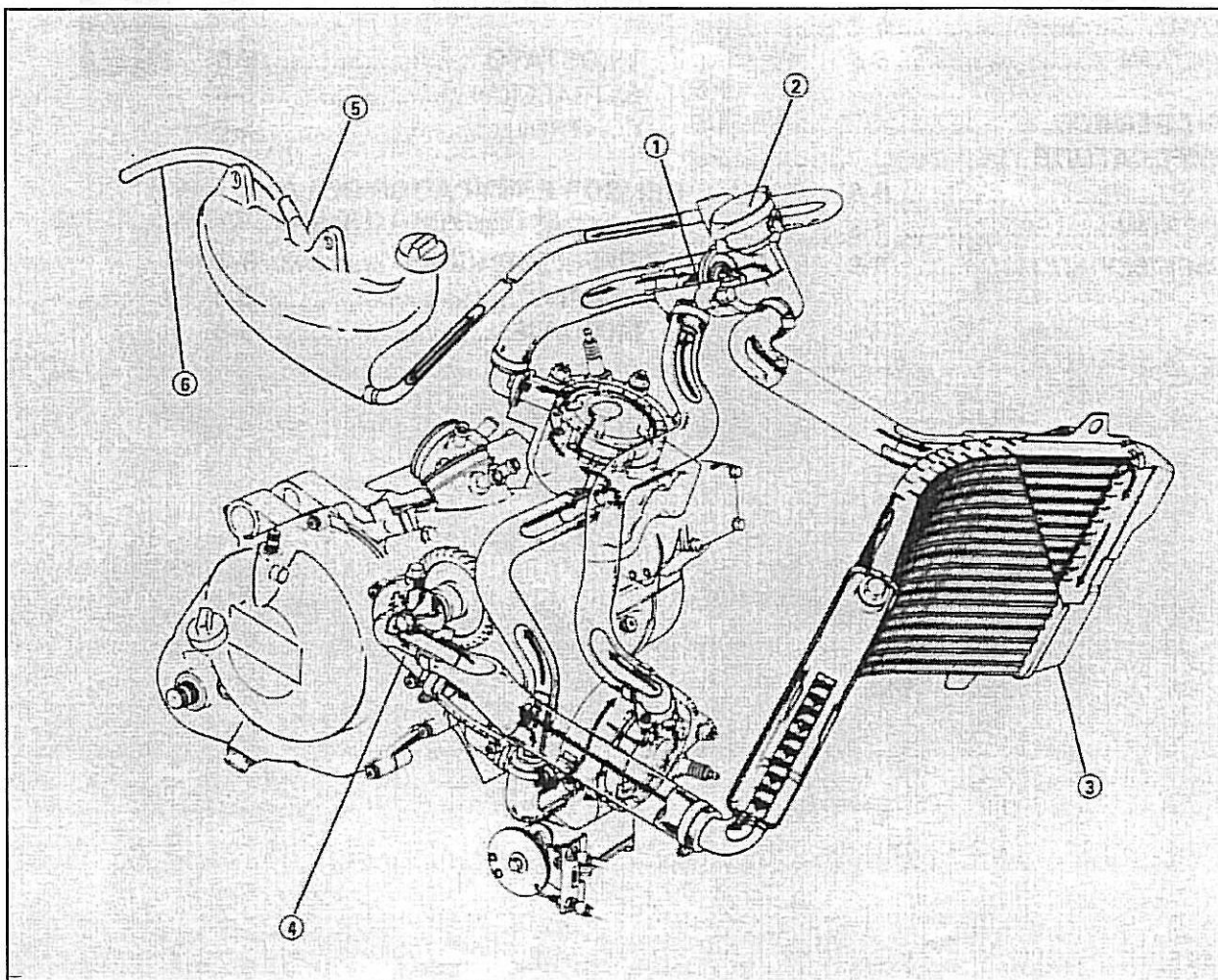
The engine is cooled by the coolant set in forced recirculation through jackets formed in the cylinders and heads, and through the radiator. To make the fluid circulate, a high-capacity centrifugal pump is used. The radiator is of the tube and fin type in aluminium material and is characterized by lightness in weight and good heat dispersion.

The thermostat is of wax pellet type, complete with a valve as the means of temperature-dependent regulation over the flow of water through the radiator. The valve is actuated by the temperature-sensitive wax contained in the pellet.

Referring to the following illustration, the thermostat is in closed condition, so that water recirculates through the route comprising pump, engine, by-pass holes of the thermostat and only partially radiator.

As the coolant temperature rises to 50°C and the thermostat valve unseats, the normal water flow is established. At about 65°C of rising coolant temperature, the thermostat becomes completely open and most of the heat is released to the atmosphere through the radiator core.

- ① Thermostat
- ② Radiator cap
- ③ Radiator
- ④ Water pump
- ⑤ Reservoir tank
- ⑥ Reservoir tank breather hose



COOLING SYSTEM

COOLING SOLUTION

At the time of manufacture, the cooling system is filled with a 50 : 50 solution of distilled water and anti-freeze/summer coolant. This 50 : 50 mixture will provide excellent heat protection, and will protect the cooling system from freezing at temperatures above -20°C .

NOTE:

The characteristics of different anti-freezes are different. Read the label to know the protection it guarantees.

RADIATOR

REMOVAL

- Remove the fairing.
- Drain the cooling circuit by removing the plugs from the radiator and cylinders.
- Loosen the clamps and disconnect the manifolds from the radiator.
- Remove the fastening screws and remove the radiator.

Radiator cap valve gauge pressure:

$110 \pm 10 \text{ kPa}$ ($1,1 \pm 0,1 \text{ kg/cm}^2$)

Road dirt or trash stuck to the fins must be removed. Use of compressed air is recommended for this cleaning.

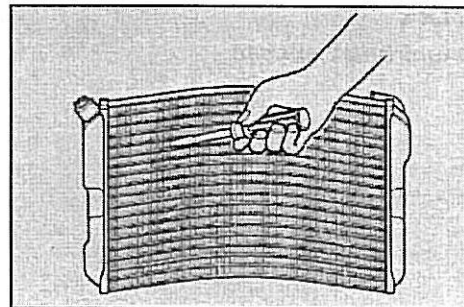
Fins bent down or dented can be repaired by straightening them with the blade of a small screwdriver.

Any water hose found in cracked condition or flattened must be replaced.

REINSTALLATION

The radiator is reinstalled in the reverse order of the removal procedure.

After installing the radiator, be sure to add cooling water.



THERMOSTAT

REMOVAL

- Remove the driver's seat and the fuel tank.
- Drain the coolant.
- Remove the water hose and thermostat cover ①.

INSPECTION

- Inspect the thermostat pellet for signs of cracking.

Test the thermostat at the bench for control action, in the following manner:

- Pass a string ② through flange, as shown in the figure.
- Immerse the thermostat in the water contained in the jar. The immersed thermostat must remain in suspension. Heat the water by placing the jar on a stove and observe the rising temperature on the thermometer.
- Read the thermometer just when the thermostat drops towards the bottom of the jar. This reading, which is the temperature level at which the thermostat valve begins to open, should be anywhere between 48° and 52°C.

Thermostat valve opening temperature: $50 \pm 2^\circ\text{C}$

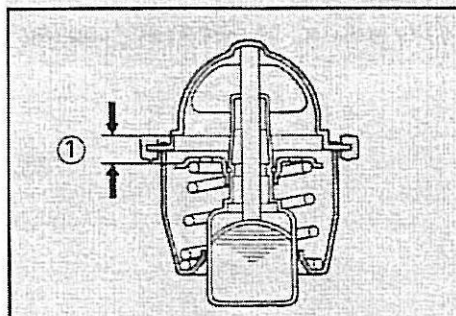
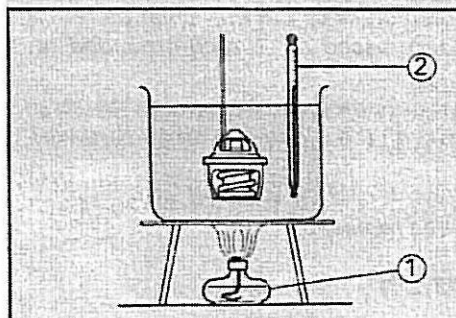
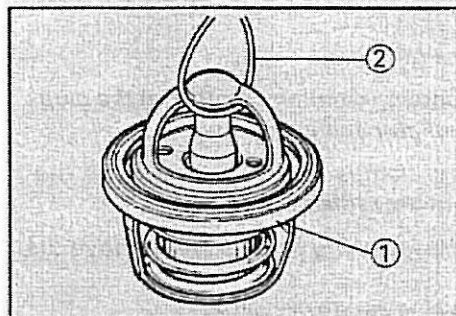
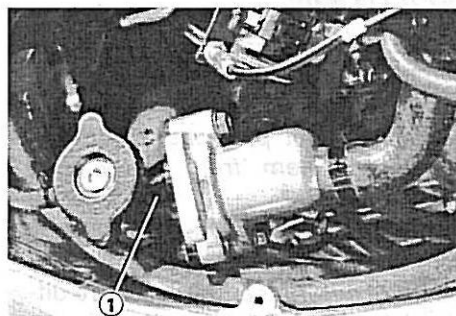
- Keep on heating the water to raise its temperature to and beyond 65°C.
- Just when the water reaches 65°C, the thermostat valve should have lifted by at least 7,0 mm.

① Stove ② Thermometer

Thermostat valve lift: 7,0 mm (at 65°C) or over

- A thermostat failing to satisfy either of the two requirements (start-to-open temperature and valve lift) must be replaced.
- Tighten the thermostat cover bolts to the specification.

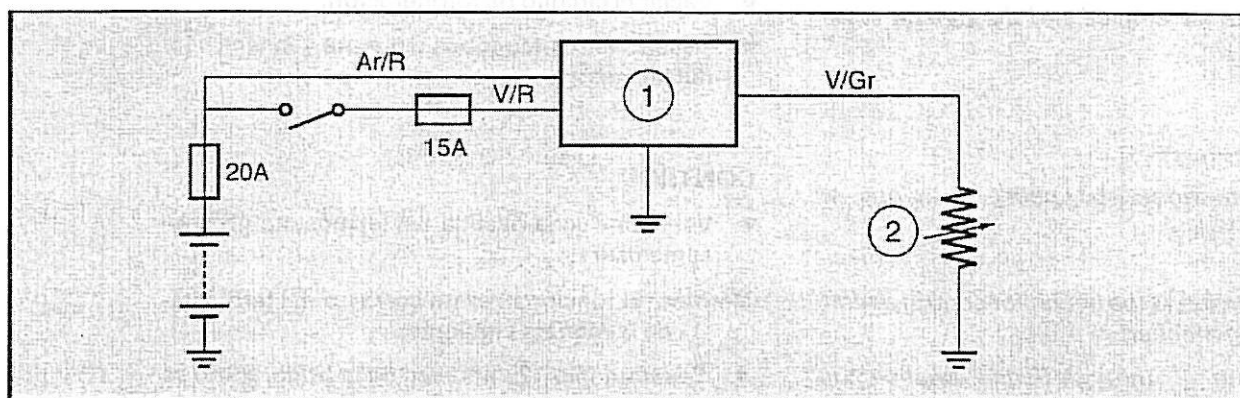
① Valve lift



COOLANT SENSOR AND TEMPERATURE GAUGE

The following circuit diagram shows the electrical wiring for the thermometer. The major components are: temperature gauge (in contact with cooling water); and temperature indicator.

- ① Multifunction computer display
- ② Coolant sensor



INSPECTION

Test the temperature gauge sensor at the bench to see if its ohmic value changes, as specified, with temperature. The test is to be run as follows: connect the tester (set like an ohmmeter) to the coolant sensor and place it in the water contained in a jar, which is placed on a stove, and heat the water to raise its temperature slowly, reading the thermometer immersed in the jar and also the tester.

A coolant sensor whose ohmic value does not change in the proportion indicated below must be replaced.

Coolant sensor specifications

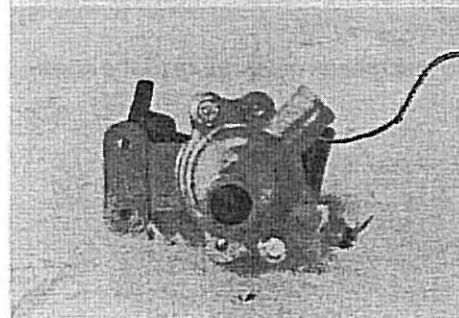
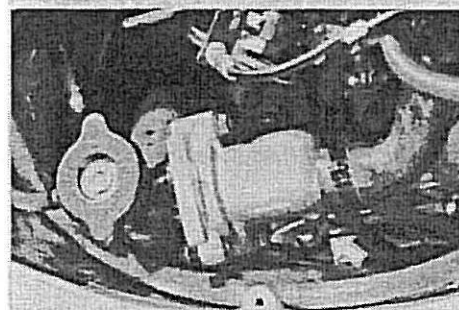
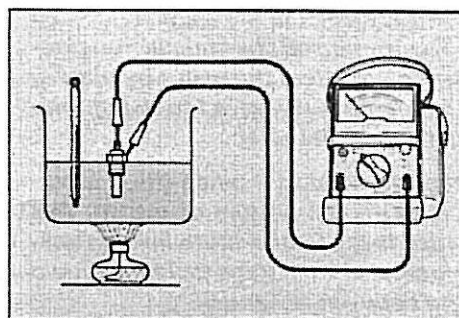
Water temp. (°C)	Standard resistance (Ω)
50	Approx. 226 ± 50
115	Approx. 26 ± 10

If the resistance is noted to show infinity or too much different resistance value, the coolant sensor must be replaced. For inspecting the coolant temperature gauge, refer to chapter 6.

REASSEMBLY

Apply LOCTITE® 547 to the thread portion of the coolant temperature sensor and install it to thermostat cover.

Tightening torque: 6 – 10 Nm (0,6 – 1,0 kgm)



IMPIANTO ELETTRICO

ELECTRICAL SYSTEM

INSTALACION ELECTRICA

6

ELECTRICAL SYSTEM

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CHARGING SYSTEM INSPECTION

CHARGING OUTPUT CHECK

- Remove the driving seat.
- Start the engine and keep it running at 5.000 rpm with lighting switch turned "ON" and dimmer switch turned to "HI" position.
- Using the pocket tester, measure the DC voltage between the battery terminal \oplus and \ominus . If the tester reads under 13,0 V or over 15,0 V, check the AC generator no-load performance and regulator/rectifier.

- ① Regulator/rectifier ② Battery
③ Ignition switch

NOTE:

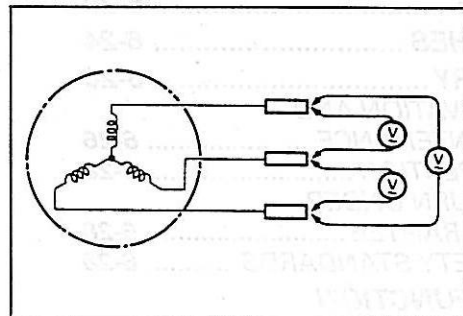
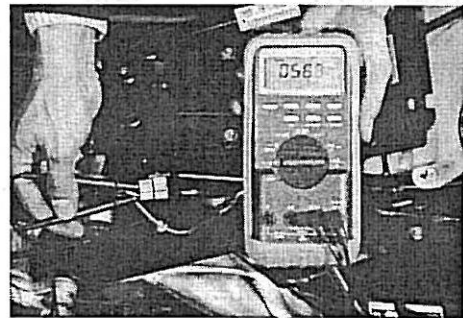
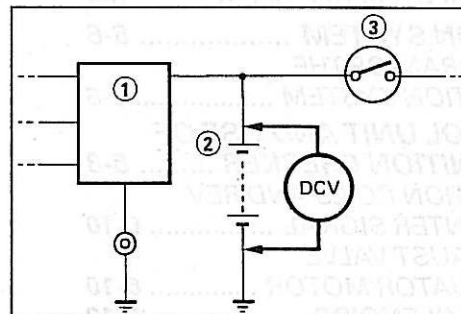
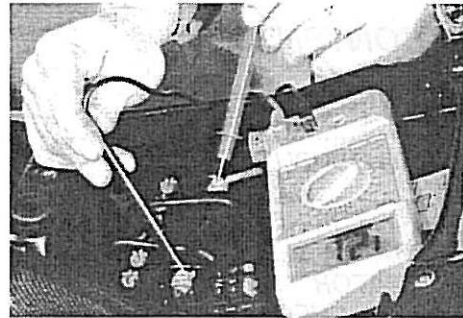
When making this test, be sure that the battery is in fully-charged condition.

Standard charging output:
13,0 – 15,0 V (DC) at 5.000 rpm

AC GENERATOR NO-LOAD PERFORMANCE

- Remove the driving seat, couling and central fairing (under the driving seat).
- Disconnect the AC generator lead wire coupler.
- Start the engine and keep it running at 5.000 rpm.
- Using the pocket tester, measure the AC voltage between the three yellow lead wires. If the tester reads under 53 V, the AC generator is faulty.

Standard no-load performance:
more than 49 V (AC) at 5.000 rpm



AC GENERATOR CONTINUITY CHECK

- Using the pocket tester, check the continuity between the yellow lead wires of the stator (with the lead wire coupler disconnected).
Also check that the stator support is insulated.

NOTE:

When making this test, it is not necessary to remove the AC generator.

Standard resistance: 0,1 - 1 Ω

Standard resistance between wires and stator support = ∞ (infinite)

REGULATOR/RECTIFIER

- Remove the driving seat and cowling.
- Disconnect the regulator/rectifier couplers from the electric.
- Using the pocket tester (x 1 k Ω range), measure the resistance between the lead wires in the following table (from the regulator/rectifier side). If the resistance checked is incorrect, replace the regulator/rectifier.

		⊕ Probe of tester to:				
⊖ Probe of tester to:		N	N	N	R/N	N/Bi
	N		∞	∞	1 - ∞	∞
	N	∞		∞	1 - ∞	∞
	N	∞	∞		1 - ∞	∞
	R/N	∞	∞	∞		∞
	N/Bi	1 - ∞	1 - ∞	1 - ∞	2 - ∞	

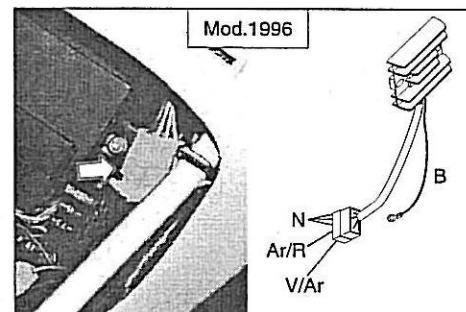
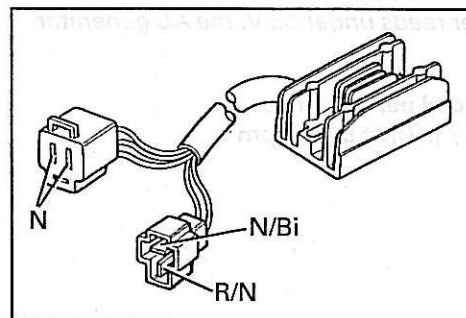
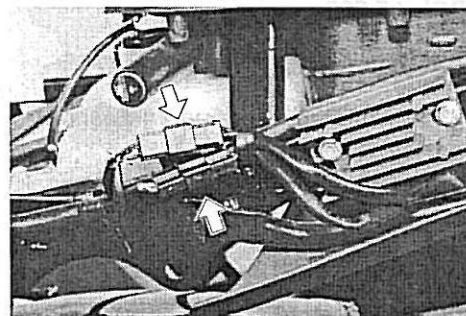
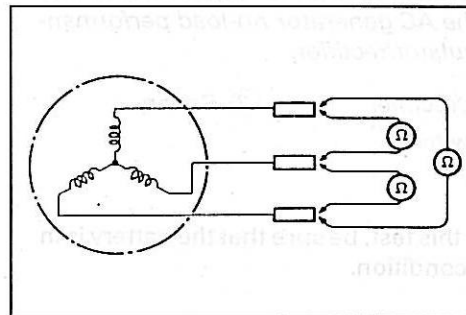
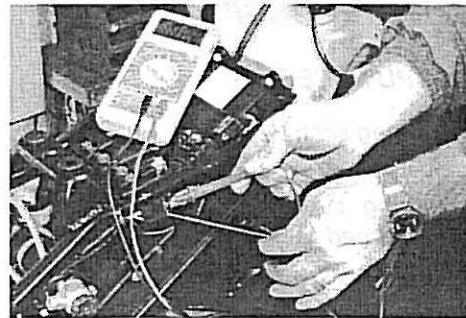
ONLY FOR MODEL 1996

Using the pocket tester (x 1 Ω range), measure the resistance between the lead wires in the following table (from the regulator/rectifier side). If the resistance checked is incorrect, replace the regulator/rectifier.

		Value in Ω					
		⊕ Probe of tester of:					
⊖ Probe of tester of:		G	G	G	R	R/V	B
	G		∞	∞	∞	1 - ∞	1 - ∞
	G	∞		∞	∞	1 - ∞	1 - ∞
	G	∞	∞		∞	1 - ∞	1 - ∞
	R	1 - ∞	1 - ∞	1 - ∞		1 - ∞	1 - ∞
	R/V	∞	∞	∞	∞		1 - ∞
	B	∞	∞	∞	∞	1 - ∞	

CAUTION:

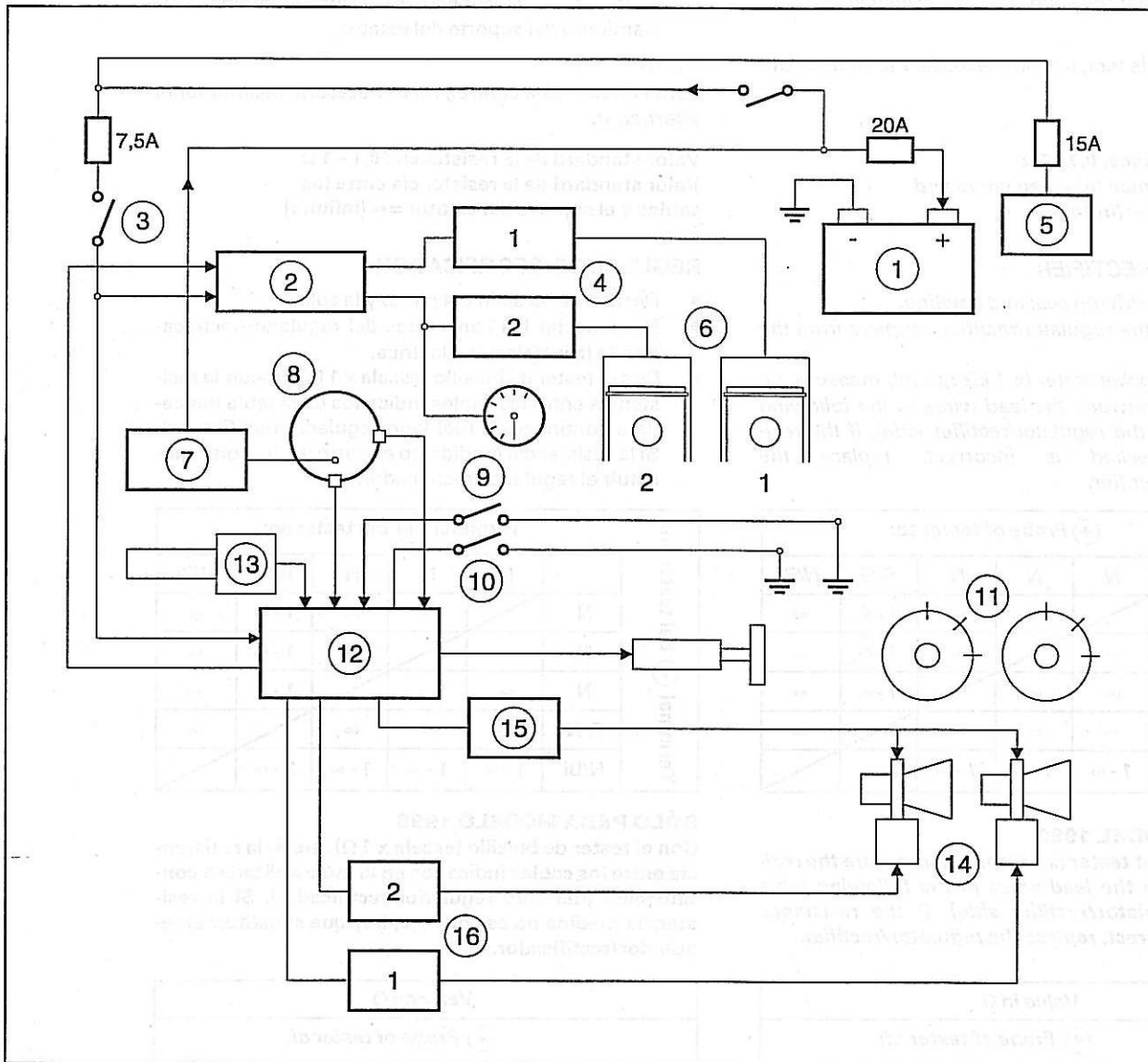
This method of measuring is only approximate. If possible check that the recharging works properly using another correctly functioning regulator/rectifier.



ELECTRICAL SYSTEM

IGNITION SYSTEM

DIAGRAM OF THE IGNITION SYSTEM



- ① Battery
- ② C.D.I. Unit
- ③ Engine emergency stop switch
- ④ Coils
- ⑤ To auxiliary services (lights)
- ⑥ Cylinders
- ⑦ Regulator/rectifier
- ⑧ Flywheel

- ⑨ Side stand switch
- ⑩ Neutral indicator switch
- ⑪ Exhaust valves
- ⑫ Control unit
- ⑬ Throttle sensor
- ⑭ Carburetors
- ⑮ Min. air solenoid
- ⑯ Max. air solenoids

CONTROL UNIT AND USE OF THE IGNITION CHECKER

The unit is to be found under the driving seat.

CONTROL PROCEDURES

The control unit functions properly if it controls:

- The front and rear cylinder ignition coils and the rev counter signal.
- The functioning of the exhaust valve actuator motor.
- Air solenoids.
- Neutral light.

The control unit may be checked by replacing it with another known to function or by using the ignition checker with the following accessories:

Ignition checker: 8600397 + Adapter: 8600398 + Harness: 8600399

CONTROL PROCEDURES WITH IGNITION CHECKER

- Remove the driving seat.
- Remove the fuel tank.
- Remove the right side cowling.
- Remove the spark plugs from the cylinders.
- Connect the adapter and ignition checker with the harness as shown in the photograph.

- ① Adapter ② Ignition checker
③ Harness

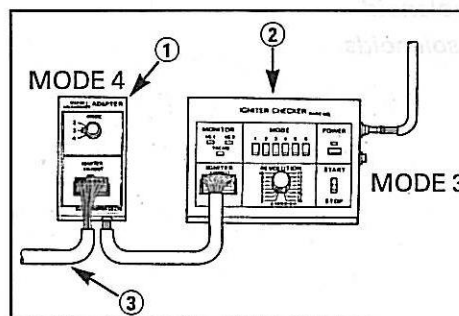
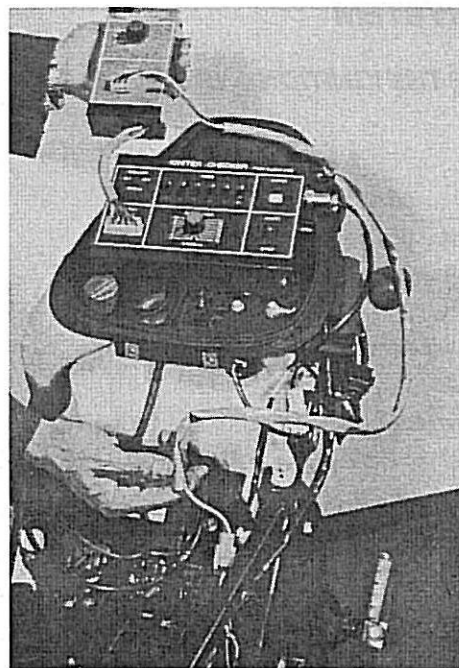
- Set the ignition checker to "MODE 3" and the adapter to "MODE 4".
- Disconnect the coupler pick-up coil going to the control unit and connect the ignition checker to the control unit coupler.
- Connect the power source leads from the ignition checker to a battery.

CAUTION:

- * Do not use the battery equipped on the motorcycle.
- * Be sure to connect the black lead to the battery \ominus terminal and red lead to the \oplus terminal.
- * Make sure START switch is in OFF position before connecting the power source lead.

NOTE:

Before making this test, be sure that the battery is fully charged condition.



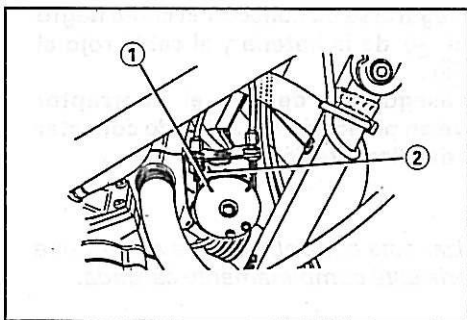
IGNITION COILS AND REV COUNTER SIGNAL

- Place the spark plugs on each cylinder head.
- Turn on the ignition switch and set the engine stop switch to "RUN" position.
- Turn the "REVOLUTION" dial knob to "2" position.
- Depress the "MODE 3" button on the ignition checker.
- Turn the "MODE" knob on the adaptor to "4" position.
- Depress the "POWER" button.
- Turn the switch to "START" position.
- Check the sparking condition of No. 1 cylinder's plug and No. 2 cylinder's plug.
- Check the sparking condition at a high revolution range (turn the "REVOLUTION" dial knob to high rpm side).

ONLY FOR MODEL 1996 VERSION 25 kW

- With released accelerator:
 - there is a continuous spark on the spark plugs.
- With completely rotated accelerator:
 - Up to 8000 rpm there is spark on the spark plugs.
 - At 8000 rpm the sparks on the spark plugs start decreasing.
 - At 10000 rpm there are almost no sparks on the spark plugs.
 - Over 11000 rpm there is no spark at all on the spark plugs.

- Check the tachometer.
- If no ignition occurs, check or replace the ignition coil and, successively, the CDI unit, the rev counter the harnesses and the control unit.



EXHAUST VALVE ACTUATOR MOTOR

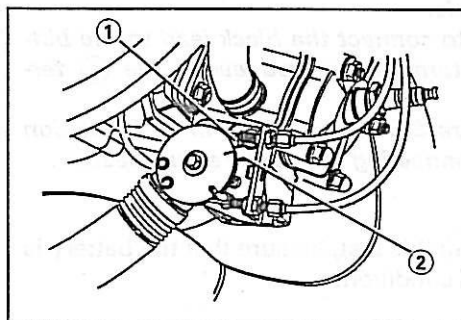
Make sure "START" switch and "POWER" button are in "OFF" positions after checking points 1 and 2.

- Depress the "MODE 3" button on the ignitor checker.
- Set the "MODE" knob on the adaptor to "4" position.
- Depress the "POWER" button.
- Turn the switch to "START" position.
- Moving the "REVOLUTION" knob gradually to check the following positions by moving the exhaust valve.
 - At 2.000 rpm - Cleaning operation of exhaust valve (only one time).
 - At 8.000 rpm (only for model 1996 **FP**, 10000 rpm) Exhaust valve is set on the half open position.
 - At 10.000 rpm (only for model 1996 **FP**, 11000 rpm) Exhaust valve is set on the full open.

ONLY FOR MODEL 1996 VERSION 25 Kw

- At 2.000 rpm - Cleaning operation of exhaust valve (only once in completely open position; any other time in half-open position).
- At 10.000 rpm - Exhaust valve is set on the full open.

- ① Half opening position
- ② Full opening position

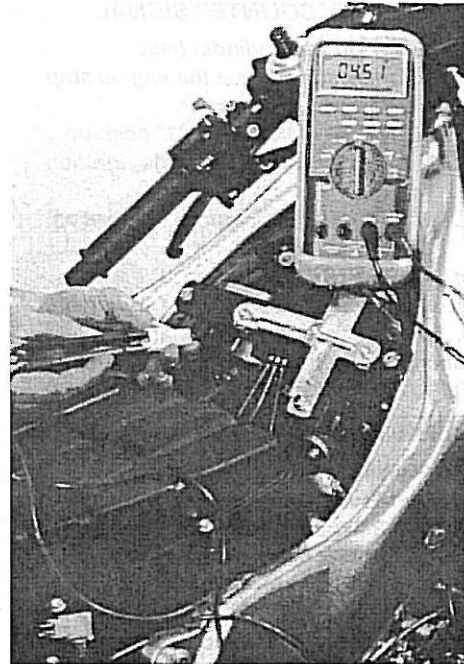


AIR SOLENOIDS

- Set the ignition checker on "MODE 3" and the adaptor on "MODE 4".

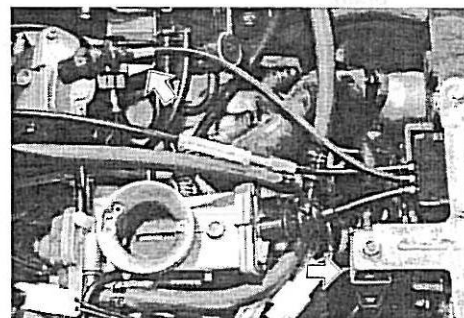
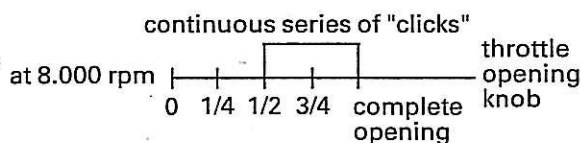
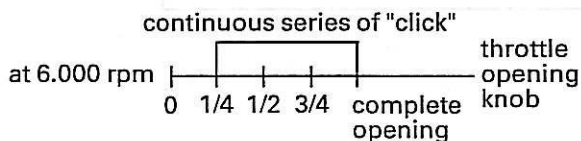
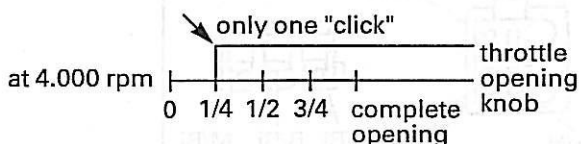
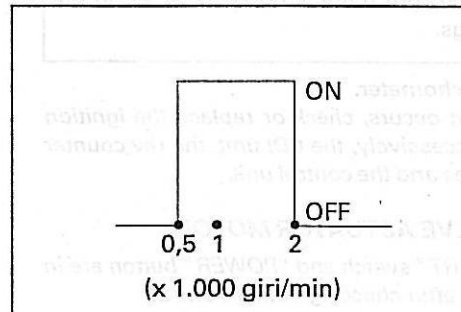
MINIMUM AIR SOLENOID

- Check the operation of solenoid with a pocket tester (range: DC 25V).
- Insert a \ominus probe of pocket tester to the G/V lead wire's coupler and a \oplus probe of pocket tester to the Ar/N lead wire's coupler.
- Turning the "REVOLUTION" dial knob gradually to check the following operations at the specified rpm.
 - at 500 rpm = "OFF"
 - at 1.000 rpm = "ON"
 - at 2.000 rpm = "OFF"



MAXIMUM AIR SOLENOIDS

- Depress the ignition checker "MODE 3" button and turn "MODE 4" adaptor button.
- Depress the "POWER" button.
- Turn the switch to "START" position.
- Check the operation of max air solenoids by "click" sound emitted by the solenoids when they are fed.
- The normal functioning of the solenoids in relation to the opening angle of the throttle knob is as follows:



NEUTRAL LIGHT

In the event of anomalous functioning, proceed as follows.

- The light stays on (even with gear engaged):
 - Check the electric connections.
 - Check and/or replace the neutral switch.
 - Check and/or replace the control unit.
- The light fails to go on in neutral:
 - Check and/or replace the bulb.
 - Check the electric connections.
 - Check and/or replace the neutral switch.
 - Check and/or replace the control unit.

C.D.I. UNIT

Checking with a pocket tester.

- Connect the \oplus probe and the \ominus probe with each lead wire of the C.D.I. unit, check continuity and measure the resistance value.
- If the continuity and the resistance values are as shown in the following table, the C.D.I. unit is may be judged to be normal (see "CAUTION").
- Measure the resistance between the leads.
- Tester range: $\times k\Omega$.

		\oplus Probe of tester to:						
		M/Bi	R/Bi	N/Bi	Ar/N	Bi/B	N/G	N/Bi
\ominus Probe of tester to:	M/Bi		0,1- ∞	0,1- ∞	∞	∞	∞	0,1- ∞
	R/Bi	0,1- ∞		0,1- ∞	∞	∞	∞	0,1- ∞
	N/Bi	0,1- ∞	0,1- ∞		∞	∞	∞	0
	Ar/N	1- ∞	1- ∞	∞		∞	∞	1- ∞
	Bi/B	1- ∞	1- ∞	1- ∞	∞		∞	1- ∞
	N/G	1- ∞	1- ∞	1- ∞	∞	∞		1- ∞
	N/Bi	0,1- ∞	0,1- ∞	0	∞	∞	∞	

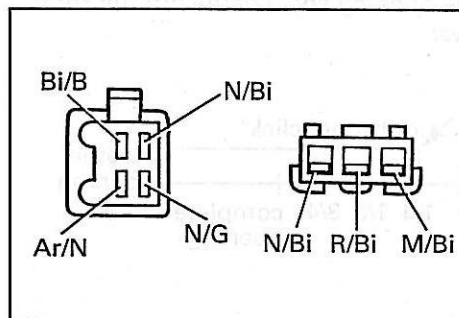
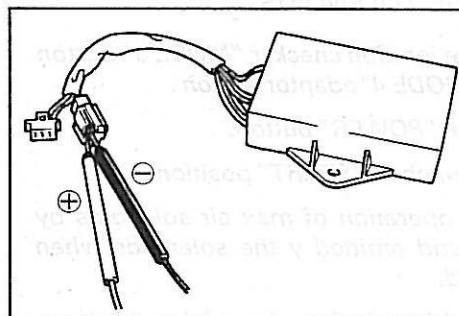
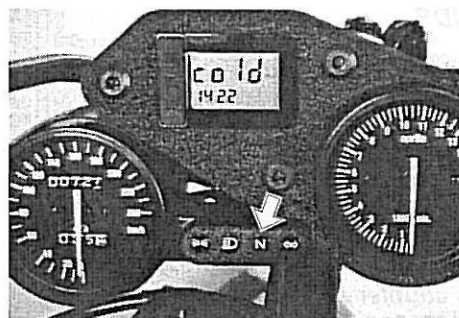
CAUTION:

Swice the C.D.I. unit contains diodes, condensers and other electronic components, the measuring method indicated is only approximate. It is advisable to make a further inspection, replacing the unit with another known to function correctly, or perform the controls envisaged in the paragraph on the control unit (with the ignition checker).

In case of replacement of the C.D.I. unit, for the 25kW I version, contact the **aprilia** consumer service.

The unit in question (code 8124347) is fixed to the vehicle by means of a lead seal with the **aprilia** mark stamped on it. The description of this tamper-proof seal is given in the vehicle's logbook.

In case of failure of the unit, it is necessary to replace and restore the seal; otherwise, the vehicle may be subject to precautionary seizure. The sealing must be carried out exclusively at the **aprilia** premises and can be performed only after the delivery of the mudguard together with the C.D.I. unit. The mudguard will be returned with the new unit already positioned and duly sealed.



IGNITION COILS

A pocket tester or an ohmmeter may be used. In either case, the ignition coil is to be checked for continuity in both primary and secondary windings. Exact ohmic readings are not necessary, but, if the windings are in sound condition, their continuity will be noted with these approximate ohmic values.

Ignition coil resistance	
Primary	0,17 - 0,53 Ω
Secondary	5 - 30 k Ω

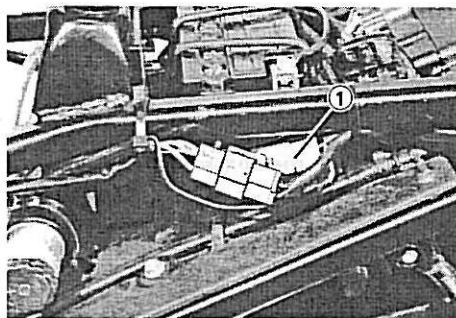
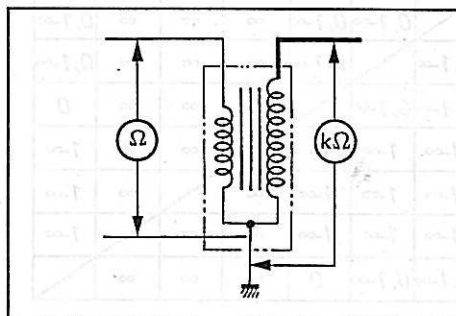
CAUTION:

This measuring method is only approximate. If possible check that the coils are functioning correctly by replacing them with others known to function.

PICK-UP

- Disconnect the pick-up lead coupler ①.
- Using a pocket tester ($\times 100 \Omega$) measure the resistance between Black and Brown lead wires.
- If the resistance is infinity or less than the specification, the pick-ups must be replaced.

Tester connected to:	Resistance	Tester range
R - Bi	20 - 200 Ω	$\times 10 \Omega$
Bi - M	20 - 200 Ω	$\times 10 \Omega$



THROTTLE SENSOR

CAUTION:

Do not remove the throttle sensor ① from the splitting case ②. This component is set at the factory with very sophisticated equipment.

CONTROL PROCEDURES

- Using a pocket tester, bring the (+) probe and the (−) probe into contact with each lead wire of the throttle sensor, check for continuity, and measure the resistance value.

Resistance standard value (kΩ)		
	CLOSED	OPENED
R - N	3,6	3,6
N - B	1	3,7
B - R	3	0,3

EXHAUST VALVES ACTUATOR MOTOR

ADJUSTMENT AND ASSEMBLY PROCEDURES

For adjustment and assembly procedures, see chapter 3.

ACTUATOR PULLEY CONTROL PROCEDURE

- Using a pocket tester, check the actuator resistance values.

Tester connected to:	Resistance	Tester range
R/N - N/R	1 - 60 Ω	x 1 Ω
Ar - N/Bi	3 - 6 kΩ	x kΩ

NOTE:

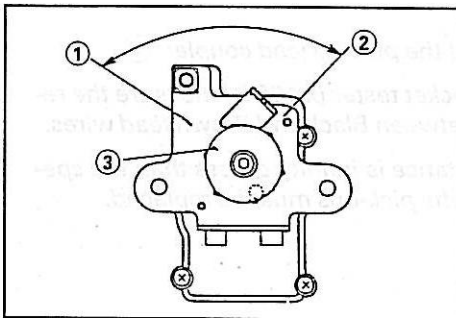
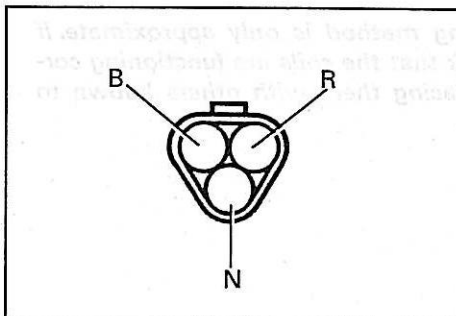
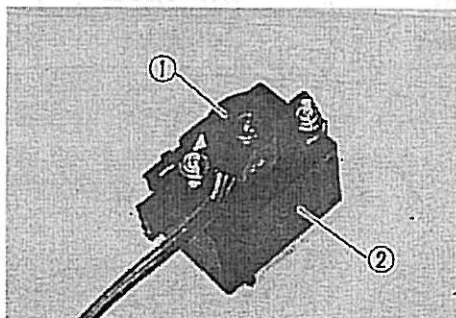
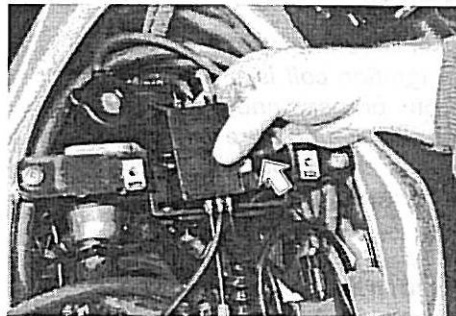
Do not move the pulley during measurement.

- The pulley should move within the angle range indicated by the arrow.

CAUTION:

Do not force the pulley in an attempt to move it beyond the angle range indicated by the arrow.

- ① Full open mark
- ② Full close mark
- ③ Reference mark

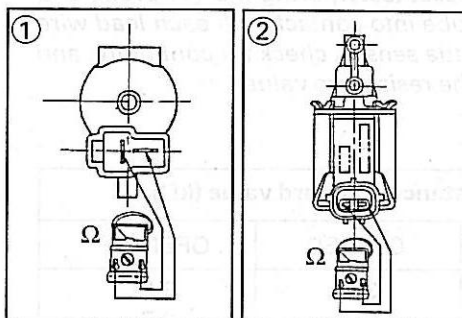
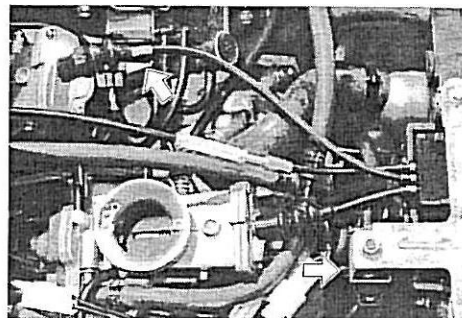


AIR SOLENOIDS

CONTROL PROCEDURE

With a pocket tester set as an ohmmeter, check that the resistance has the value indicated.

Resistance standard value	
Min air solenoid ①	$39 \pm 10 \Omega$
Max air solenoids ②	$35 \pm 10 \Omega$

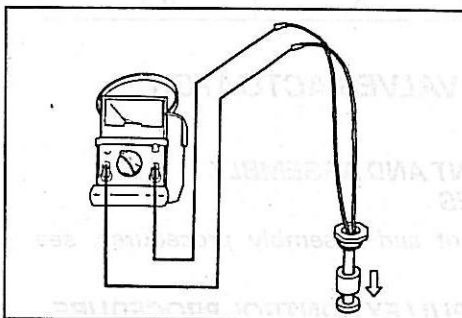


OIL LEVEL GAUGE

Using a pocket tester check the oil level switch for continuity between Vi and Bi/N lead wires. If the tester does not show the value of 0 - 1 Ω when the switch float is in bottom, file the contact surface or replace the unit.

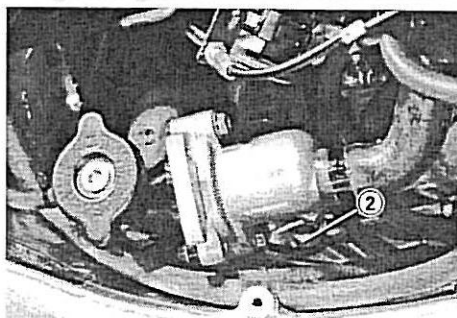
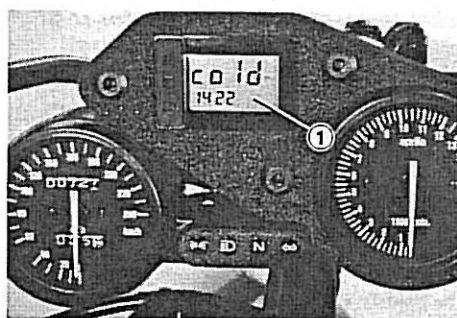
NOTE:

Turning the ignition key to "ON", the oil level light must turn on for 1 second, then go off (if the oil in the tank is not in reserve).



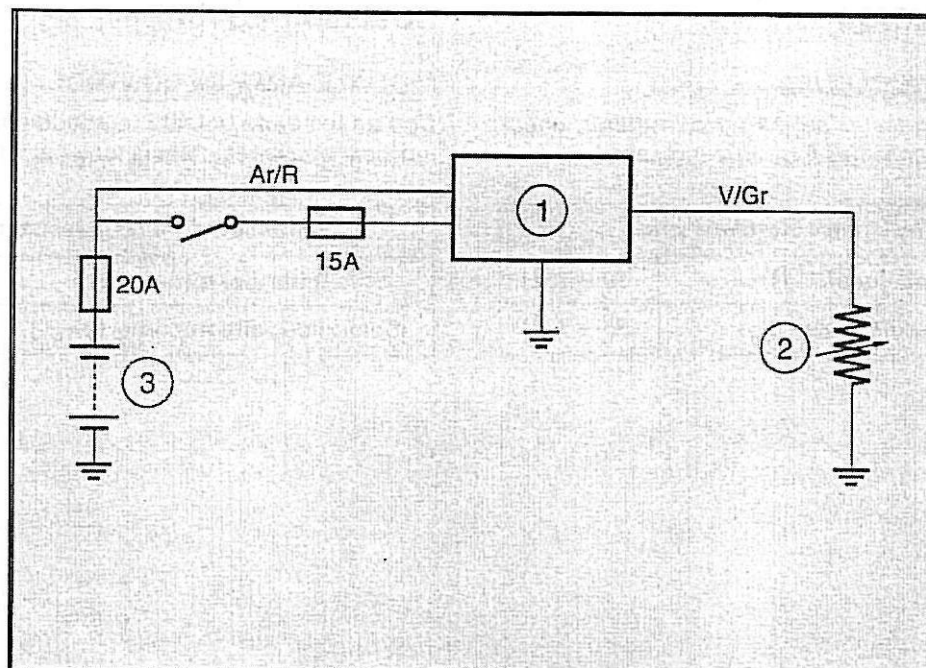
COOLANT TEMPERATURE GAUGE

- ① Temperature gauge display
- ② Thermistor



ELECTRICAL SYSTEM

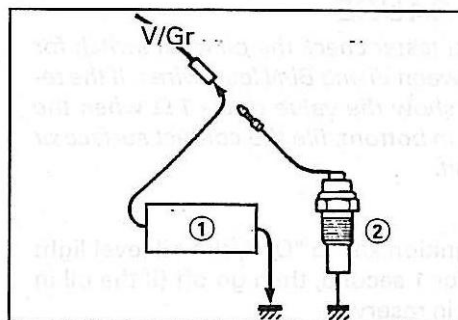
- ① Temperature gauge display
- ② Thermistor
- ③ Battery



Disconnect the V/Gr cable of the thermistor and connect the three resistances 1.000 Ω , 50 Ω and 15 Ω respectively as shown in the figure.

The temperatures or indications listed below will appear on the display (with the ignition key on "ON").

Connected resistance	Display indication
1.000 Ω	COLD
50 Ω	90 ÷ 95°C
15 Ω	120 ÷ 130°C



- ① Resistance
- ② Thermistor

ELECTRICAL SYSTEM

SWITCHES

Using a pocket tester check the continuity of the switches in accordance with the specific table below. If any abnormality is noted, replace the corresponding switch unit.

IGNITION SWITCH

	Ar	V	B	Bi
ON				
OFF				
LOCK				

RIGHT LIGHT SWITCH UNIT

	Ar/R	Ar/N	Gr/G	G/Bi	V/R	M/G	V/R
LIGHTS OFF							
LIGHTS P							
LIGHTS H							
PASSING							
RUN							
OFF							

LEFT LIGHT SWITCH UNIT



	G/Bi	Gr/Bi	Gr/G	Bi/N	G/R	G/Az	Gr/B	Bi/N	N/Vi
HI - LO									
H - HI									
LAP									
R TURN									
L TURN									
HORN									

FRONT STOP SWITCH



	N	N
ON		
OFF		

ELECTRICAL SYSTEM





REAR STOP SWITCH

	G	G
ON		
OFF		

NEUTRAL SWITCH

	B	-
ON		
OFF		

SIDE STAND SWITCH

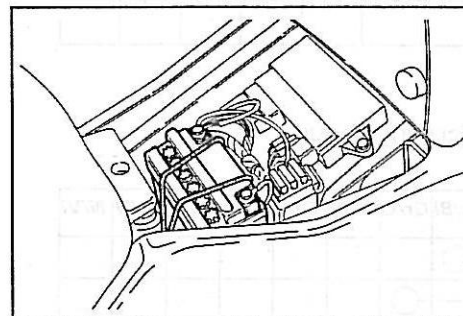
	M	V	N
ON			
OFF			

BATTERY

Type : 12 V - 4 Ah

ACTIVATION AND MAINTENANCE

- Remove the battery from the motorcycle.
- Remove the plugs from the elements and the breather plug.
- Fill the cells with electrolyte fluid with a specific weight of 1,3.
- Charge the battery slowly (with an amperage of 1/10 its capacity) for at least 10 hours and reassemble it on the motorcycle at the moment of delivery to the customer (when a distance of some kilometres is expected to be covered).
- Reassemble the battery on the motorcycle, and connect the battery terminals and the breather hose.
- If the motorcycle stands idle for a considerable amount of time, it is necessary to recharge the battery periodically (at least once a month) for at least 10 hours (eg during prolonged winter stoppages).
- Top up the level of the electrolyte periodically (once a month) **only** with distilled water.



ELECTRICAL SYSTEM

INSPECTION

In the event of anomalies, check first of all that the recharging system is working properly. To inspect the battery, remove it from the cycle and proceed as follows:

- *Look to see that:*
 - *there are no evident signs of sulphatisation (visible from the whitening of one or more elements);*
 - *the level of the electrolyte is between the two reference notches MIN and MAX;*
 - *there are no leaks from the container (external casing).*
- *Charge the battery slowly for at least 10 hours.*
- *Then check the density of the electrolyte in each element using a densimeter. If the density is lower than 1,26 in some elements, or if the idling output is lower than 12V, the battery needs to be replaced.*

RETURN UNDER GUARANTEE

Batteries with the following characteristics will not be recognised as being under guarantee:

- *mechanical damage (eg broken container, bent poles etc);*
- *general sulphatisation (due to wrong activation or use of the battery);*
- *insufficient electrolyte level (to solve to problem of delivery, it is sufficient to close the breather with the special rubber plug).*

SAFETY STANDARDS

WARNING:

Remember that the electrolyte fluid contains sulphuric acid. Avoid contact with the skin and clothes and always keep the batteries well away from sources of excessive heat or sparks, especially during charging, since the hydrogen released might cause explosions.

MULTIFUNCTION COMPUTER

- 1) MODE button
- 2) LOCK button
- 3) START button
- 4) LAP RESET button (on left handle)
- 5) Top display
- 6) Bottom display

CAUTION:

If the letters "LLL" appear on the display check the sensor and/or electric connection circuit for faults.

DESCRIPTION OF FUNCTIONS

Pressing the "M" button in sequence the functions are obtained in the order shown in the figure.

"TEMP H₂O" (Coolant temperature)

Turning the ignition key to "ON", the top display normally visualises the coolant temperature in degrees Centigrade (°C), while the bottom display shows the time. If the temperature exceeds 115°C, the top display flashes, even if a function other than "TEMP H₂O" is set. If the temperature is lower than 30°C, "COLD" appears on the display. Plage de lecture: 0 ÷ 130°C.

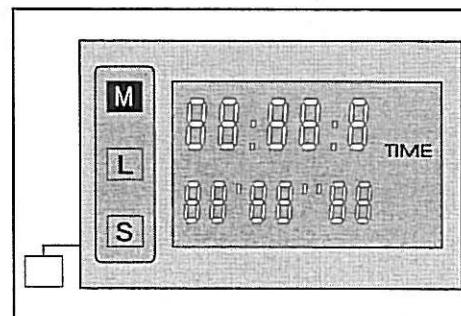
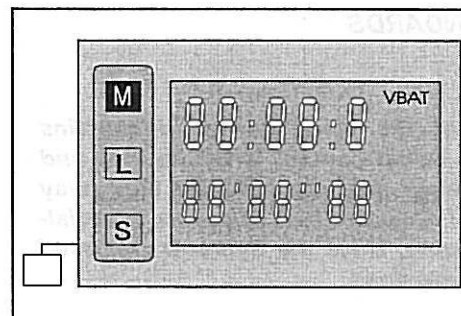
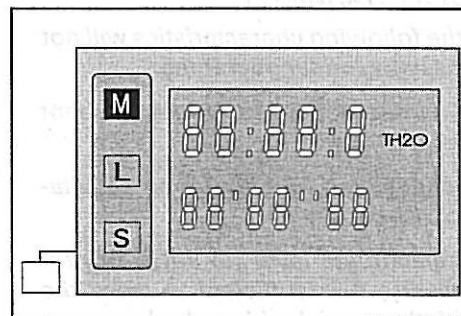
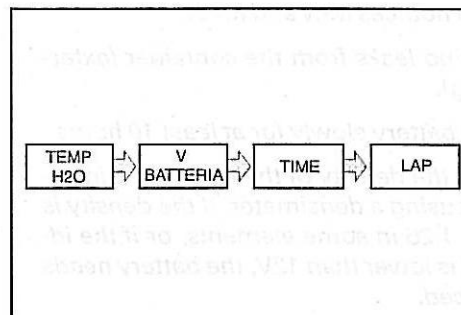
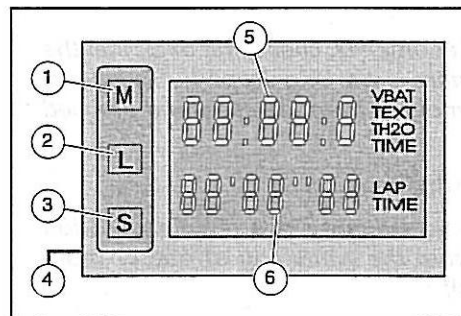
"V BATT" (Battery output)

Pressing button "M" a second time, the battery output in Volts is visualised on the top display. The recharging system works properly if, at 4.000 rpm, battery output with the dipped light on is between 13 and 15 Volts.

"TIME" (Hour/minute setting)

Pressing button "M" a third time, hour and minutes are visualised.

To alter them, proceed as follows:



- Press button "L": the hour time will start to flash.
- Press button "S" to move it forward.
- To set the minute time, press button "M".
- Press button "S" to move it forward.
- To memorise the hour and minute setting, press central button "L".

"LAP" (Chronometer)

Pressing button "M" a fourth time, the "LAP" function is visualised. This function times laps of the track, memorising them for future reference.

"LAP" FUNCTION USE PROCEDURES

(Only for races in places that are closed to traffic)

- To initialise the computer to the lap timer function, press button "S": "L" (LAP) will begin to flash on the screen.
 - To start the function, press button "LAP RESET" on the left handlebar.
 - To visualise the lap time, press button "LAP RESET" button once more.
- After pressing the "LAP RESET" button for about 15 seconds, the time taken in the previous lap is visualised, after which the current time is revisualised.
- To terminate the lap timing, press button "S".

NOTE:

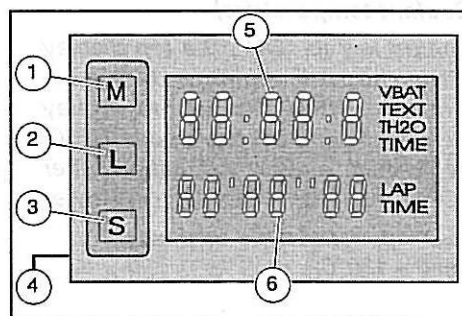
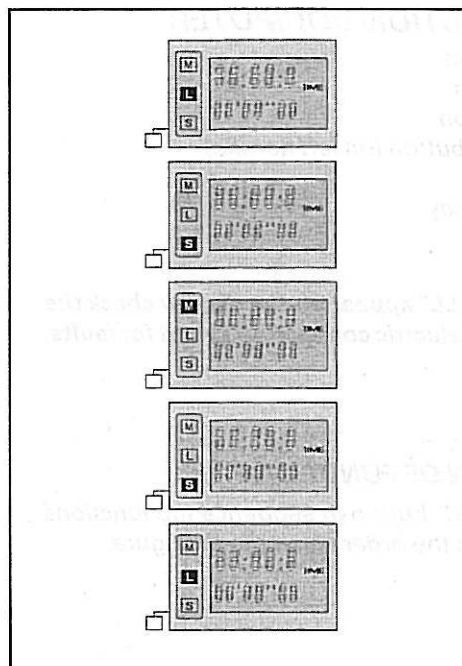
It is possible to perform up to a maximum of 10 lap timings. At the last "L10" will appear on the screen.

LAP MEMORY

- To recall lap times, press button "L". "Ld" will appear on the display.
- To consult lap times stored in the memory, press button "LAP RESET". "Ld 01" corresponds to the first lap, "Ld 02" to the second lap and so on.

CANCELLATION OF MEMORY-STORED DATA

- To cancel data stored in the memory, press button "L". "L10" or "L9" or "L8" and so on will appear on the display.
- Press button "S" continuously and, at the same time, press the "LAP RESET" button on the left handlebar. In this way the data stored in the memory will be totally cancelled.



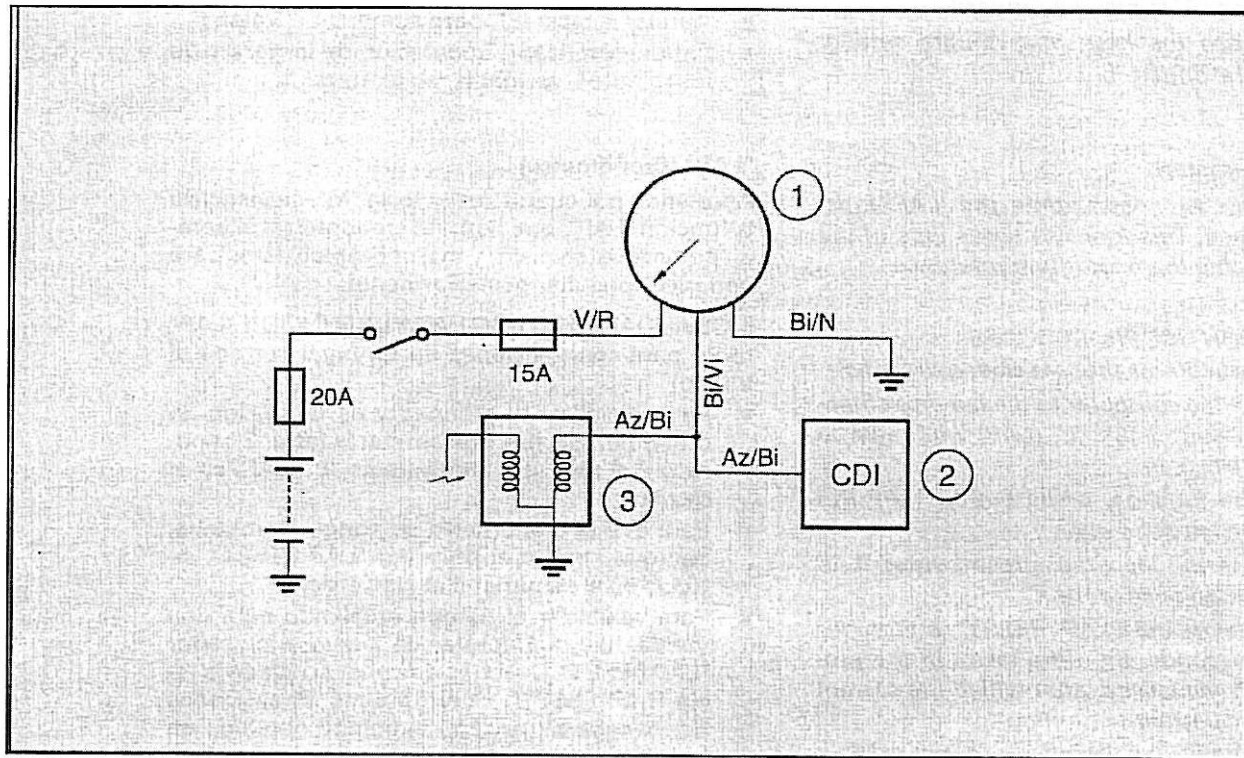
ELECTRONIC REV COUNTER

WIRING DIAGRAM

- ① Rev counter
- ② C.D.I. Unit
- ③ Cylinder ignition coil (R)

If anomalies are noted in the functioning of the rev counter:

- The supply voltage ($11 \div 15V$ DC), measuring it between the Green/Red cable and the White/Black cable with the ignition key at "ON" and the engine on.
- The connection with the cylinder ignition coil (R).
- Perform the tests listed in paragraph "Ignition coils and rev counter signal" in this chapter.
- If these checks produce negative results, replace the rev counter.



BULB REPLACEMENT

CAUTION:

Before replacing a bulb, turn the ignition key to "OFF".

To replace bulbs wear clean gloves.

NOTE:

Do not touch the bulbs with the fingers. Finger-marks cause overheating and the filament may thus break prematurely.

If a bulb has been touched with the fingers, clean it carefully with alcohol before reassembling.

HEADLIGHTS

To replace the high-beam or dipped light bulb, proceed as follows:

- Remove the rubber cover ① on the rear of the headlight in question.
- Disconnect the bulb lead wire.
- Free the bulb holder by releasing the "V" spring.
- Replace the bulb.
- Reassemble by performing disassembly operations in reverse order.

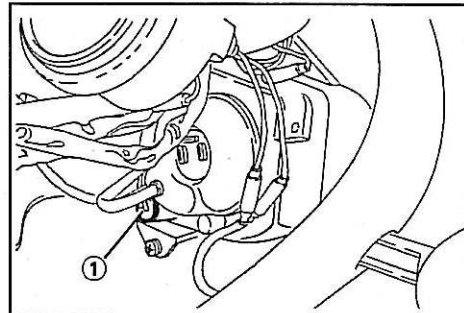
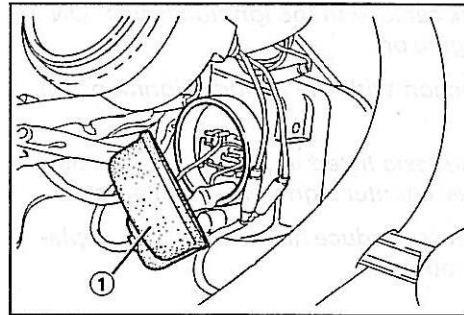
NOTE:

The right-hand bulb corresponds to the high-beam light, the left-hand bulb to the dipped light.

FRONT PARKING LIGHT

This light is situated in a central position with respect to the high-beam and dipped headlights.

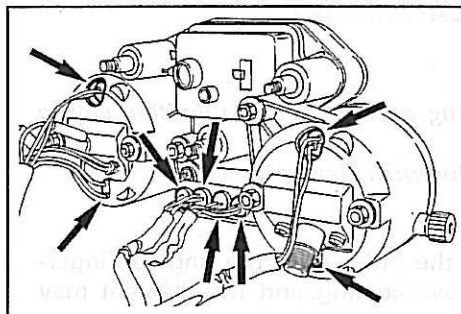
- Remove the rubber lampholder ①.
- Replace the bulb.
- Reassemble the bulbholder with the bulb.



INSTRUMENTATION LIGHTS

To have access to the instrument light bulbs, remove the cup from the cowling.

- Remove the lamp holder from the light in question.
- Replace a bulb.

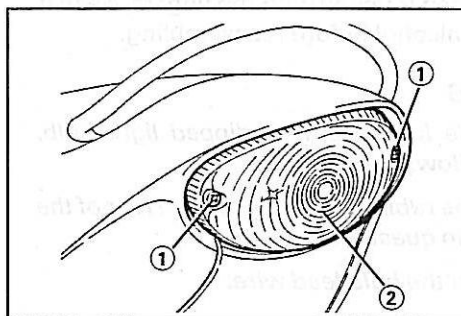


TAIL LIGHT

- Remove the glass fastening screws ①.
- Remove the glass ②.
- Press the lamp and turn in an anticlockwise direction.
- Fit in the new lamp, press it and turn in a clockwise direction.

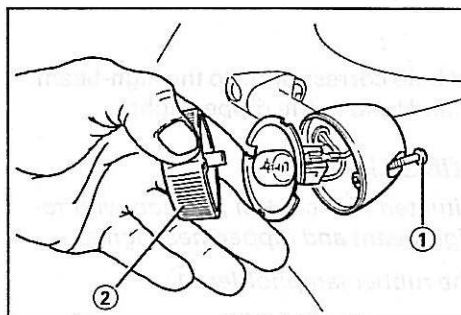
NOTE:

The bulb may be fitted only in one direction because the two guide pins are not aligned.



INDICATORS

- Remove the fastening screw ①.
- Remove the glass ②.
- Press the lamp and turn in an anticlockwise direction.
- Fit in the new lamp, press it and turn in a clockwise direction.
- Fit the flap of the glass into its housing to the body of the indicator and tighten the fastening screw.



CAUTION:

While tightening the screw ①, hold the glass firmly in position. The torque of screw ① must not be excessive so as not to break the glass.

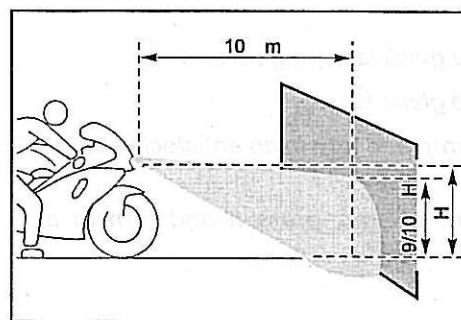
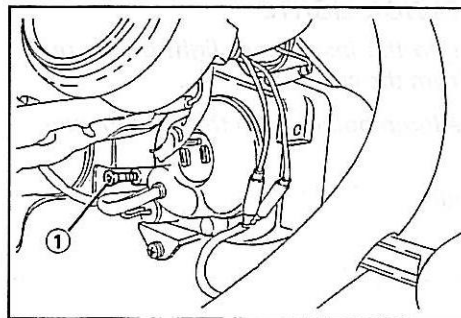
HEADLIGHT SETTING

It is possible to set the front headlights vertically by turning the screw ①.

- Clockwise rotation of screw ①: the beam rises.
- Anticlockwise rotation of screw ①: the beam lowers.

To check the setting of the headlights, set the motorcycle on a level surface, with the headlights 10 metres from the wall and the driver on the motorcycle.

Turn on the dipped lights to check that the top of the beam projected on the wall is slightly below the line of the light (about 90% the height of the light).



FUSE REPLACEMENT

WARNING:

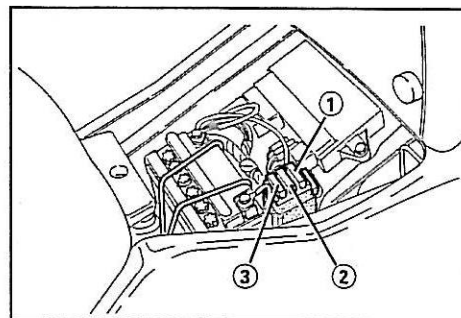
Do not use fuses of an amperage other than that prescribed so as not to damage the electric system or cause a fire.

If a component in the electric system does not work or the engine does not start, check the conditions of the fuses.

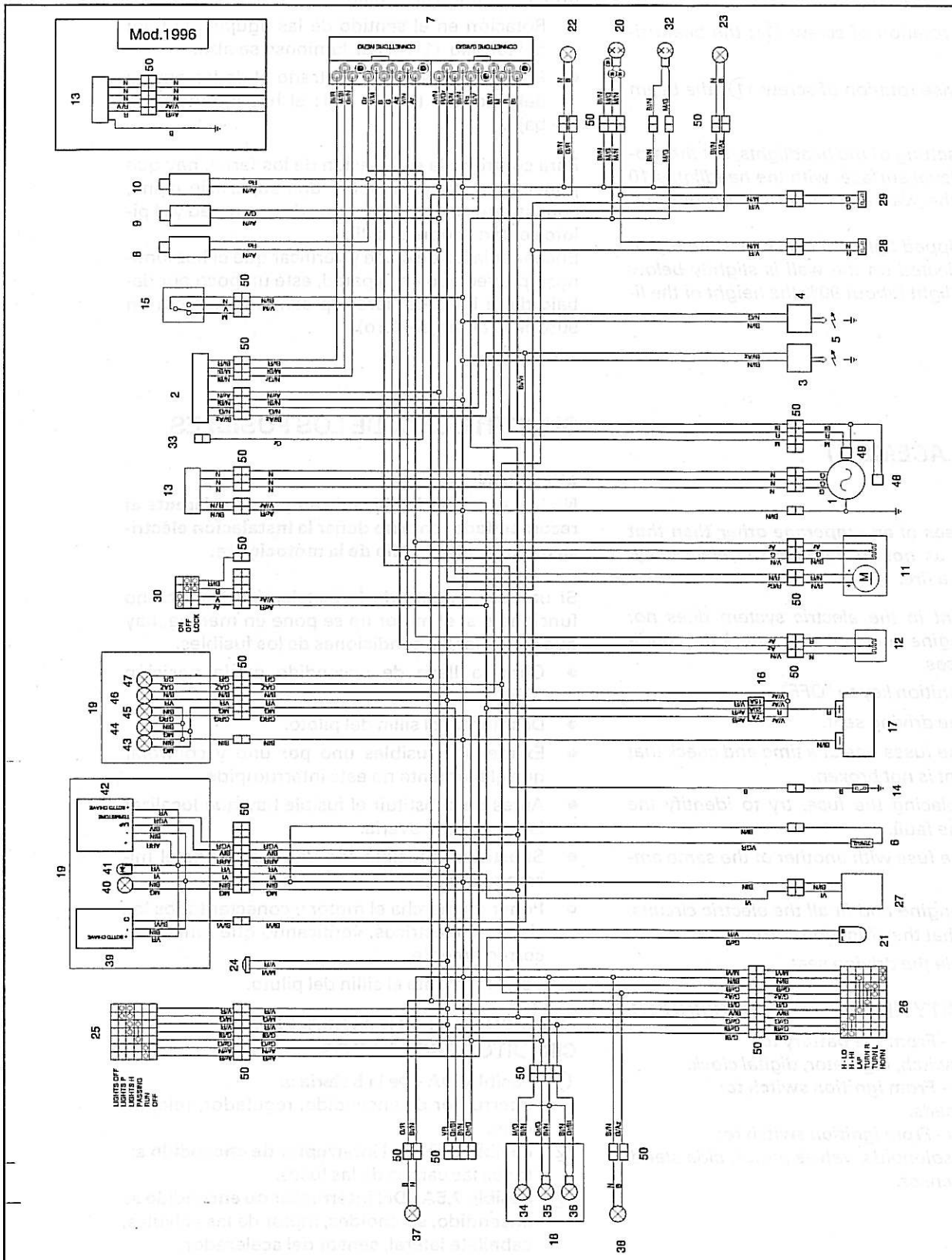
- Turn the ignition key to "OFF".
- Remove the driving seat.
- Remove the fuses one at a time and check that the filament is not broken.
- Before replacing the fuse, try to identify the cause of the fault.
- Replace the fuse with another of the same amperage.
- Start the engine and fit all the electric circuits, checking that they function correctly.
- Reassemble the driving seat.

FUSE CAPACITY AND PROTECTED CIRCUITS

- ① **20A Fuse** - From the battery to: ignition switch, regulator, digital clock.
- ② **15A Fuse** - From ignition switch to: all light loads.
- ③ **7,5A Fuse** - From ignition switch to: ignition, solenoids, valves motor, side stand, throttle sensor.



SCHEMA ELETTRICO – SCHEMA ELECTRIQUE – ELEKTRISCHERPLAN



LEGENDE

1. Generatore
2. Centralina CDI
3. Bobina cilindro ant. (R)
4. Bobina cilindro post. (L)
5. Candele
6. Termistore
7. Centralina di controllo
8. Solenoide del massimo 1
9. Solenoide del minimo
10. Solenoide del massimo 2
11. Motorino valvole scarico
12. Sensore acceleratore
13. Regolatore di tensione
14. Interruttore folle
15. Interruttore cavalletto laterale
16. Fusibili
17. Batteria
18. Far anteriori
19. Cruscotto
20. Fanale posteriore
21. Interruttore stop anteriore
22. Interruttore stop posteriore
23. Interruttore di accensione
24. Interruttore dx luci
25. Interruttore sx luci
26. Sensore livello olio
27. Interruttore stop anteriore
28. Interruttore stop posteriore
29. Interruttore di accensione
30. Relé luci
31. Luce targa
32. Check motorino valvole scarico
33. Lampada di posizione ant.
34. Lampada abbagliante
35. Lampada anabbagliante
36. Indicatore di direzione ant. dx
37. Indicatore di direzione ant. sx
38. Contagiri
39. Luce strumenti
40. Spia LCD livello olio
41. Display cronom./temp. H20/orologio
42. Luce strumenti
43. Spia luci di posizione
44. Spia luci abbaglianti
45. Spia cambio in folle
46. Spia indicatori di direzione
47. Pick up cilindro ant. (R)
48. Pick up cilindro post. (L)
49. Connettori multipli
- 50.

COLORE DEI CAVI

- | | |
|----|---------|
| Ar | arancio |
| Az | azzurro |
| B | blu |
| Bi | bianco |
| G | giallo |
| Gr | grigio |
| M | marrone |
| N | nero |
| R | rosso |
| V | verde |
| Vi | viola |

LEGENDE

1. Alternateur
2. Bloc C.D.I.
3. Bobine cylindre av. (R)
4. Bobine cylindre ar. (L)
5. Bougies
6. Thermistor
7. Bloc de contrôle
8. Solénoïde de puissance 1
9. Solénoïde du ralenti
10. Solénoïde de puissance 2
11. Moteur clapets échappement
12. Capteur accélérateur
13. Régulateur de tension
14. Commutateur point mort
15. Commutateur béquille latérale
16. Fusibles
17. Batterie
18. Phares avant
19. Tableau de bord
20. Feu arrière
21. Clignotement
22. Clignotant arrière droit
23. Clignotant arrière gauche
24. Claxon
25. Commutateur droit feu
26. Commutateur feu gauche
27. Capteur niveau huile
28. Commutateur stop avant
29. Commutateur stop arrière
30. Commutateur d'allumage
31. Relais feux
32. Eclairage de plaque
33. Check moteur clapets échappement
34. Lampe de position avant
35. Lampe de croisement
36. Lampe de route
37. Clignotant avant droit
38. Clignotant avant gauche
39. Compte-tours
40. Eclairage instruments
41. Témoin jauge d'huile
42. Display chronomètre/temp. H20/montre
43. Eclairage instruments
44. Témoin feux de position
45. Témoin feux de croisement
46. Témoin vitesse point mort
47. Témoin clignotants
48. Pick up cylindre avant (R)
49. Pick up cylindre arrière (L)
50. Connecteurs multiples

COULEURS DES CABLES

- | | |
|----|------------|
| Ar | orange |
| Az | bien clair |
| B | bleu |
| Bi | bleu |
| G | jaune |
| Gr | gris |
| M | marron |
| N | noir |
| R | rouge |
| V | vert |
| Vi | violet |

LEGENDE

1. Generator
2. Steuergewölbe C.D.I.
3. Spule Zylinder vorn (R)
4. Spule Zylinder hint. (L)
5. Kerzen
6. Thermistor
7. Steuergewölbe
8. Höchstsolenoid 1
9. Mindestsolenoid 1
10. Höchstsolenoid 2
11. Antrieb Auslaßventile
12. Gaszugsensor
13. Spannungsregler
14. Leerlaufschalter
15. Schalter seitliche Fußraste
16. Sicherungen
17. Batterie
18. Vordere Lichter
19. Armaturenbrett
20. Rücklicht
21. Unterbrechung
22. Richtungsanzeiger hinten rechts
23. Richtungsanzeiger hinten links
24. Hupe
25. Rechter Lichtschalter
26. Linker Lichtschalter
27. Sensor Ölstand
28. Vordere Stoppschalter
29. Hinterer Stoppschalter
30. Zündschalter
31. Relais Lichter
32. Kennzeichenlicht
33. Check Antrieb Auslaßventile
34. Standlicht vorn
35. Fernlicht
36. Abblendlicht
37. Vordere rechter Richtungsanzeiger
38. Vordere linker Richtungsanzeiger
39. Drehzahlmesser
40. Instrumentenlicht
41. Meilleuchte LCD Ölstand
42. Display Chronometer/Temp. H20/Uhr
43. Instrumentenlicht
44. Meilleuchte Standlichter
45. Meilleuchte Fernlichter
46. Meilleuchte Leerlauf
47. Meilleuchte Richtungsanzeiger
48. Pick up vorderer Zylinder (R)
49. Pick up hinterer Zylinder (L)
50. Mehrfachstecker

FARBE DER KABEL

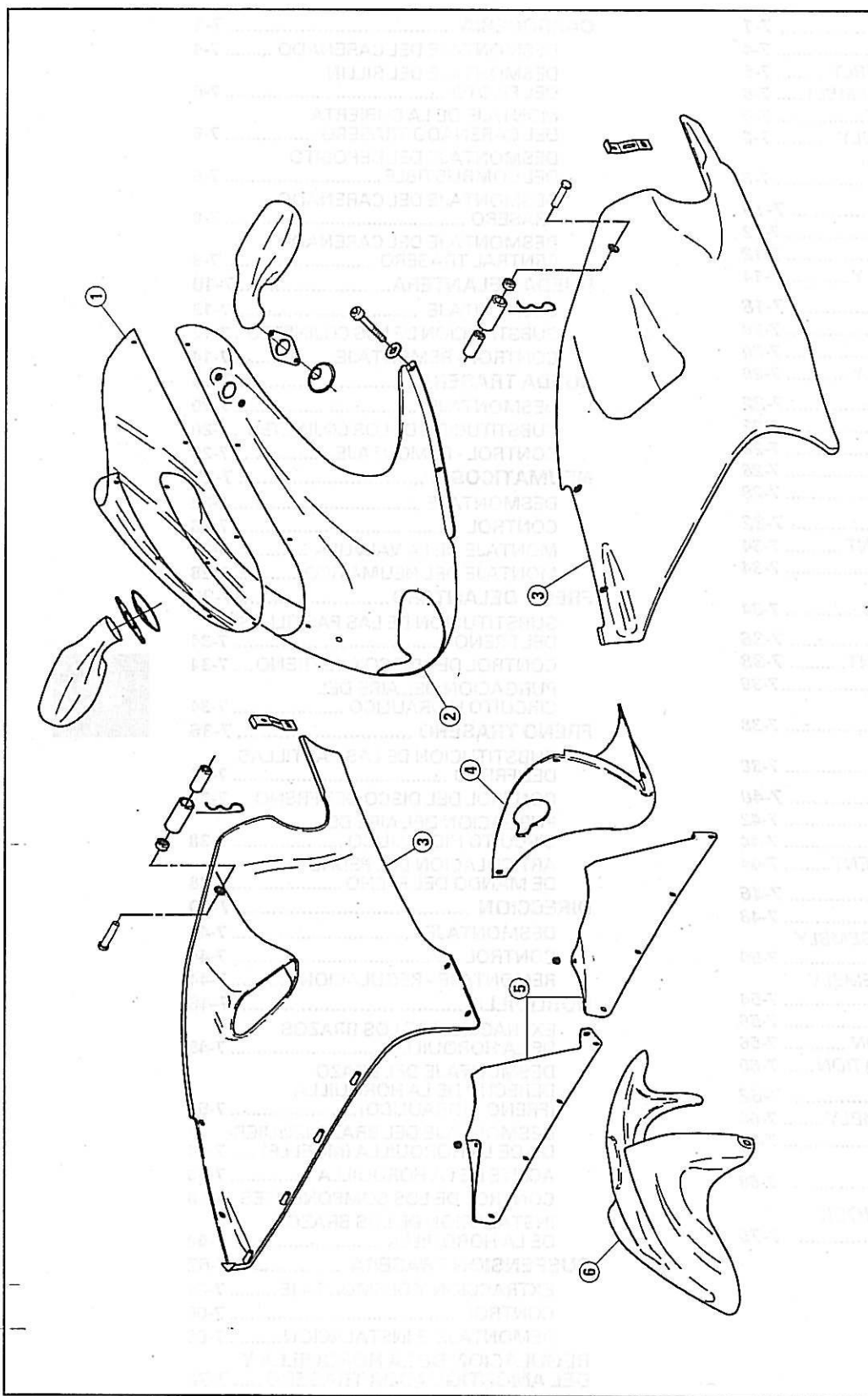
- | | |
|----|---------|
| Ar | Orange |
| Az | Helblau |
| B | Blau |
| Bi | Weiß |
| G | Gelb |
| Gr | Grau |
| M | Braun |
| N | Schwarz |
| R | Rot |
| V | Grün |
| Vi | Lila |

CHASSIS

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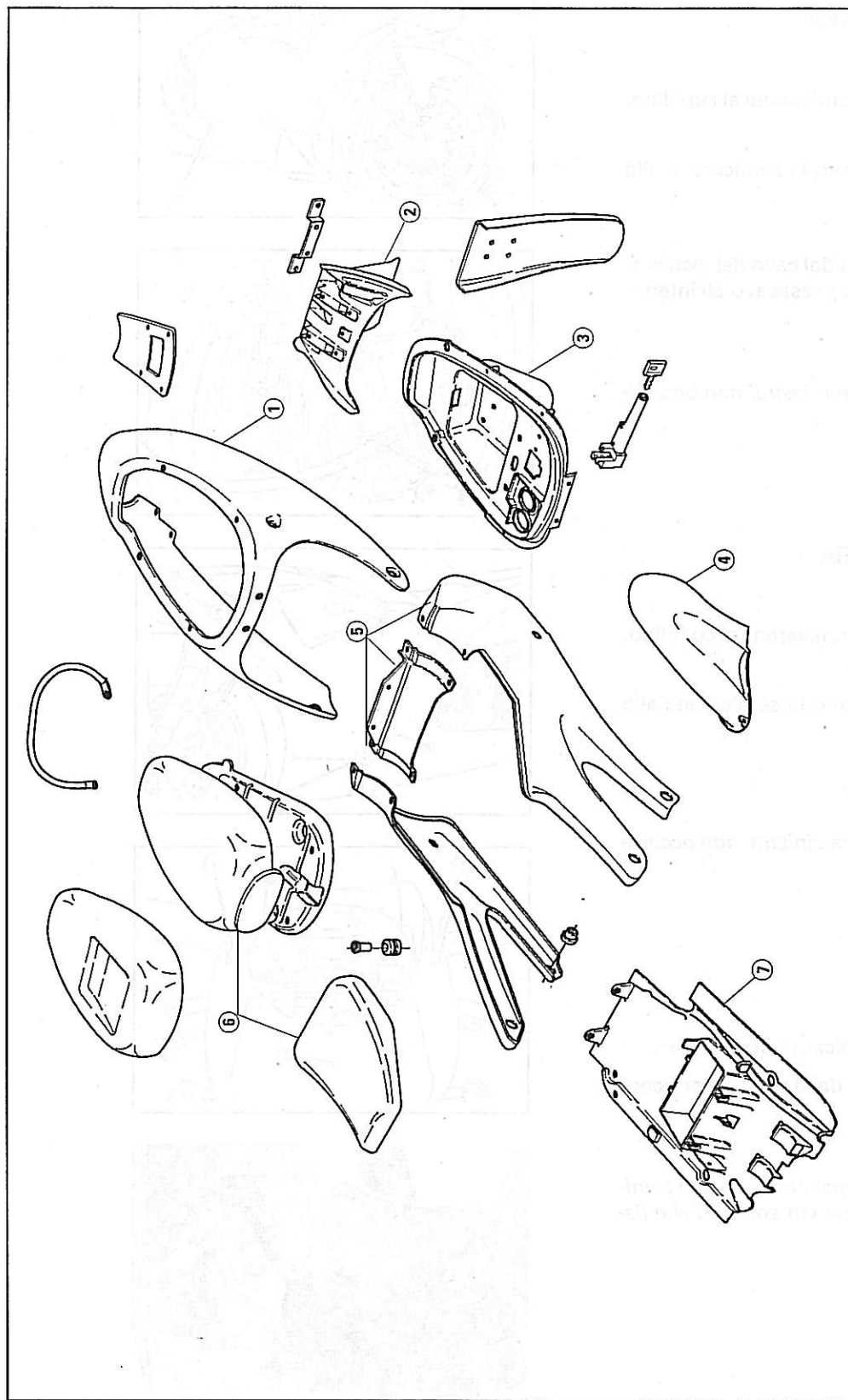
CARROZZERIA - BODY - CARROCERIA



- ① Parabrisas
- ② Carenado superior
- ③ Semicarenados laterales
- ④ Carenado inferior central
- ⑤ Flancos interiores
- ⑥ Guardabarro delantero

- ① Windshield
- ② Front fairsing
- ③ Side half-fairsings
- ④ Lower central fairsing
- ⑤ Internal panels
- ⑥ Front mudguard

- ① Parabrezza
- ② Cupolino
- ③ Semicarene laterali
- ④ Carena inferiore centrale
- ⑤ Fianchetti interni
- ⑥ Parafango anteriore



- ① Carenado trasero
- ② Porta-matrícula
- ③ Equipaje trasero
- ④ Guardabarro trasero
- ⑤ Carenado central trasero
- ⑥ Sillín del piloto y del pasajero
- ⑦ Soporte de la batería/guardabarro

- ① Rear fairing
- ② Number plate holder
- ③ Rear oddments tray
- ④ Rear mudguard
- ⑤ Rear central cowl
- ⑥ Driver's and passenger's seat
- ⑦ Battery/mudguard holder

- ① Codone
- ② Portatarga
- ③ Vasca portaoggetti posteriore
- ④ Parafango posteriore
- ⑤ Carena centrale posteriore
- ⑥ Sella pilota e passeggero
- ⑦ Supporto batteria/parafango

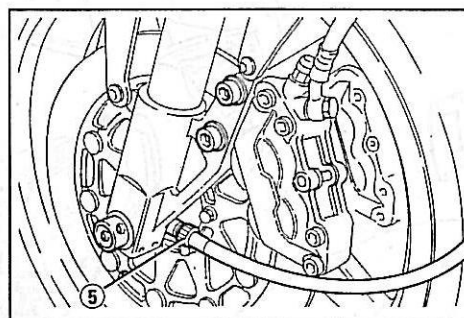
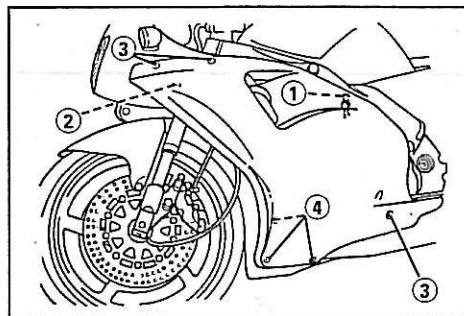
FAIRING DISASSEMBLY

LEFT SIDE HALF-FAIRING

- Remove the inside clip ①.
- Remove the screw ② fastening half-fairing to front fairing.
- Remove the three screws ③.
- Remove the three screws ④ fastening half-fairing to the lower fairing.
- Remove half-fairing.
- Unscrew tachometer cable fastening ring nut ⑤, remove from housing and from the two fairleads inside the half-fairing.

NOTE:

If the right half-fairing has already been removed, it is unnecessary to remove the three screws ④.

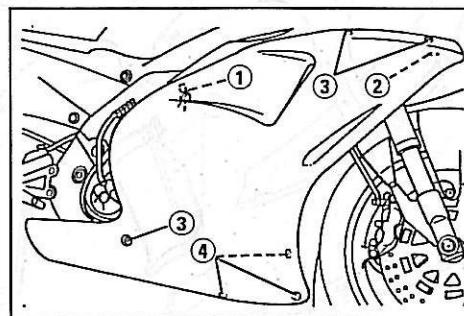


RIGHT SIDE HALF-FAIRING

- Remove the inside clip ①.
- Remove the screw ② fastening half-fairing to front fairing.
- Remove the three screws ③.
- Remove the three screws ④ fastening the half-fairing to the lower fairing.
- Remove half-fairing.

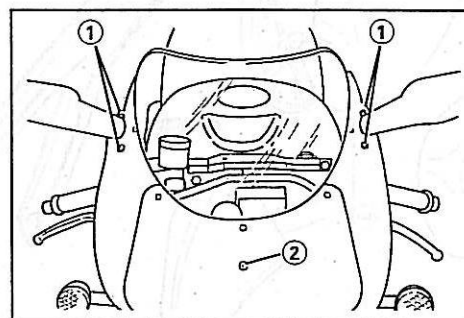
NOTE:

If the left half-fairing has already been removed, it is unnecessary to remove the three screws ④.



FRONT FAIRING

- Remove the four screws ①.
- Remove the central screw ②.
- Disconnect the indicator connectors.
- Disconnect the headlight connector from the connector plate on the front chassis.

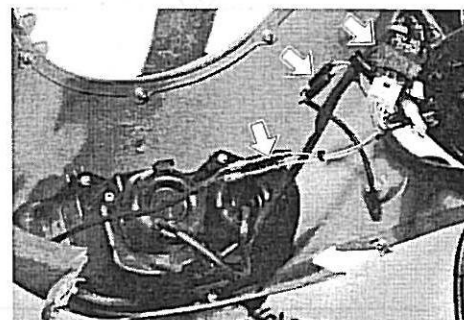


NOTE:

To disassemble the front fairing without removing the side half-fairings, remove the two front screws which fix the front fairing to the half-fairings.

REASSEMBLY

Perform disassembly operations in reverse order.

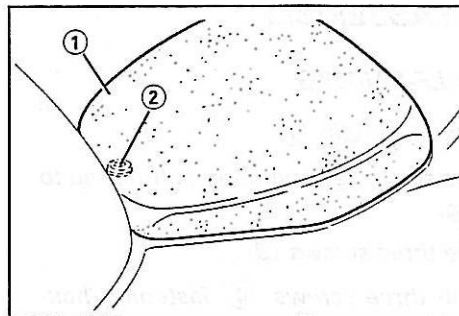


DRIVER'S SEAT DISASSEMBLY

- Raise the front of the seat upholstery ①.
- Remove screw ② and remove the seat from the front.

REASSEMBLY

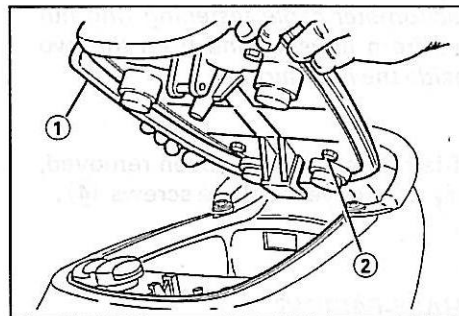
- Fit the rear flaps into their housings.
- Lower the front of the seat.
- Tighten screw ② securely.



REAR FAIRING COVER ASSEMBLY

To replace the passenger's seat upholstery with the rigid fairing cover, proceed as follows:

- Disassemble the passenger's seat ①.
- Remove the four nuts ② which fasten the seat upholstery.
- Assemble the rigid fairing cover to the base of the seat and fix with the self-tapping screws supplied with the cover.

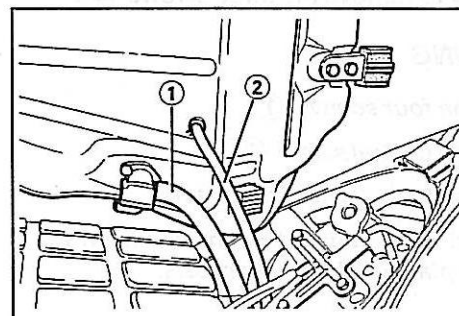
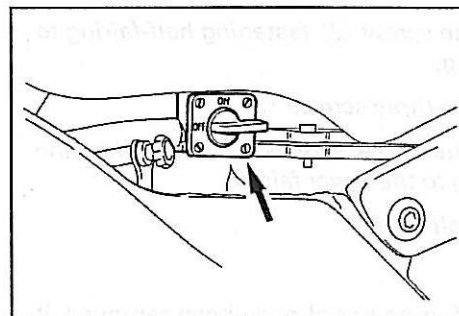


FUEL TANK DISASSEMBLY

WARNING:

Before disassembling the tank, check that the fuel cock is closed and the engine cold. Check also that there are no lit cigarettes, free flames or incandescent bodies in the vicinity: **DANGER OF FIRE!**

- Turn the fuel cock to "OFF".
- Disassemble the driver's seat.
- Carefully raise the rear part of the tank and push back to release the front check tab.
- Slightly incline the tank on its left side.
- Remove the fuel hose ① and water drain hose ② fastened with an elastic clamp.



REASSEMBLY

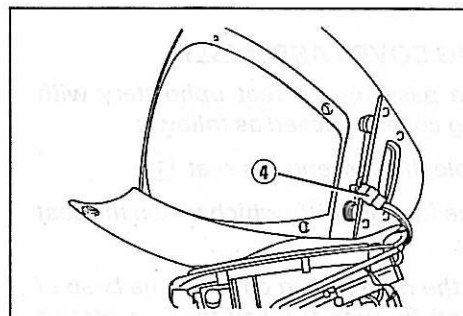
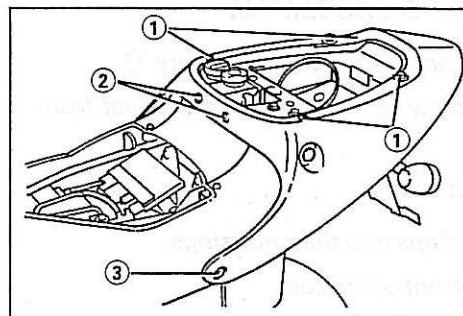
Perform the disassembly operations in reverse order.

REAR FAIRING DISASSEMBLY

- Disassemble the passenger's seat.
- Remove the four screws ①.
- Remove the two screws ②.
- Remove the two screws ③.
- Remove the rear fairing from the rear of the motorcycle, carefully widening the bottom part to release it from the passenger seat lock.
- Disconnect tail light connector ④.

REASSEMBLY

Perform the disassembly operations in reverse order, being careful not to widen the lower part of the rear fairing excessively.



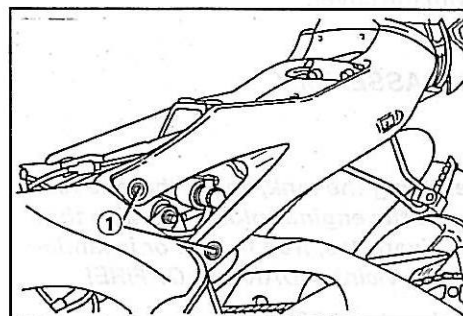
REAR CENTRAL COWLING DISASSEMBLY

- Disassemble the driver's seat.
- Disassemble the passenger's seat.
- Disassemble the rear fairing.
- Disassemble the four screws ① and bushes which fasten the rear part of the chassis.
- Remove the rear central cowling from above.

REASSEMBLY

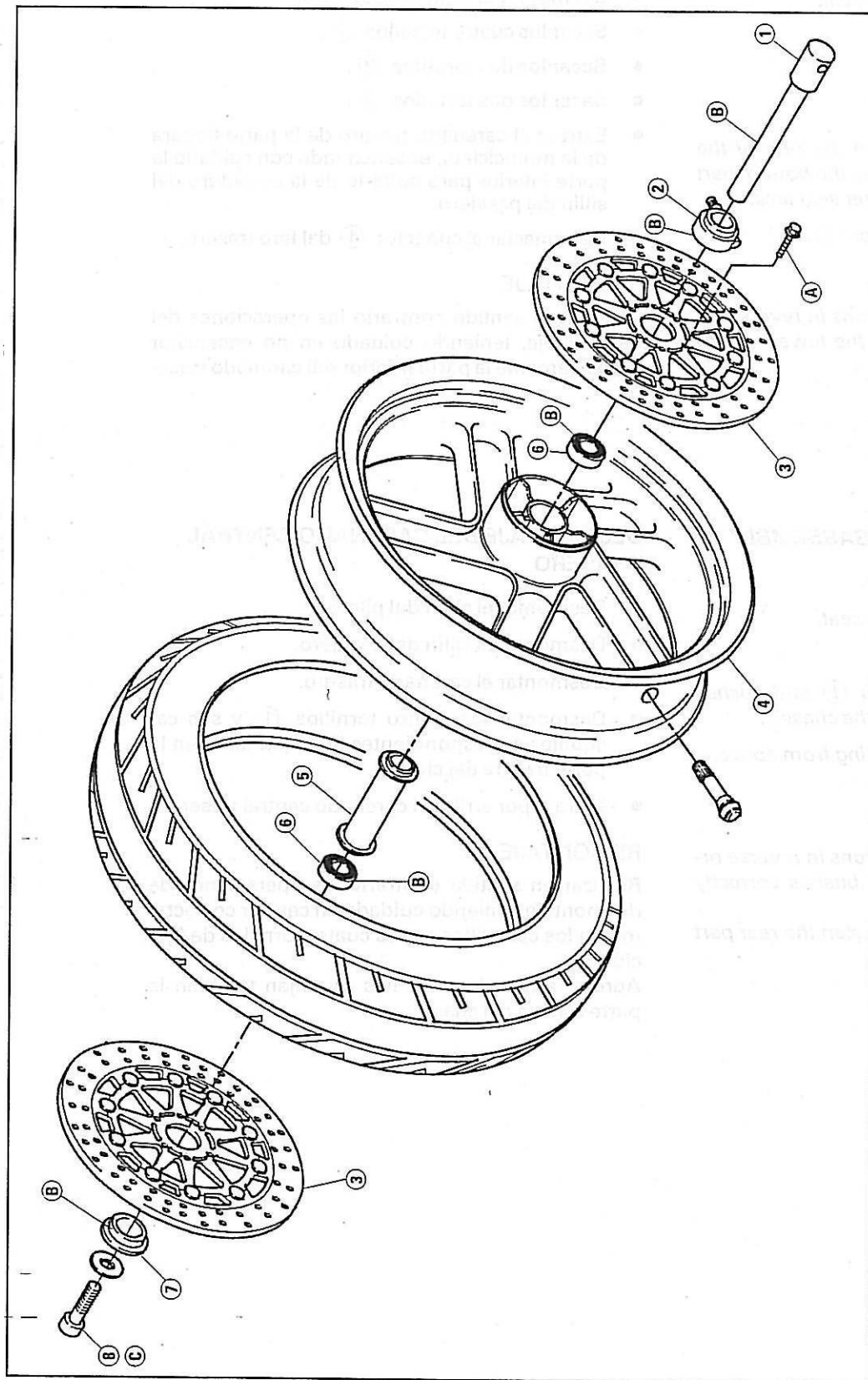
Perform the disassembly operations in reverse order, being careful to centre the bushes correctly over the four fastening screws.

Fully tighten the screws which fasten the rear part of the chassis.



FRONT WHEEL

- ① Wheel pin
- ② Tachometer socket
- ③ Brake disc
- ④ Wheel rim
- ⑤ Bearings spacer
- ⑥ Bearings
- ⑦ External spacer
- ⑧ Wheel pin screw
- (A) = Apply LOCTITE® medium:
15 - 25 Nm (1,5 - 2,5 kgm)
- (B) = Apply lithium grease
- (C) = Wheel pin screw:
80 Nm (8,0 kgm)



DISASSEMBLY

WARNING:

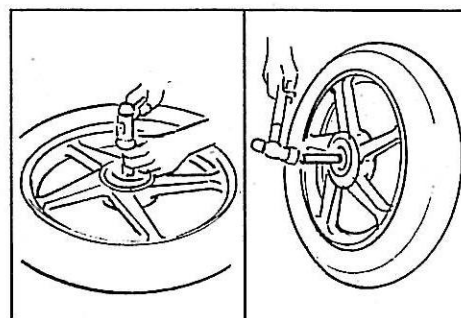
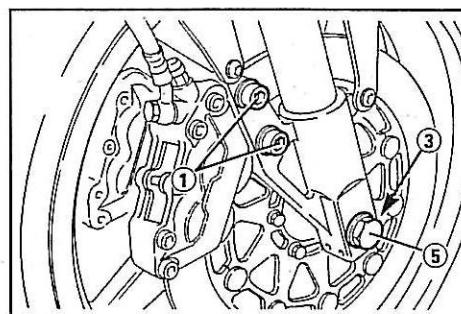
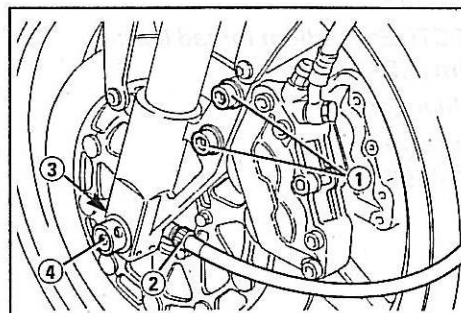
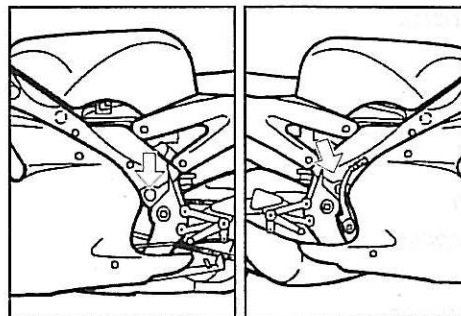
Before disassembling the wheel, set the motorcycle securely on the special stand whose support pins should be fitted into the holes on the chassis.

- Remove the fastening screws ① and disassemble both the front brake calipers.

CAUTION:

When the calipers are disassembled do not pull the brake lever as the caliper pistons might leave their housings, and this might cause the brake fluid to leak.

- Detach the tachometer cable, unscrewing the ring nut ②.
- Loosen the wheel pin screw ⑤.
- Loosen the four screws ③ at the basis of the fork tubes.
- Remove the wheel pin screw ⑤.
- Unscrew and remove the wheel pin ④.
- Remove the wheel.



BEARING REPLACEMENT

NOTE:

After every disassembly operation, the bearings must be replaced.

- Clean the wheel hub.
- Remove the bearing by hitting the internal ring of the bearing itself with a copper or aluminium punch.
- Remove the spacer and proceed as before to remove the other bearing.
- Clean the wheel hub thoroughly.

NOTE:

Begin assembling the new bearings starting from the one on the right (opposite the tachometer socket), setting it against the hub housing.

- With a pad of the same diameter as the external ring, push the new bearing firmly into its housing.
- Fit the spacer into the hub body.
- Using the pad, push the other bearing into its housing.

CAUTION:

Do not hammer the bearing balls or inner ring.

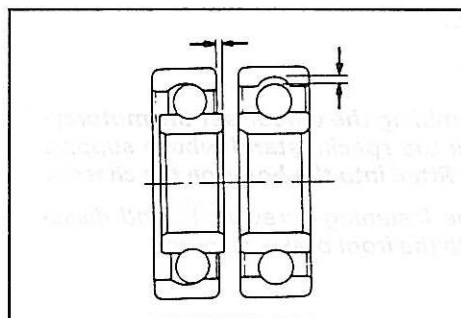
INSPECTION

BEARINGS

After assembling the wheel hub bearings, check the inner ring clearance by hand.

Turn the inner ring by hand to check that it rotates smoothly and silently.

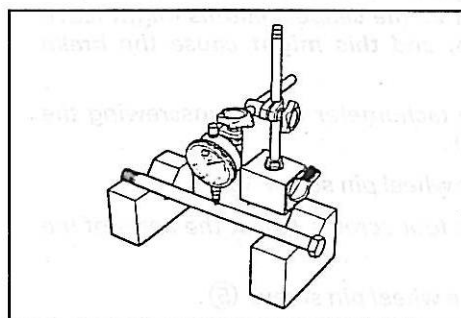
Replace any faulty bearings.



WHEEL PIN

Using a dial gauge, check the runout limit of the wheel pin. If the runout limit exceeds the maximum value, replace the pin.

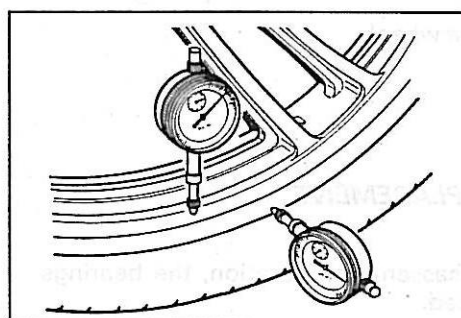
Maximum runout limit: 0,25 mm



RIM

Check that the axial and radial runout of the rim does not exceed the maximum value. Excess runout is usually caused by consumed or worn or loose wheel bearings and decreases when the bearings are replaced. If after replacing the bearings the runout does not return to the value indicated, replace the rim.

Maximum runout limit (radial and axial): 2,0 mm

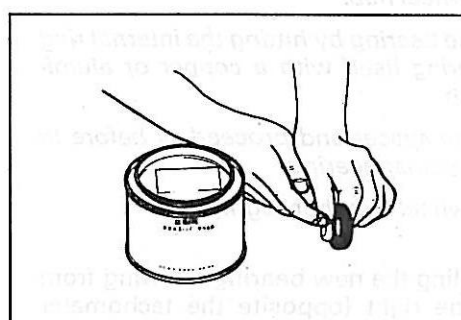


REASSEMBLY

Reassemble the front wheel by performing the disassembly operations in reverse order and paying attention to the following points:

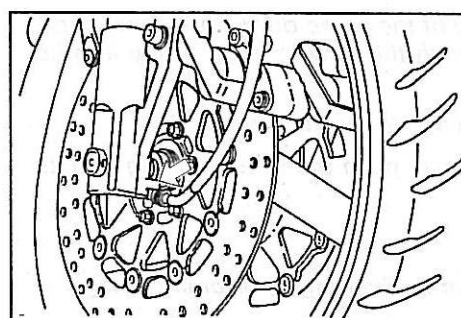
BEARINGS

- Apply lithium grease before reassembling the bearings.



TACHOMETER SOCKET

- Before reassembling the tachometer socket, rub it with lithium grease.
- When the socket is installed on the hub, check that the socket tab fits the hub housing properly.
- Before tightening the wheel pin, place the tachometer socket into position properly, with the cable housing in contact with the ledge on the front fork leg guard.



CHASSIS

WHEEL PIN

- Grease the wheel pin ④ with lithium grease and fit it into the wheel hub.
- Fit and tighten the wheel pin screw ⑤.
- Tighten the four screws ③ at the base of the fork tubes.
- Tighten the wheel pin screw ⑤ to the required torque.

Tightening torques

Wheel pin screw: 80 Nm (8,0 kgm)

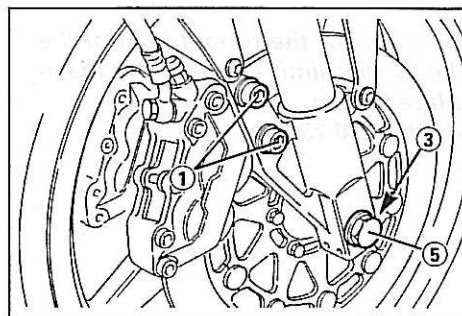
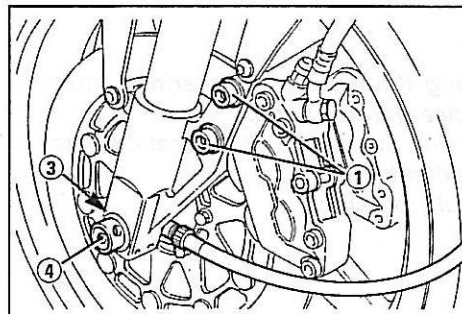
Wheel pin locking screws: 10 Nm (1,0 kgm)

BRAKE CALIPERS

Assemble the brake calipers, tightening the screws ① to the required torque.

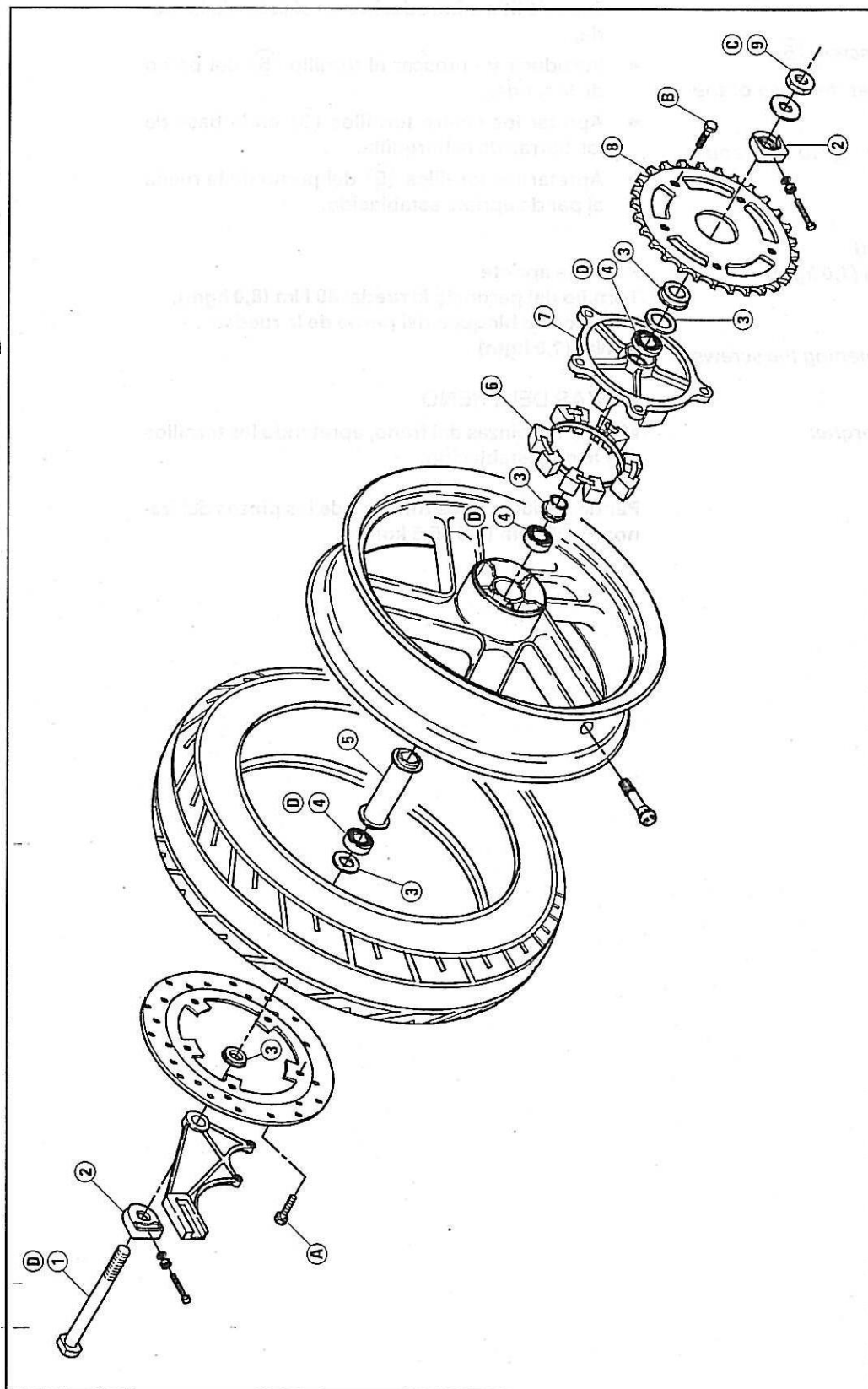
Brake caliper screw tightening torque:

45 - 55 Nm (4,5 - 5,5 kgm)



REAR WHEEL

- ① Wheel pin
- ② Chain tightness adjuster
- ③ Spacer
- ④ Bearing
- ⑤ Central spacer
- ⑥ Jerk guard
- ⑦ Crownholder hub
- ⑧ Crown
- ⑨ Wheel pin nut
- Ⓐ = Apply LOCTITE® medium i
15 - 25 Nm (1,5 - 2,5 kgm)
- Ⓑ = Crown nuts:
20 - 30 Nm (2,0 - 3,0 kgm)
- Ⓒ = Wheel pin nut:
85 - 115 (8,5 - 11,5 kgm)
- Ⓓ = Apply lithium grease



DISASSEMBLY

WARNING:

Before disassembling the wheel, set the motorcycle up securely on the special stand, whose support pins should be fitted into the holes on the chassis.

- Remove nut ①.
- Remove pin ②.
- Push the wheel forward and remove the crown chain.
- Remove the wheel from the rear swingarm.

CAUTION:

When the wheel is disassembled do not press the brake pedal as the caliper pistons might leave their housing and this might cause the brake fluid to leak.

BEARING REPLACEMENT

See page 7-12.

NOTE:

Begin assembling the new bearings starting from the one on the left (crown side), setting it against the hub housing.

INSPECTION

BEARINGS see page 7-14

WHEEL PIN see page 7-14

RIM see page 7-14

JERK GUARD: Check that the jerk guard blocks are not worn or damaged and that the crown holder hub does not turn excessively with respect to the wheel hub. Otherwise, replace the jerk guard.

CROWN: Check the conditions of the crown and sprocket teeth. If they are excessively worn, replace the sprocket, crown and drive chain together.

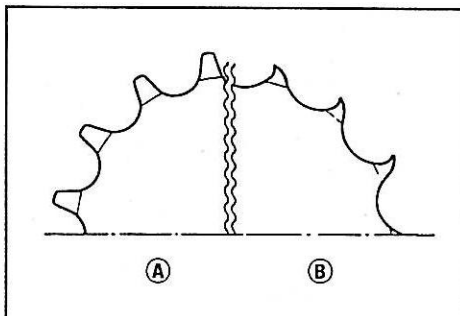
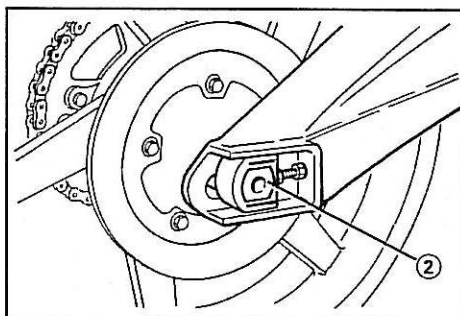
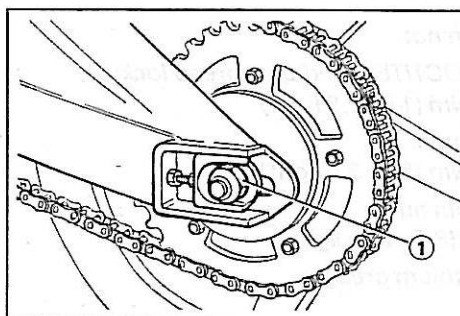
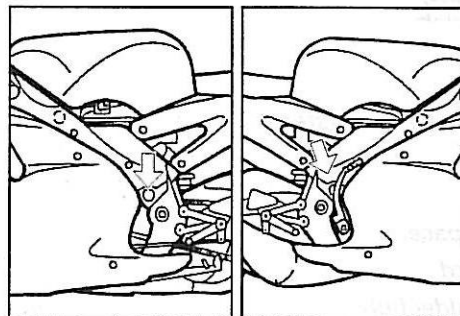
Ⓐ = Normal profile Ⓑ = Excessive wear

NOTE:

Do not replace separately the transmission drive components to avoid premature wear of the new components.

REASSEMBLY

- Apply lithium grease before assembling the bearings.
- Fit the wheel between the fork arms with the crownholder hub and all spacers correctly in place.
- Push the wheel forward and put the chain on the crown.



- Properly fit the fork lock plate into the brake caliper antirotation plate.
- Set the chain tightening adjusters in place.
- Apply lithium grease to the wheel pin and fit it securely into its housing, checking that the spacers are properly in place.
- Screw the wheel pin nut, set the chain tightness and tighten the nut to the prescribed torque.

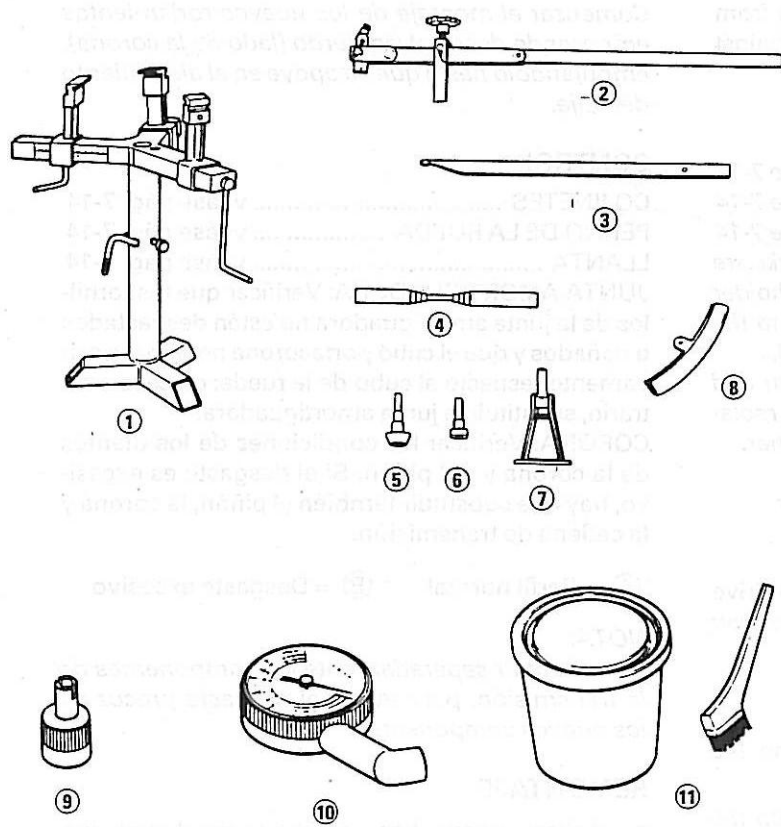
Wheel pin nut tightening torque:
85 - 115 Nm (8,5 - 11,5 kam)

TYRES

TYRE REMOVAL

The most critical factor of a tubeless tyre is the seal between the wheel rim and the tyre bead. Because of this, we recommend using a tyre changer which is also more efficient than tyre levers.

For tyre removal the following tools are required.



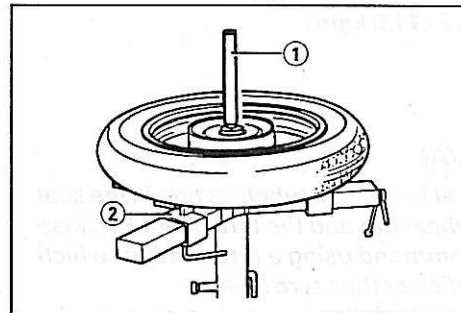
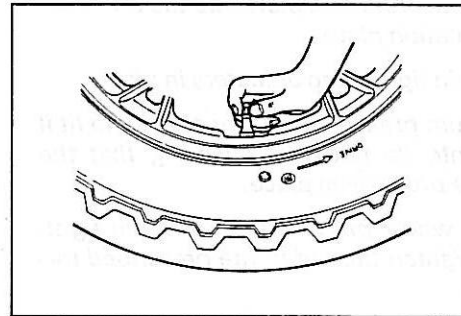
- ① Tyre changer stand
- ② Operation arm
- ③ Tyre lever
- ④ Center shaft
- ⑤ Bead pushing roller
- ⑥ Rim guide roller
- ⑦ Bead breaker
- ⑧ Rim protector
- ⑨ Core remover
- ⑩ Air pressure gauge
- ⑪ Tyre lubricant

- Remove the valve core from the valve stem, and deflate the tyre completely.

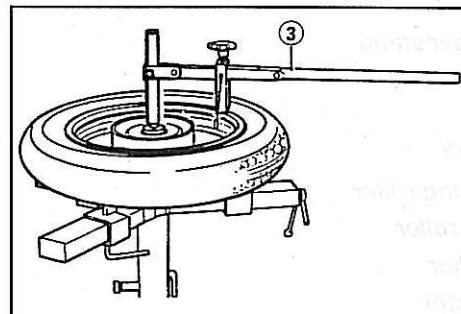
NOTE:

Mark the tyre with chalk to note the position of the tyre on the rim and rotational direction of the tyre.

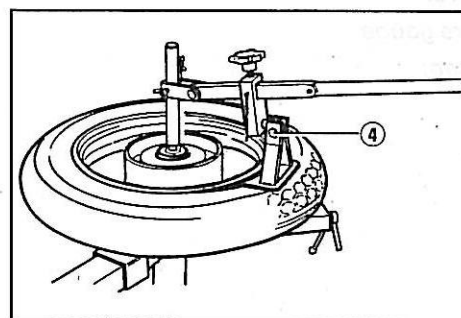
- Place the center shaft ① to the wheel, and fix the wheel with the rim holder ②.



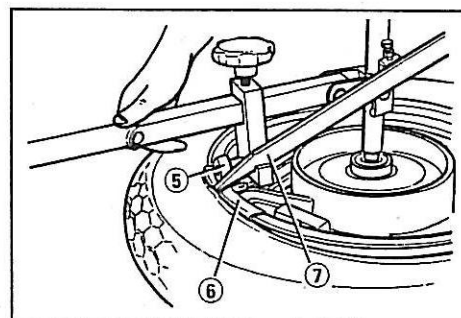
- Attach the operation arm ③ to the center shaft.



- Attach the bead breaker ④ to the operation arm, and dismount the bead from the rim. Turn the wheel over and dismount the other bead from the rim.



- Install the rim guide roller ⑤.
- Install the rim protector ⑥, and raise the tyre bead with the tyre lever ⑦.



- Set the tyre lever against the operation arm, and rotate the lever around the rim.
- Repeat this procedure to remove the other bead from the rim.

INSPECTION

WHEEL

Wipe off any rubber substance or rust from the wheel, and inspect the wheel rim. If any one of the following items is observed, replace it with a new wheel.

- * A distortion or crack
- * Any scratches or flaws in the bead seating area
- * Wheel runout (axial & radial) fo more than 2,0 mm.

TYRE

Thoroughly inspect the removed tyre, and if any one of the following items is observed, do not repair the tyre. Replace with a new one.

- * A puncture or a split whose total length or diameter exceeds 5,0 mm
- * A scratch or split at the side wall
- * Tread depth less than 2,0 mm
- * Ply separation
- * Tread separation
- * Tread wear is extraordinarily deformed or distributed around the tyre
- * Scratches at the bead
- * Cord is cut
- * Damage from skidding (flat spots)
- * Abnormality in the inner liner.

NOTE:

When repairing a flat tyre, follow the repair instructions and use only recommended repairing materials.

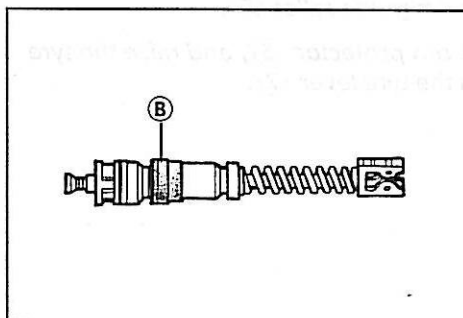
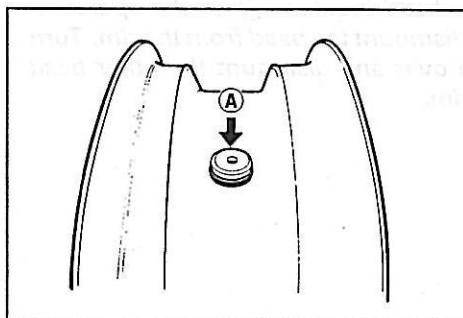
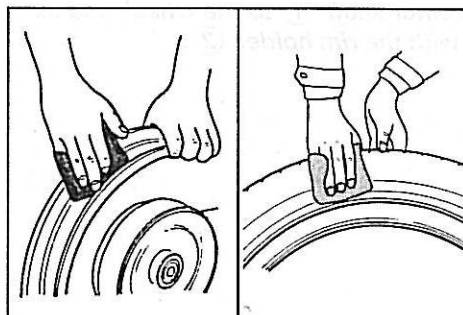
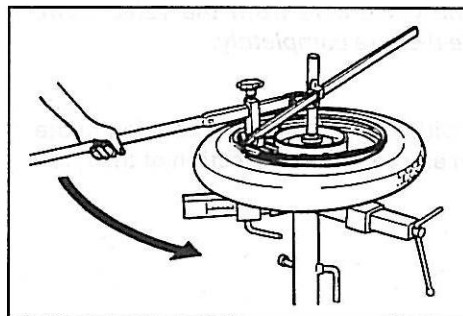
VALVE INSPECTION

Inspect the valve after the tyre is removed from the rim, and replace with a new valve if the seal rubber has any splits or scratches.

Inspect the removed valve core and replace with the new one if the seal rubber is abnormally deformed or worn.

— (A) = Valve

— (B) = Seal



VALVE INSTALLATION

Any dust or rust around the valve hole must be cleaned off. Then install the valve in the rim.

WARNING:

When installing the valve, do not overtighten the nut as this may distort the valve and cause an air leak.

TYRE MOUNTING

- Apply a special tyre lubricant or neutral soapy liquid to the tyre bead.

WARNING:

Never apply grease, oil or gasoline to the tyre bead.

- When installing the tyre, make certain that the directional arrow faces the direction of wheel rotation and align the balancing mark of the tyre with the valve as shown.

① = Valve

② = Tyre mark

- Set the bead pushing roller ③.
- Rotate the operation arm around the rim to mount the bead completely. Do the bottom bead first, then the upper bead.
- Remove the wheel from the tyre changer, and install the valve core in the valve stem.

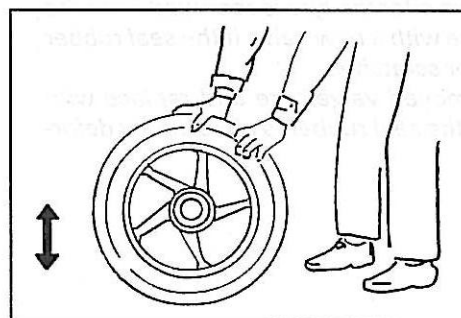
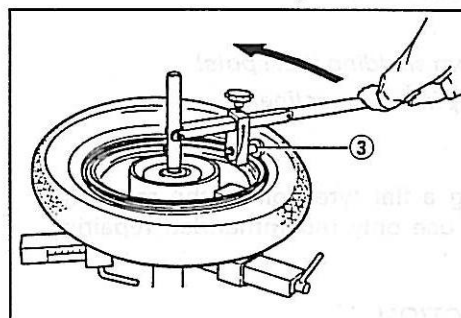
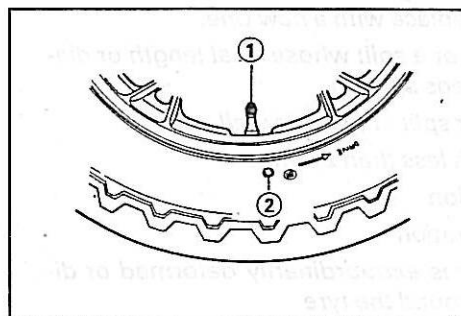
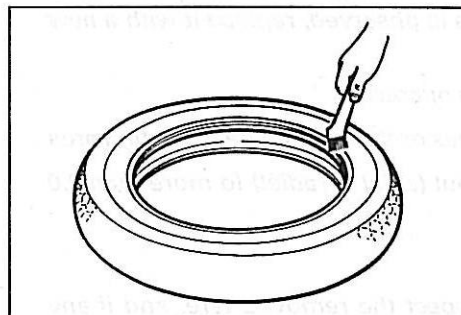
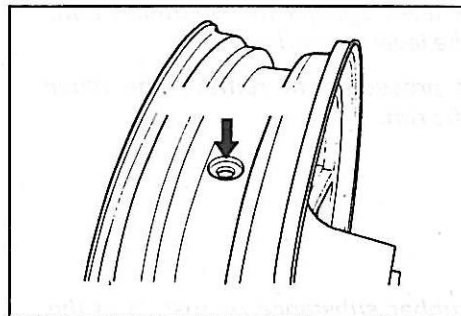
NOTE:

Before installing the valve core, inspect the core.

- Bounce the tyre several times while rotating. This makes the tyre bead expand outwards, and thus makes inflation easier.

NOTE:

Before inflating, confirm that the balance mark lines up with the valve.



- Pump up the tyre with air.

WARNING:

Do not inflate the tyre to more than 4,0 bar (4,0 kg/cm²). The tyre could burst with sufficient force to cause severe injury. Never stand directly over the tyre while inflating it.

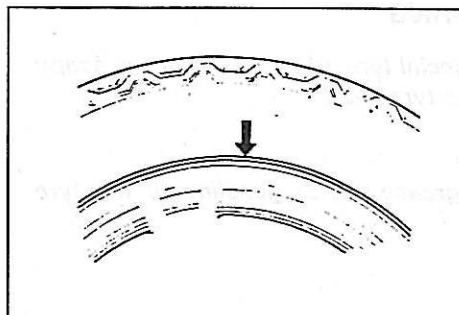
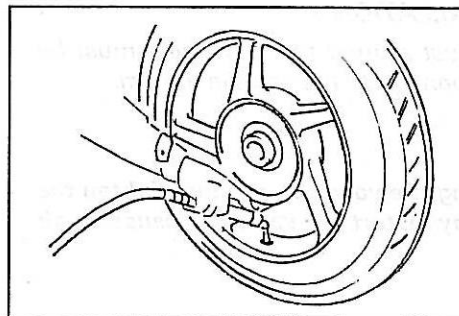
NOTE:

Check the "rim line" cast on the tyre side walls. It must be equidistant from the wheel rim all the way around. If the distance between the rim line and wheel rim varies, this indicates that the bead is not properly seated. If this is so, deflate the tyre completely, and unseat the bead for both sides. Coat the bead with lubricant, and try again.

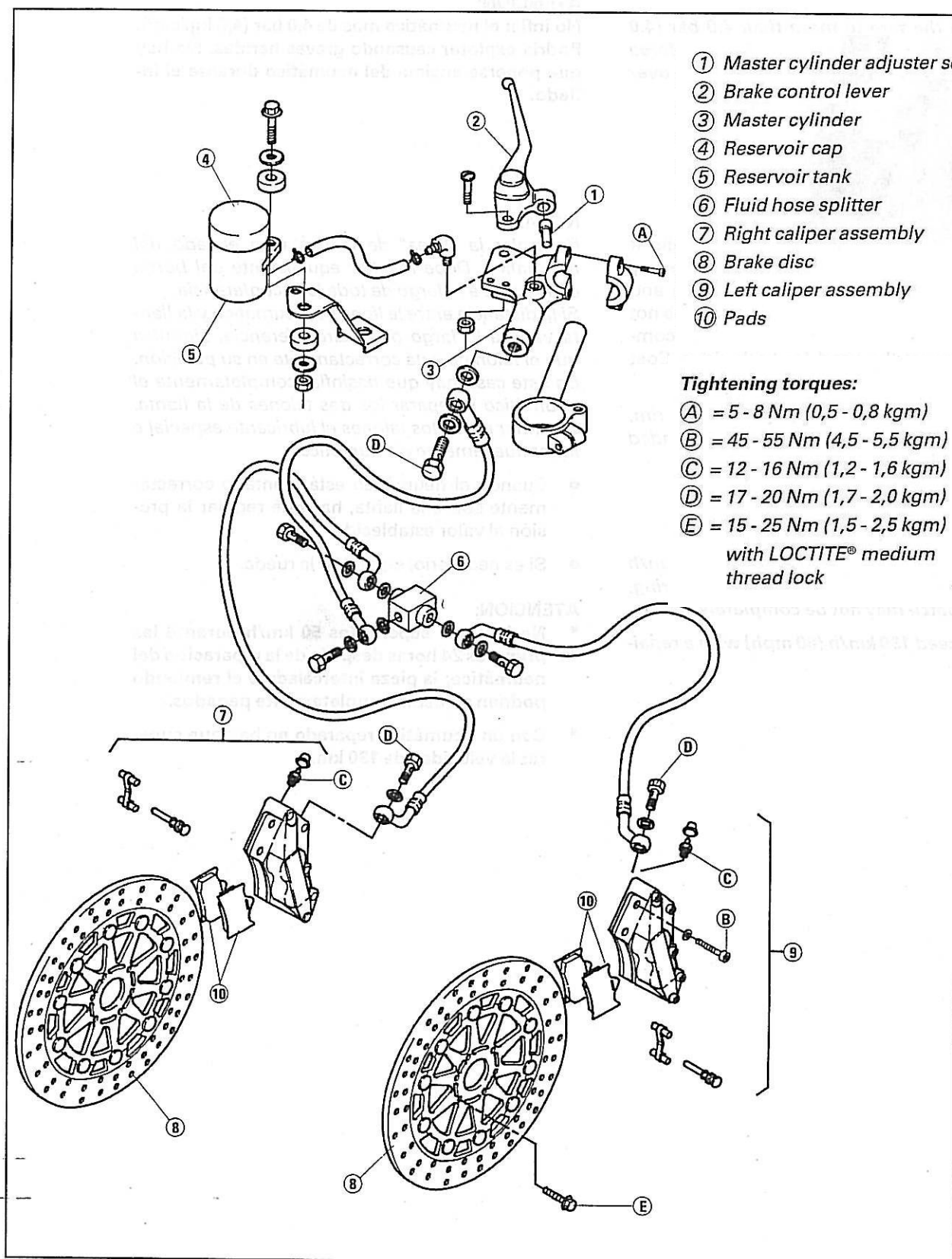
- After tyre is properly seated to the wheel rim, adjust the air-pressure to the recommended pressure.
- Correct the wheel balance if necessary.

WARNING:

- * Do not run a repaired tyre more than 50 km/h (30 mph) within 24 hours after tyre repairing, since the patch may not be completely cured.
- * Do not exceed 130 km/h (80 mph) with a repaired tyre.



FRONT BRAKE



- ① Master cylinder adjuster screw
- ② Brake control lever
- ③ Master cylinder
- ④ Reservoir cap
- ⑤ Reservoir tank
- ⑥ Fluid hose splitter
- ⑦ Right caliper assembly
- ⑧ Brake disc
- ⑨ Left caliper assembly
- ⑩ Pads

Tightening torques:

- Ⓐ = 5 - 8 Nm (0,5 - 0,8 kgm)
 - Ⓑ = 45 - 55 Nm (4,5 - 5,5 kgm)
 - Ⓒ = 12 - 16 Nm (1,2 - 1,6 kgm)
 - Ⓓ = 17 - 20 Nm (1,7 - 2,0 kgm)
 - Ⓔ = 15 - 25 Nm (1,5 - 2,5 kgm)
- with LOCTITE® medium thread lock

BRAKE PAD REPLACEMENT

- Remove the pin stopper clip ①.
- Remove the pin ②.
- Remove pads press spring ③.
- Remove the pads.
- Move back the pistons, being careful not to damage them.
- Fit the new pads.
- Place the pads press spring on the pads and fit the pin ②.
- Assemble the safety clip ① to the end of the pin.

Pad wear limit: 1 mm

CAUTION:

- * **Do not pull the brake lever when the pads are disassembled.**
- * **Always replace both pads to ensure maximum braking effectiveness.**

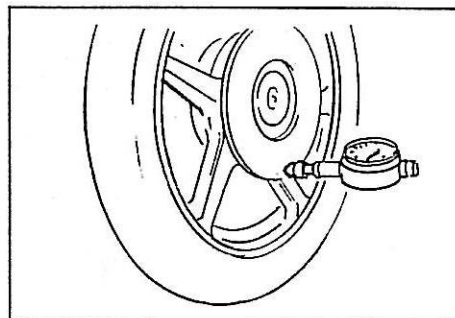
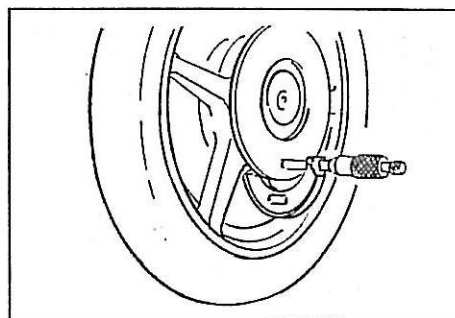
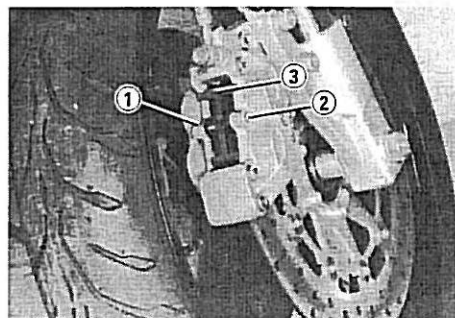
BRAKE DISC INSPECTION

Check disc wear by measuring minimum thickness at different points of the disc with a micrometer. If the minimum thickness even at a single point of the disc, is below the limit, replace the disc.

Minimum disc thickness value: 3,5 mm

With the disc assembled on the wheel, use a comparator to check that maximum disc wobble does not exceed the indicated limit.

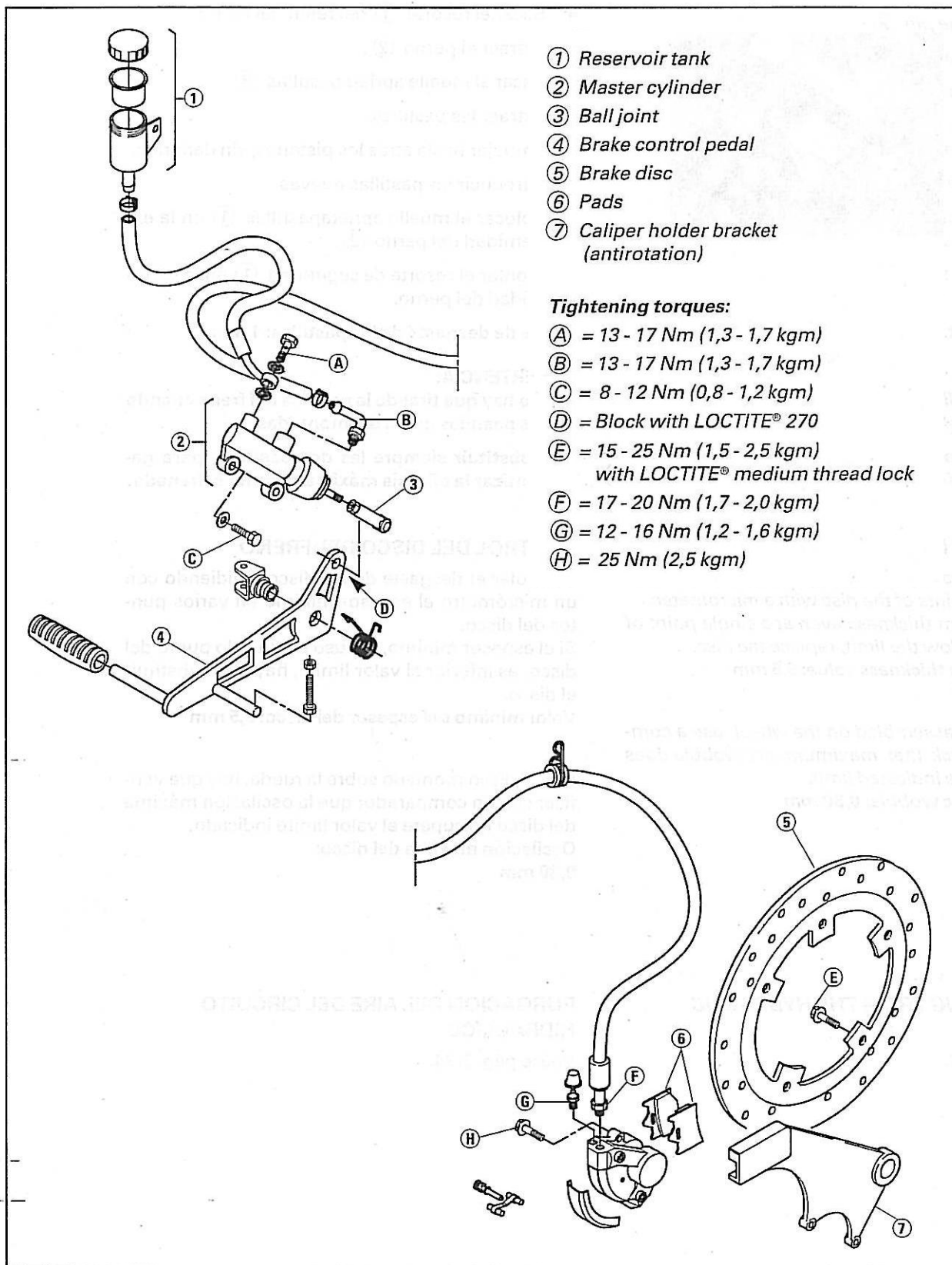
Maximum disc wobble: 0,30 mm



AIR BLEEDING FROM THE HYDRAULIC CIRCUIT

See page 2-16

REAR BRAKE



BRAKE PADS REPLACEMENT

- Remove the press-in cover.
- Remove the pin ① and the pads presser spring.
- Remove the pads.
- Pull back the pistons, being careful not to damage them.
- Fit the new pads.
- Place the pads presser spring on the pads and fit the pin securely ①.

Pad wear limit: 1 mm

CAUTION:

- * Do not press the brake pedal when the pads are disassembled.
- * Always replace both pads to ensure maximum braking efficiency.

BRAKE DISC CONTROL

See page 7-18

Minimum disc thickness: 4,0 mm

Maximum disc wobble: 0,30 mm

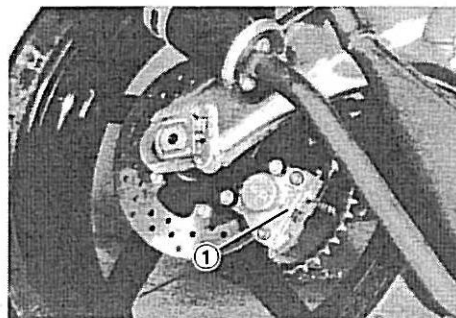
AIR BLEEDING FROM HYDRAULIC CIRCUIT

See page 2-16

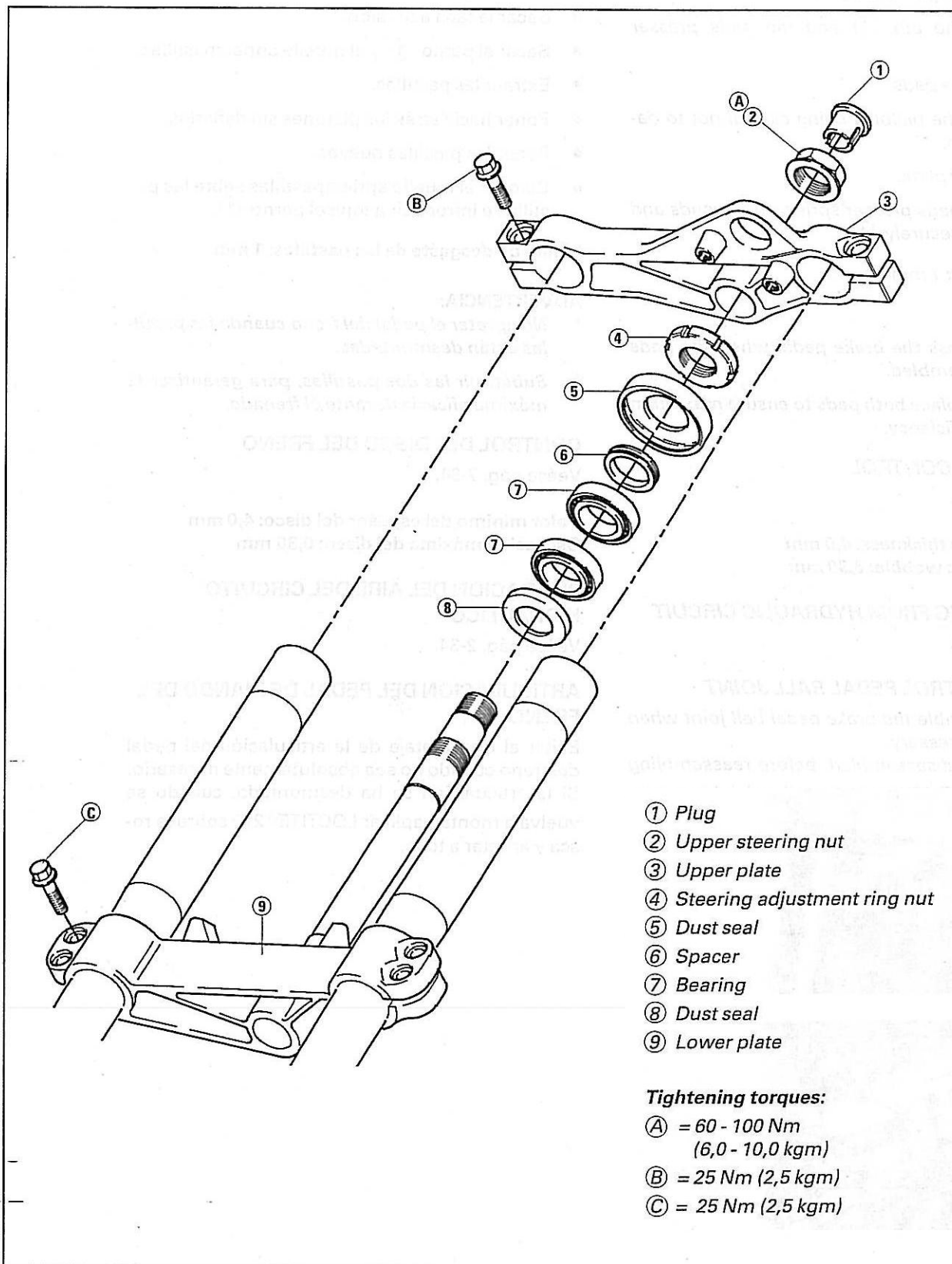
BRAKE CONTROL PEDAL BALL JOINT

Only disassemble the brake pedal ball joint when absolutely necessary.

If the joint is disassembled, before reassembling apply LOCTITE® 270 to the thread and tighten securely.

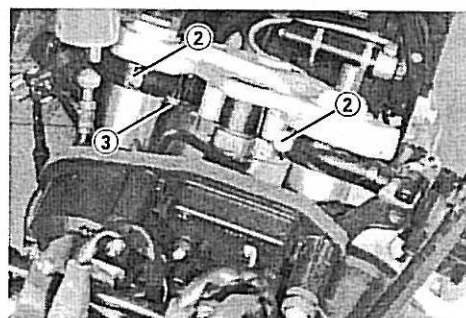
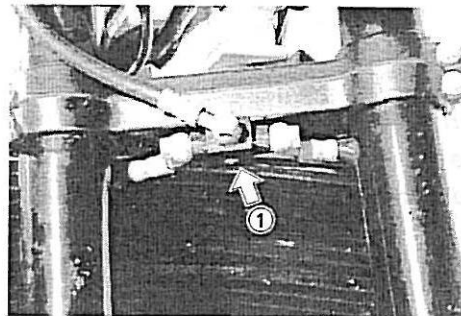


STEERING

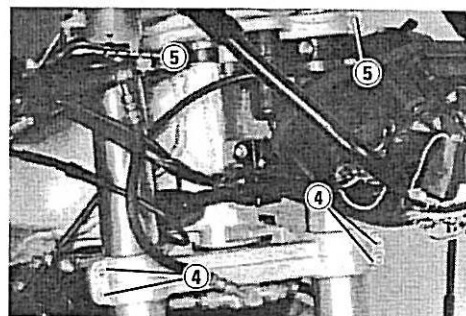


DISASSEMBLY

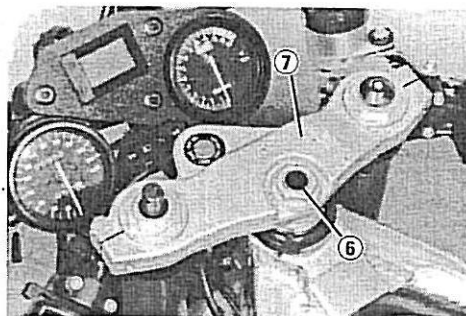
- Remove the fairing and front fairing.
- Remove the fuel tank.
- Support the motorcycle properly with the special stand.
- Remove the front wheel.
- Disassemble the front mudguard.
- Remove the screw ① which fastens the front brake hydraulic circuit splitter to the lower plate.
- Loosen the screws ② which fasten the handlebars.
- Remove the screws ③ which fasten the handlebars to the upper plate.



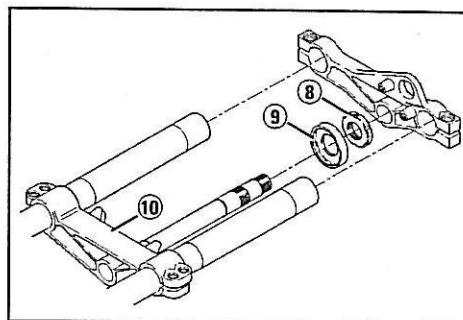
- Loosen the screws ④ which tighten the fork leg guards to the lower plate and upper plate screws ⑤.
- Remove the front fork leg guards and the handlebars.



- Unscrew the steering head nut ⑥.
- Disassemble upper plate ⑦.



- Unscrew ring nut ⑧.
- Remove dust seal ⑨.
- Disassemble lower plate ⑩ with the steering axle.
- Pull out the bearings and lower dust seal.



CHASSIS

INSPECTION

Clean the bearings and dust seals thoroughly and check their conditions.

Turn the inner bearing ring by hand to check that it rotates smoothly and silently. Replace any faulty bearings.

The dust seals must be devoid of cavities or cracks. Replace damaged dust seals.

REASSEMBLY

Perform the disassembly operations in reverse order, paying special attention to the following operations.

- *Lubricate the bearings and dust seals with lithium grease.*
- *Before tightening the steering head nut, rotate the steering fully right and left several times to allow the bearings to set.*
- *Check that the upper and lower plates are perfectly aligned.*

Tightening torques:

Steering head nut:

60 - 100 Nm (6,0 - 10,0 kgm)

Upper and lower plate screws:

25 Nm (2,5 kgm)

Screw fastening handlebar to sleeve:

15 - 25 Nm (1,5 - 2,5 kgm)

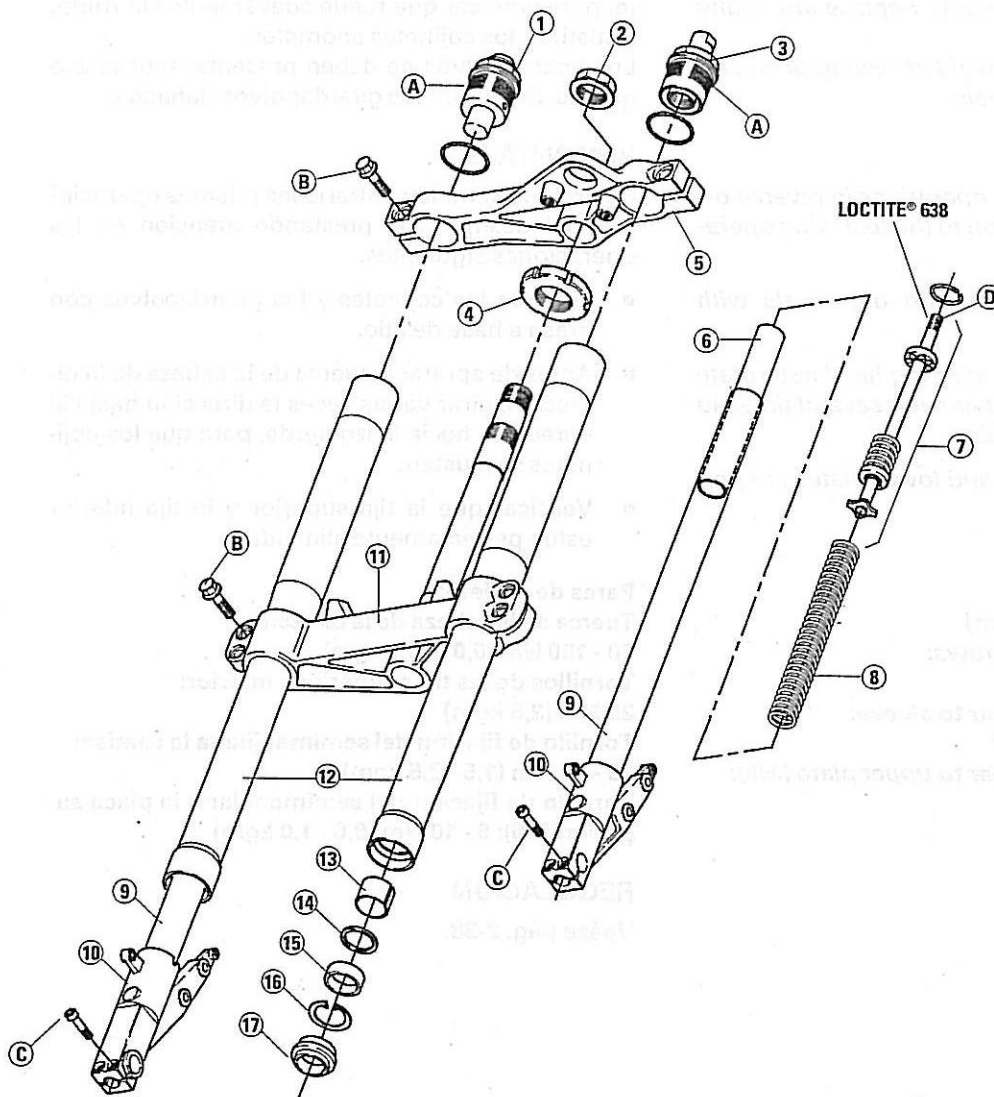
Screw fastening handlebar to upper plate (M6):

6 - 10 Nm (0,6 - 1,0 kgm)

ADJUSTMENT

See page 2-18

FRONT FORK



- ① Cap with hydraulic adjustment
- ② Steering head nut
- ③ Cap with spring adjustment
- ④ Steering adjustment ring nut
- ⑤ Upper plate
- ⑥ Spring guide hose
- ⑦ Spring presser assembly
- ⑧ Spring
- ⑨ Tube

- ⑩ Hub
- ⑪ Lower seal
- ⑫ Sleeve
- ⑬ Slide bush
- ⑭ Cup
- ⑮ Oil seal
- ⑯ Stopper ring
- ⑰ Dust seal
- ⑱ Pumper

- Tightening torques**
- Ⓐ 20 Nm (2,0 kgm)
 - Ⓑ 25 Nm (2,5 kgm)
 - Ⓒ 10 Nm (1,0 kgm)
 - Ⓓ 30 Nm (3,0 kgm)

LEG GUARDS REMOVAL

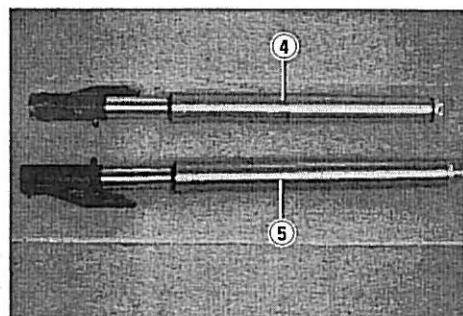
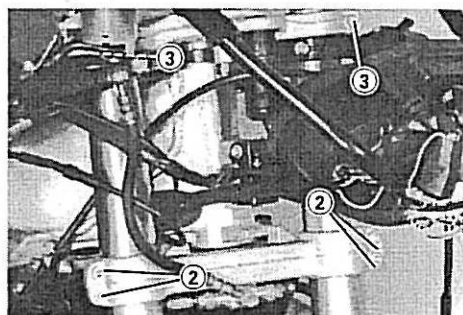
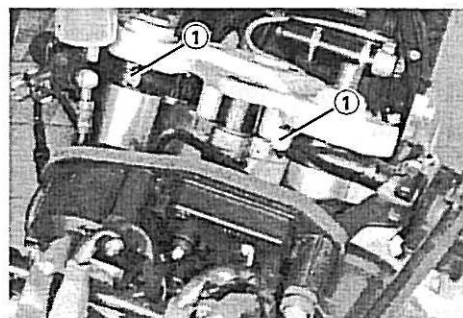
NOTE:

The upper caps of the sleeves must be loosened when the leg guards are still on the vehicle, fixed to the lower plate and released from the upper plate (loosened screws).

- Remove the fairing and the front fairing.
- Support the motorcycle securely on the special stand.
- Remove the front wheel.
- Remove the front mudguard.
- Loosen the screws ① which fasten the handlebars to the sleeves.
- Loosen the screws ② and ③ which fasten the fork leg guards respectively to the lower and upper fork plates.
- Slide out the plate leg guards.

NOTE:

The leg guards are completely different one from the other: the right guard ④ performs the function of a hydraulic brake in extension, the left guard ⑤ that of a spring in compression.



RIGHT LEG GUARD DISASSEMBLY (HYDRAULIC BRAKE)

- Unscrew the sleeve upper cap completely.

NOTE:

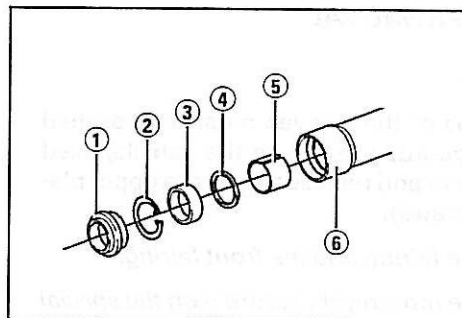
The upper caps of the sleeves must be loosened when the leg guards are still on the vehicle, fixed to the lower plate and released from the upper plate (loosened screws).

- Refit the tube firmly into the sleeve and dump all the oil from the leg guard by holding the leg guard upside down for a few minutes.

NOTE:

Wheel-holder, tube and pumper are supplied as a single element. For the disassembly, do not turn the screw positioned on the wheel-holder.

- Push the wheel-holder until the pumper head comes out.
- Withdraw the wheel-holder complete with tube and pumper.
- Remove the dust seal 1 from the sleeve 6.
- Using the special pliers, slide out the stopper ring 2.
- Carefully pull out the oil seal 3 being careful not to damage the housing.
- Pull out the cup 4 and slide bush 5.



RIGHT LEG GUARD REASSEMBLY

Perform the disassembly operations in reverse order, paying particular attention to the following points.

- Wash all parts with clean solvent.
- Replace the oil seal, the dust seal and the slide bush with new ones at every disassembly operation.

CHASSIS

CAUTION:

When assembling the slide bush ①, be careful not to damage the slide surfaces in any way.

- Tighten the cap of the sleeve on the pumper shaft thread, holding the shaft head with a plain wrench.

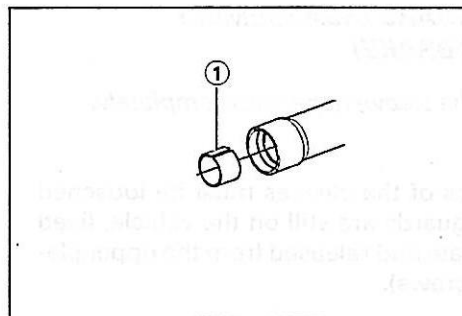
Pumper shaft sleeve cap tightening torque:
30 Nm (3,0 kgm)

- Through the upper sleeve cap housing, refill the leg guard with the prescribed oil up to 60 mm from the upper rim border of the sleeve (with the tube firmly fitted into the sleeve and the pumper fitted).
- Screw the upper sleeve cap without tightening.

NOTE:

The upper caps of the sleeves must be loosened when the leg guards are still on the vehicle, fixed to the lower plate and released from the upper plate (loosened screws).

Upper sleeve cap tightening torque:
20 Nm (2,0 kgm)



LEFT LEG GUARD DISASSEMBLY (SPRING)

- Completely unscrew the upper sleeve cap ①.

NOTE:

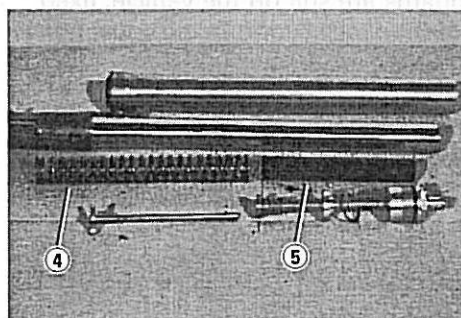
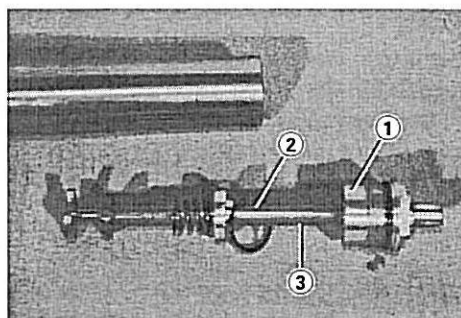
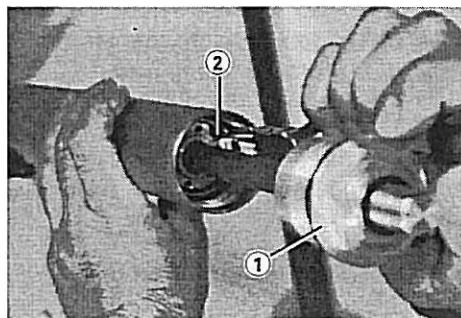
The cap must be loosened when the leg guard is still assembled on the motorcycle, hence blocked by the plates.

- Refit the tube firmly into the sleeve and dump all the oil from the leg guard by holding the latter upside down for a few minutes.
- Remove the stopper ring ② with the special pliers.
- Remove the whole presser spring assembly.

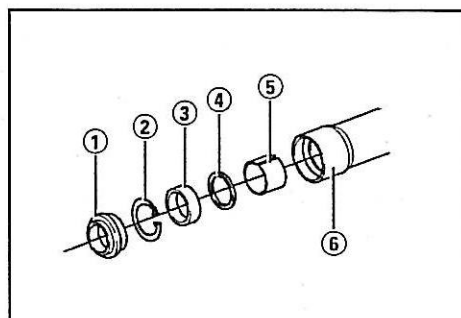
NOTE:

The upper sleeve cap ① is screwed to the presser screw rod ③ with LOCTITE® 638. It must therefore be disassembled only if absolutely necessary.

- Pull the spring ④ and spring guide tube hose ⑤ from the tube.



- Remove the dust seal ① from the sleeve ⑥.
- Slide out the stopper ring ② using the special pliers.
- Carefully remove the oil seal ③ being careful not to damage the housing.
- Pull out the cup ④ and the slide bush ⑤.



LEFT LEG GUARD REASSEMBLY

Perform the disassembly operations in reverse order, paying particular attention to the following points.

- Wash all parts with clean solvent.
- Replace the dust seal, oil seal and slide bush with new ones at every disassembly operation.

CHASSIS

CAUTION:

When disassembling the slide bush ①, be careful not to damage the slide surfaces in any way.

- If previously disassembled, tighten the sleeve cap ① on the spring presser assembly rod thread ②, after spreading applying LOCTITE® 638 to the shaft thread.

Rod sleeve cap tightening torque:
30 Nm (3,0 kgm)

- Through the upper sleeve cap housing, refill the leg guard with 420 cc of the prescribed oil.
- Screw the upper sleeve cap without tightening.

NOTE:

The upper sleeve cap must be tightened when the leg guard is assembled on the cycle and locked by the plates.

Upper sleeve cap tightening torque:
20 Nm (2,0 kgm)

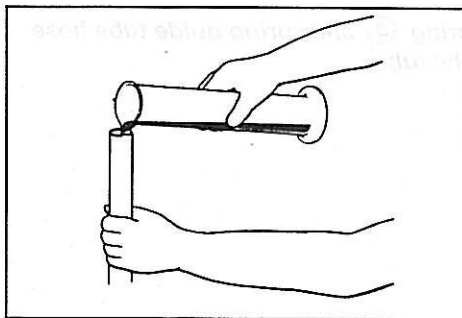
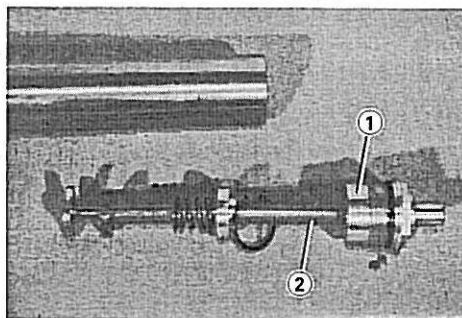
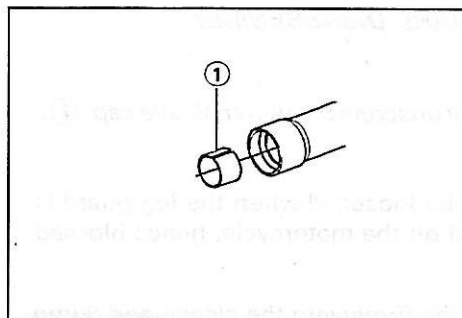
FORK OIL

Use fork oil with a grading of SAE 10W.
At a very low or very high ambient temperature, it is possible to use fork oil with gradings of SAE 5W and 20W respectively.

COMPONENTS INSPECTION

CAUTION:

The proper functioning of the fork will be adversely affected by the presence of foreign matter. Be particularly careful to prevent foreign matter from entering during oil changes or when the fork is being disassembled or reassembled.



CHASSIS

TUBE

- Check the conditions of the slide surface. There must be no grooves or scratches.
- Grooves that are not excessively deep may be removed using damp sandpaper with a grain of 1,000.
- If the grooves are deep the tube must be replaced.
- Set the tube on two V-shaped supports and, using a comparator, check that any bending of the tube is below the limit.

Tube bending limit: 0,2 mm

NOTE:

The bending value corresponds to half the comparator reading.

- If the bending is higher than the minimum value, replace the tube.

WARNING:

Never straighten a bent tube as this might weaken it and make the motorcycle dangerous.

SLEEVE

- Check that it is not cracked or damaged.
- The sleeve must be replaced if it is damaged, or if the oil seal or upper cap housings are deformed or damaged.

SPRING

- Measure the free length of the spring. If it is lower than the limit value, replace the spring.

Minimum spring free length = 247 mm

PUMPER BAR

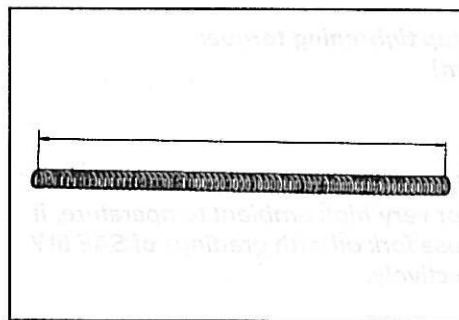
- Check that the shaft is not damaged or bent. If damaged, replace.

SLEEVE CAP

- Check that the O-ring is not damaged. If it is, replace.
- Replace the cap if the thread is damaged or if the adjustment device does not rotate freely.

DUST SEAL, OIL SEAL, SLIDE BUSH

- These must be replaced with new ones after every disassembly operation.



LEG GUARDS REINSTALLATION

Perform the assembly operations in reverse order, paying careful attention to the following points.

- Before fitting the leg guards, check that the upper and lower plates are perfectly aligned.
- The leg guards must be fitted into the plates in such a way that the edge of the sleeve juts out by about 10 - 11 mm from the surface of the upper plate, excluding the thickness of the lining caps.
- Tighten the plate screws ① and ② to the prescribed torque.

Fork plate screw tightening torque:
25 Nm (2,5 kgm)

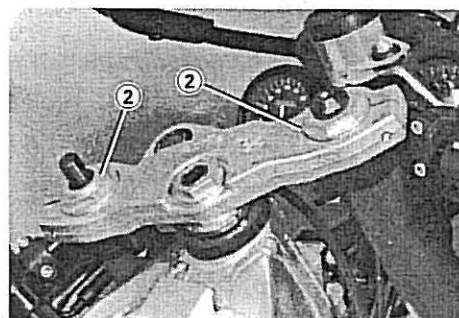
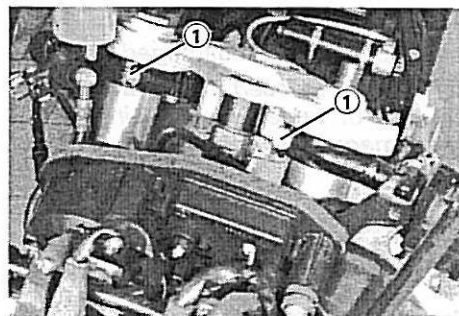
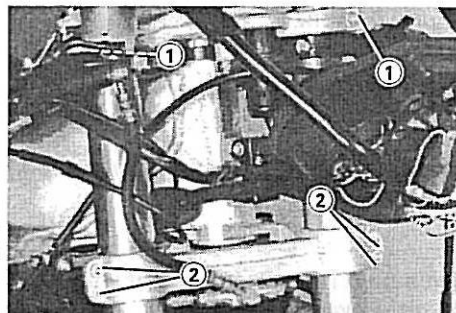
Tighten the screws ① which fasten the handlebars to the sleeves at the prescribed torque.

Handlebar screw tightening torque:
15 - 25 Nm (1,5 - 2,5 kgm)

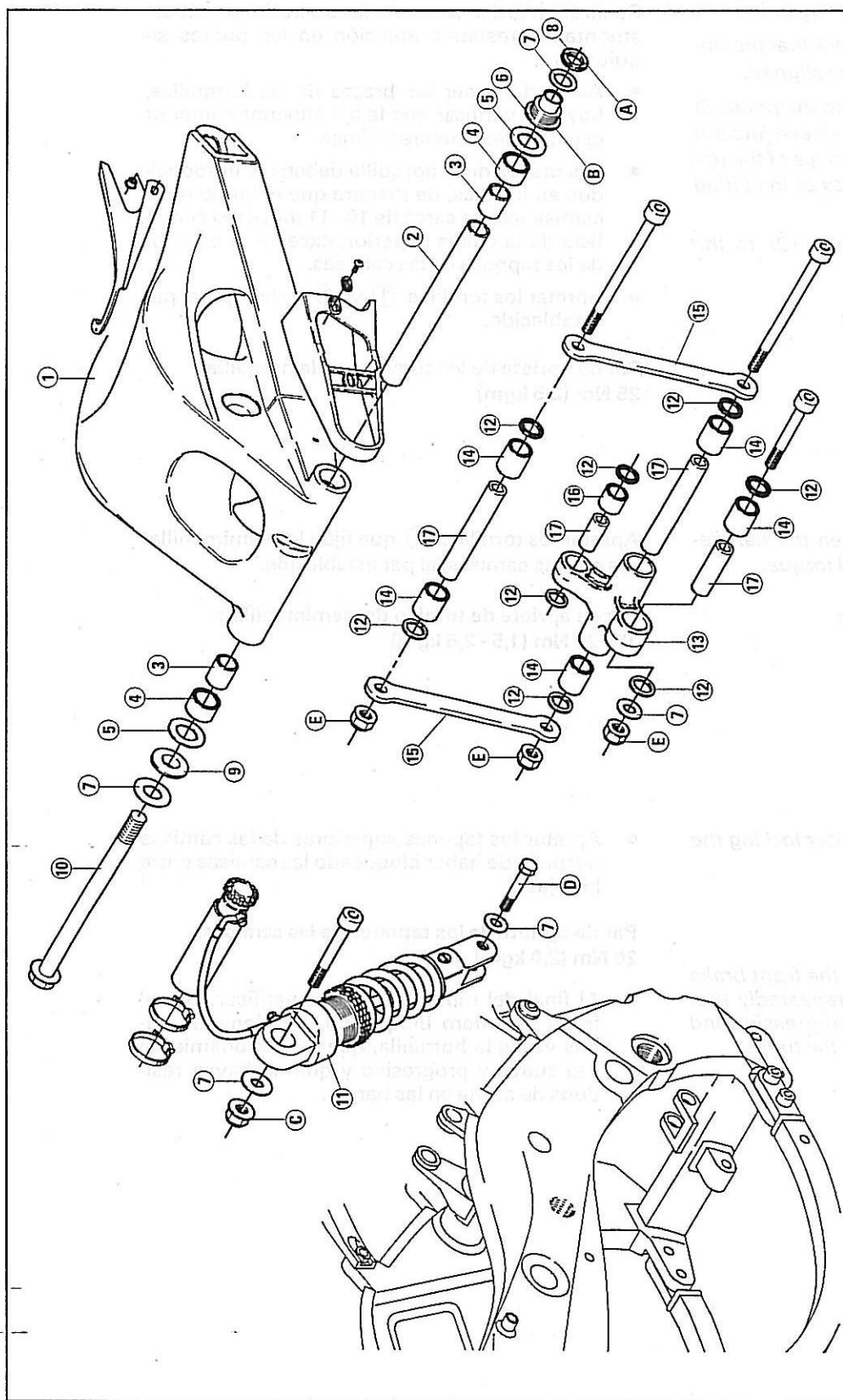
- Tighten the upper sleeve caps after locking the sleeves between the plates.

Sleeve cap tightening torque:
20 Nm (2,0 kgm)

- After reassembling, check with the front brake locked and operating the fork repeatedly that the functioning is smooth and progressive and that there are no traces of oil on the tubes.



REAR SUSPENSION



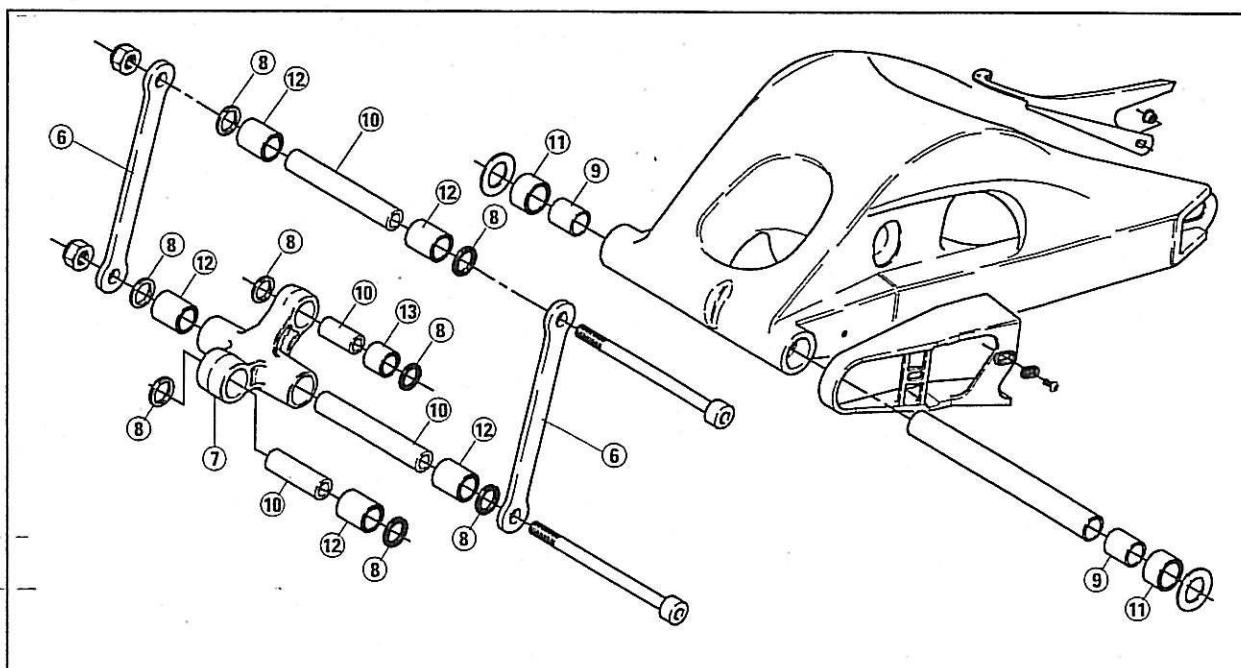
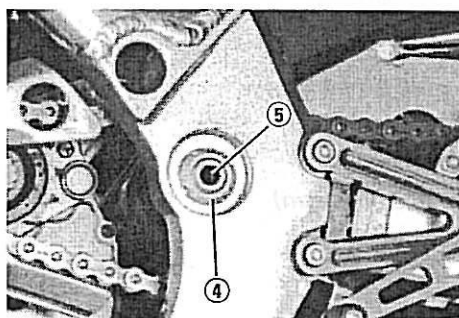
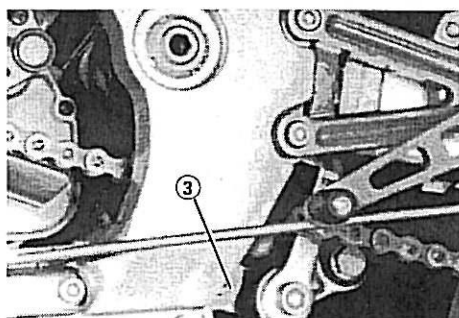
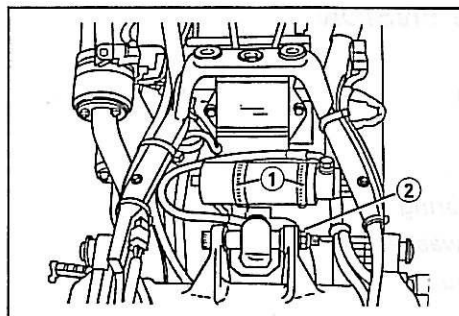
- | | | | |
|-------------------|-----------------------|-------------------------|--------------------------------|
| ① Swingarm | ⑦ Washer | ⑬ Double connecting rod | Tightening torques: |
| ② Spacer | ⑧ Ring nut | ⑭ Roller bearing | ① = 85 - 110 Nm (8,5-11,0 kgm) |
| ③ Bush | ⑨ Shoulder bush | ⑮ Single connecting rod | ② = Contact + 1/4 bush turn |
| ④ Needle bearing | ⑩ Swingarm pin | ⑯ Roller case | ③ = 80 Nm (8,0 kgm) |
| ⑤ Shoulder washer | ⑪ Rear shock absorber | ⑰ Pin | ④ = 45 - 50 Nm (4,5 - 5,0 kgm) |
| ⑥ Adjuster bush | ⑫ Seal ring | | ⑤ = 90 Nm (9,0 kgm) |

REMOVAL AND DISASSEMBLY

- Disassemble the seat and fuel tank.
- Disassemble the air filter case.
- Support the motorcycle securely with the special stand.
- Disassemble the rear wheel.
- Release the rear brake hose from the three fair leads.
- Loosen the clamps ① which fasten the rear shock absorber tank.
- Remove the bolt ② from the upper shock absorber attachment.
- Remove the bolt ③ which fastens the double connecting rod to the chassis.
- Loosen the ring nut ④ and the fork pin adjuster bush ⑤.
- Remove the fork pin.
- Remove the fork-shock absorber-double connecting rod-single connecting rod from the chassis.
- Detach the shock absorber by removing the lower attachment screw.
- Separate the single connecting rods ⑥ from the fork and double connecting rod ⑦.
- Disassemble the seal rings ⑧, bush ⑨, pins ⑩, needle bearings ⑪, roller bearings ⑫ and roller cases ⑬.

NOTE:

All the bearings and roller cases disassembled must be replaced with new ones.



INSPECTION

- Check that the suspension components (rear swingarm, double connecting rod, single connecting rods) are not deformed, broken or cracked. Replace all damaged components.
- Check that pins, bushes and seal springs are not worn or damaged. In this case, replace them.
- Check that the movement of each articulation is smooth, unhampered and devoid of excessive free play. Otherwise, replace the bearings and bush pins in question.

NOTE:

Always replace the bearings and roller cases disassembled with new ones.

REAR SWINGARM PIN

Using a comparator check that the runout limit of the front fork does not exceed the indicated limit. Otherwise, replace the pin with a new one.

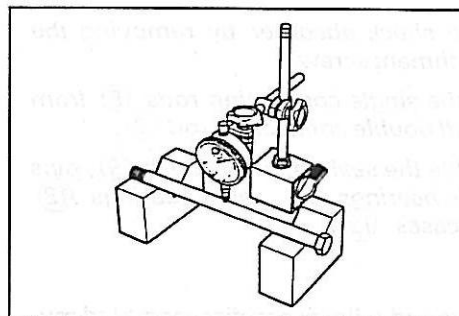
Maximum swingarm pin turnout limit: 0,3 mm

SHOCK ABSORBER

- Check that no oil leaks from the shock absorber and that it works smoothly and progressively.
- The shock absorber can be neither recharged nor repaired. If it breaks or is rundown, it must be replaced with a new one complete with tank.

WARNING:

- * Do not force or try to open the shock absorber and tank.
- * Do not expose the shock absorber to naked flames or other sources of heat.



REASSEMBLY AND REINSTALLATION

Perform the removal and disassembly operations in reverse order, paying attention to the following points.

- Thoroughly clean all the rear swingarm articulation components and grease them with lithium grease.
- Assemble the rear swingarm-double connecting rod-single connecting rods-shock absorber unit to the chassis starting with the rear swingarm pin.
- Set the rear swingarm free play by tuning the adjuster bush ① and screwing it by a further 1/4 turn.
- Holding the bush securely with the key, tighten the lock nut ②.

Rear swingarm adjuster bush ① tightening:

Contact + 1/4 turn of bush

Rear swingarm pin lock nut ② tightening torque:
85 - 110 Nm (8,5 - 11,0 kgm)

- Before fastening the double connecting rod to the chassis, check that the front fork moves smoothly without lateral free play.
If lateral free play is excessive or movement excessively stiff, repeat the adjustment procedure.
- Tighten the articulation bolts to the prescribed torque.

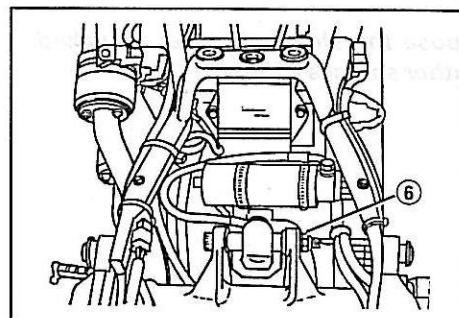
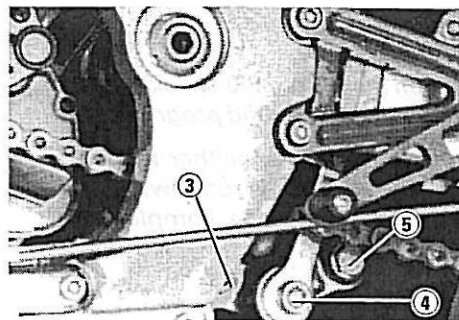
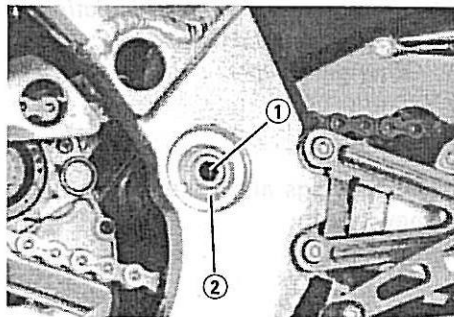
Tightening torques:

Double connecting rod pin nut ③ on the chassis attachment: 90 Nm (9,0 kgm)

Link rod (upper and lower) fastening nuts ④:
90 Nm (9,0 kgm)

Lower shock absorber fastening screw ⑤:
45 - 50 Nm (4,5 - 5,0 kgm)

Upper shock absorber fastening nut ⑥:
80 Nm (8,0 kgm)



FRONT FORK AND REAR SHOCK ABSORBER ADJUSTMENT

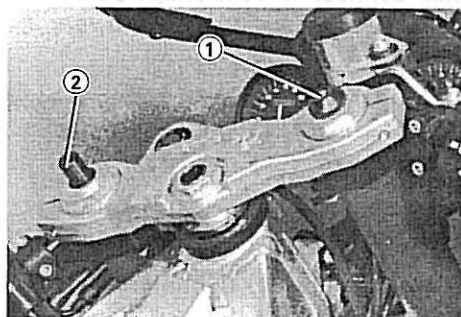
WARNING:

When the fork spring preload and/or rear shock absorber preload is increased, it is necessary to increase the corresponding hydraulic break too to avoid uncontrollable reactions by the motorcycle while driving.

FRONT FORK

The right tube of the fork performs a hydraulic breaking function in extension, the left tube a compression spring function.

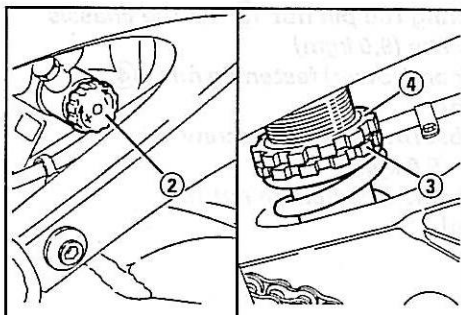
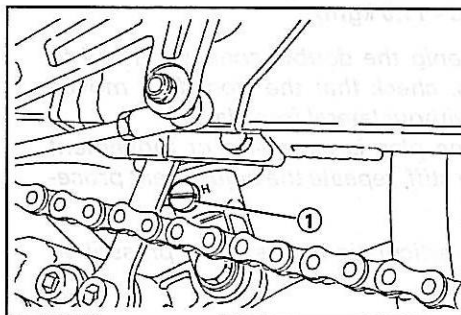
- To increase the spring preload, turn the adjuster ② clockwise (+). To decrease the preload turn the adjuster anticlockwise (-).
- To increase the hydraulic brake, turn the adjuster ① clockwise (+). To decrease the hydraulic brake turn the adjuster anticlockwise (-).



REAR SHOCK ABSORBER

The shock absorber has three possible adjustments:

- ① = Adjuster screw of hydraulic brake in extension (25 positions).
- ② = Knob (on the shock absorber tank) to adjust the hydraulic brake in compression (40 positions).
- ③ = Spring preload adjuster ring nut.
- Turn the screw ① clockwise (H) to increase the hydraulic brake in extension, turn it anticlockwise (S) to reduce the hydraulic brake.
- Turn the knob ② clockwise (+) to increase the hydraulic brake in compression, turn it anticlockwise (-) to reduce the hydraulic brake.
- To increase the spring preload, screw the ring nut ③. To decrease the preload, unscrew the ring nut ③.



NOTE:

To screw or unscrew the ring nut ③, first loosen the lock nut ④. Tighten the lock nut after adjustment.

INFORMAZIONI PER LE RIPARAZIONI

8

SERVICING INFORMATION

INFORMACIONES PARA LAS REPARACIONES

SERVICING INFORMATION

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TROUBLESHOOTING

ENGINE

Complaint	Symptom and possible causes	Remedy
Engine will not start, or is hard to start	<p>Compression too low</p> <ol style="list-style-type: none"> 1. Excessively worn cylinder or piston rings. 2. Stiff piston ring in place. 3. Gas leaks from the joint in crankcase, cylinder or cylinder head. 4. Spark plug too loose. 5. Broken, cracked or otherwise failed piston. 6. Worn crankshaft oil seal. <p>Plug not sparking</p> <ol style="list-style-type: none"> 1. Fouled spark plug. 2. Wet spark plug. 3. Defective ignition coil. 4. Open or short in high-tension cord. 5. Defective ignition system. <p>No fuel reaching the carburettor</p> <ol style="list-style-type: none"> 1. Clogged air vent hole in the fuel tank cap. 2. Clogged or defective fuel cock. 3. Defective carburettor needle valve. 4. Clogged fuel pipe. 	<p>Replace. Repair or replace.</p> <p>Repair or replace. Tighten. Replace. Replace.</p> <p>Replace. Clean and dry. Replace. Replace. Repair or replace.</p> <p>Clean. Clean or replace. Replace. Clean.</p>
Engine stalls easily	<ol style="list-style-type: none"> 1. Fouled spark plug. 2. Defective ignition system. 3. Clogged fuel pipe. 4. Clogged jets in carburettor. 	<p>Clean. Repair or replace. Replace. Clean.</p>
Noisy engine	<p>Noise appears to come from piston</p> <ol style="list-style-type: none"> 1. Piston or cylinder worn down. 2. Combustion chamber fouled with carbon. 3. Piston pin or piston pin bore worn. 4. Piston ring groove worn. 5. Piston pin bearing worn. <p>Noise seems to come from clutch</p> <ol style="list-style-type: none"> 1. Worn splines of countershaft or hub. 2. Worn teeth of clutch plates. 3. Distorted clutch plates, driven and drive. <p>Noise seems to come from crankshaft</p> <ol style="list-style-type: none"> 1. Rattling bearings due to wear. 2. Big-end bearings worn and burnt. 3. Crankshaft bearing worn and burnt. <p>Noise seems to come from transmission</p> <ol style="list-style-type: none"> 1. Gears worn or rubbing. 2. Badly worn splines. 3. Primary gears worn or rubbing. 	<p>Replace. Clean. Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p> <p>Replace. Replace. Replace.</p>

Complaint	Symptom and possible causes	Remedy
Slipping clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or loss of play. 2. Weakened clutch springs. 3. Worn or distorted pressure plate. 4. Distorted clutch plates, driven and drive. 	Adjust. Replace. Replace. Replace.
Dragging clutch	<ol style="list-style-type: none"> 1. Clutch control out of adjustment or too much play. 2. Some clutch springs weakened while others are not. 3. Distorted pressure plate or clutch plates. 	Adjust. Replace. Replace.
Transmission will not shift	<ol style="list-style-type: none"> 1. Broken gearshift cam. 2. Distorted gearshift forks. 	Replace. Replace.
Transmission will not shift back	<ol style="list-style-type: none"> 1. Broken return spring on gearshift fork shaft. 2. Gearshift fork shafts are rubbing or sticky. 	Replace. Repair or replace.
Transmission jumps out of gear	<ol style="list-style-type: none"> 1. Worn shifting gears on drive shaft or countershaft. 2. Distorted or worn gearshift forks. 3. Weakened stopper spring on gearshift stopper. 	Replace. Replace. Replace.
Engine idles poorly	<ol style="list-style-type: none"> 1. Spark plug gap too wide. 2. Defective ignition coil. 3. Defective ignition system. 4. Float-chamber fuel level out of adjustment in carburettor. 5. Clogged jets. 	Adjust. Replace. Repair or replace. Adjust. Clean.
Engine runs poorly in high-speed range	<ol style="list-style-type: none"> 1. Spark plug gap too narrow. 2. Clogged jets. 3. Defective ignition coil. 4. Defective ignition system. 5. Float-chamber fuel level too low. 6. Clogged air cleaner element. 7. Clogged fuel pipe, resulting in inadequate fuel supply to carburettor. 8. Exhaust valve control out of adjustment. 9. Defective exhaust valve control unit, actuator or exhaust valve. 	Adjust. Clean. Replace. Repair or replace. Adjust. Clean. Clean and refuel. Adjust. Replace.
Dirty or heavy exhaust smoke	<ol style="list-style-type: none"> 1. Oil pump out of adjustment. 2. Damaged or worn crankshaft oil seal. 	Adjust. Replace.
Engine lacks power	<ol style="list-style-type: none"> 1. Worn piston rings or cylinder. 2. Spark plug gap incorrect or defective ignition system. 3. Clogged jets in carburettors. 4. Float-chamber fuel level out of adjustment. 5. Clogged air cleaner element. 6. Imbalance of the carburettors. 7. Sucking air from intake pipe. 8. Supplying too much engine oil. 	Replace. Adjust or replace. Clean. Adjust. Clean. Adjust. Adjust. Retighten or replace. Adjust oil pump.
Engine overheats	<ol style="list-style-type: none"> 1. Heavy carbon deposit on piston crown. 2. Not enough oil supply. 3. Defective oil pump or clogged oil lines. 4. Fuel level too low in float chambers. 5. Sucking air from intake pipes. 6. Using incorrect engine oil. 7. Defective cooling system. 	Clean. Adjust oil pump. Replace or clean. Adjust. Retighten or replace. Use prescribed oil. See radiator section.

CARBURETTOR

Complaint	Symptom and possible causes	Remedy
Trouble with starting	<ol style="list-style-type: none"> 1. Starter jet is clogged. 2. Starter pipe is clogged. 3. Air leaking from a joint between starter body and carburettor. 4. Starter plunger is not operating properly. 	<p>Clean. Clean.</p> <p>Check and retighten. Repair.</p>
Idling or low-speed trouble	<ol style="list-style-type: none"> 1. Pilot jet is clogged or loose. 2. Air leaking from carburettor's S.I.P.C. hose or starter. 3. Pilot outlet or by-pass is clogged. 4. Starter plunger is not fully closed. 5. Imbalance of carburetors. 	<p>Check and clean. Check.</p> <p>Check and clean. Check and adjust. Adjust the carburetors.</p>
Medium- or high-speed trouble	<ol style="list-style-type: none"> 1. Main jet is clogged. 2. Jet needle is clogged. 3. Throttle valve is not operating properly. 4. Filter is clogged. 	<p>Check and clean. Check and clean.</p> <p>Check throttle valve for operation. Check and clean.</p>
Overflow and fuel level fluctuations	<ol style="list-style-type: none"> 1. Needle valve is worn or damaged. 2. Float is not working properly. 3. Foreign matter has adhered to needle valve. 4. Fuel level is too high or low. 5. Clogged carburettor air vent pipe. 6. Spring in needle valve is broken. 	<p>Replace. Check and adjust.</p> <p>Clean. Adjust float height. Clean. Replace.</p>

RADIATOR

Complaint	Symptom and possible causes	Remedy
Engine overheats	<ol style="list-style-type: none"> 1. Not enough cooling water. 2. Radiator core is clogged with dirt or trashes. 3. Defective thermostat, stuck in closed position. 4. Clogged water passages. 5. Air trapped in the cooling circuit. 6. Defective water pump. 7. Incorrect cooling water used. 	<p>Add. Clean. Replace. Clean. Bleed out air. Replace. Change coolant.</p>
Engine overcools	<ol style="list-style-type: none"> 1. Defective thermostat, stuck in full-open position. 2. Extremely cold weather. 	<p>Replace. Put on the radiator cover.</p>

ELECTRICAL SYSTEM

Complaint	Symptom and possible causes	Remedy
Spark plugs soon becomes fouled with carbon	<ol style="list-style-type: none"> 1. Mixture too rich. 2. Idling speed set too high. 3. Incorrect gasoline. 4. Clogged air cleaner element. 5. Spark plugs type too cold. 	Adjust carburettor. Adjust carburettor. Change the gasoline. Clean. Replace by hot type plug.
Spark plugs become fouled too soon	<ol style="list-style-type: none"> 1. Worn piston rings. 2. Piston or cylinder worn. 	Replace. Replace.
Spark plug electrodes overheat or burn	<ol style="list-style-type: none"> 1. Spark plug too hot. 2. The engine overheats. 3. Spark plug loose. 4. Mixture too lean. 	Replace by cold type plug. Turn up. Retighten. Adjust carburettors.
Generator does not charge	<ol style="list-style-type: none"> 1. Open or short in lead wires, or loose lead connections. 2. Shorted, grounded or open generator coils. 3. Shorted or defective regulator/rectifier. 	Repair or replace or retighten. Replace. Replace.
Generator charges, but charging rate is below the specification	<ol style="list-style-type: none"> 1. Lead wires tend to get shorted or open-circuited or loosely connected at terminals. 2. Grounded or open-circuited stator coils of generator. 3. Defective regulator/rectifier. 4. Defective battery. 	Repair or retighten. Replace. Replace. Replace.
Generator overcharges	<ol style="list-style-type: none"> 1. Internal short-circuit in the battery. 2. Regulator/rectifier damaged or defective. 3. Regulator/rectifier poorly grounded. 	Replace the battery. Replace. Clean and tighten ground connection.
Unstable charging	<ol style="list-style-type: none"> 1. Lead wire insulation frayed due to vibration, resulting in intermittent shorting. 2. Generator internally shorted. 3. Defective regulator/rectifier. 	Repair or replace. Replace. Replace.

BATTERY

Complaint	Symptom and possible causes	Remedy
Battery runs down quickly	<ol style="list-style-type: none"> 1. The charging system is defective. 2. Cell plates have lost much of their active material as a result of over-charging. 3. A short-circuit condition exists within the battery due to excessive accumulation of sediments caused by the incorrect electrolyte. 4. Battery is too old. 	<p>Check the generator, regulator/rectifier and circuit connections, and make necessary adjustments to obtain specified charging operation.</p> <p>Replace the battery, and correct the charging system.</p> <p>Replace the battery.</p> <p>Replace the battery.</p>
Reversed battery polarity	The battery has been connected the wrong way round in the system.	Replace the battery and be sure to connect the battery properly.
Battery discharges too rapidly	<ol style="list-style-type: none"> 1. Dirty container top and sides. 2. Battery is too old. 	<p>Clean.</p> <p>Replace.</p>

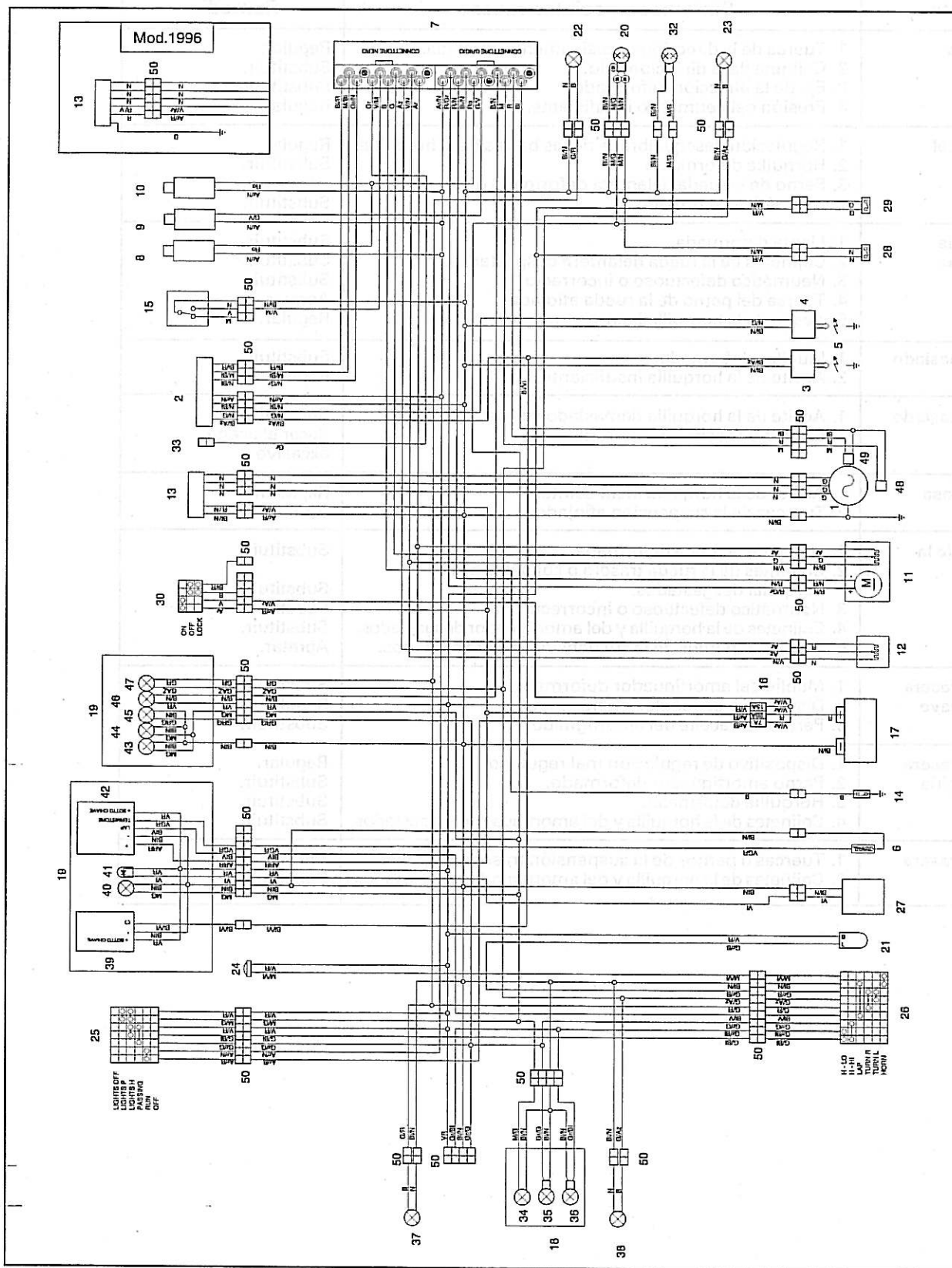
BRAKES

Complaint	Symptom and possible causes	Remedy
Insufficient brake power	<ol style="list-style-type: none"> 1. Leakage of brake fluid from hydraulic system. 2. Worn pads. 3. Oil adhesion on engaging surface of pads. 4. Worn disc. 5. Air in hydraulic system. 	<p>Repair or replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Replace.</p> <p>Bleed air.</p>
Brake squeaking	<ol style="list-style-type: none"> 1. Glazed pad surface. 2. Tilted pad. 3. Damaged wheel bearing. 4. Loose front-wheel axle or rear-wheel axle. 5. Worn pads. 6. Foreign material in brake fluid. 7. Clogged return port of master cylinder. 	<p>Repair surface with sandpaper.</p> <p>Modify pad fitting.</p> <p>Replace.</p> <p>Tighten to specified torque.</p> <p>Replace.</p> <p>Replace brake fluid.</p> <p>Disassemble and clean master cylinder.</p>
Excessive brake lever stroke	<ol style="list-style-type: none"> 1. Air in hydraulic system. 2. Insufficient brake fluid. 3. Improper quality of brake fluid. 	<p>Bleed air.</p> <p>Replenish fluid to specified level; bleed air.</p> <p>Replace with correct fluid.</p>
Leakage of brake fluid	<ol style="list-style-type: none"> 1. Insufficient tightening of connection joints. 2. Cracked hose. 3. Worn piston and/or cup. 	<p>Tighten to specified torque.</p> <p>Replace.</p> <p>Replace piston and/or cup.</p>

CHASSIS

Complaint	Symptom and possible causes	Remedy
Heavy steering	<ol style="list-style-type: none"> 1. Steering stem nut overtightened. 2. Broken bearing in steering stem. 3. Distorted steering stem. 4. Not enough pressure in tyres. 	Adjust. Replace. Replace. Adjust.
Wobbly handle	<ol style="list-style-type: none"> 1. Loss of balance between right and left front forks. 2. Distorted front fork. 3. Distorted front axle or crooked tyre. 	Adjust. Replace. Replace.
Wobbly front wheel	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down front wheel bearings. 3. Defective or incorrect tyre. 4. Loose nut on axle. 5. Incorrect front fork oil. 	Replace. Replace. Replace. Retighten. Adjust.
Front suspension too soft	<ol style="list-style-type: none"> 1. Weakened springs. 2. Not enough fork oil. 	Replace. Refill.
Front suspension too stiff	<ol style="list-style-type: none"> 1. Fork oil too viscous. 2. Too much fork oil. 	Replace. Drain excess oil.
Noisy front suspension	<ol style="list-style-type: none"> 1. Not enough fork oil. 2. Loosen nuts on suspension. 	Refill. Retighten.
Wobbly rear wheel	<ol style="list-style-type: none"> 1. Distorted wheel rim. 2. Worn-down rear wheel bearings or swingarm bearings. 3. Defective or incorrect tyre. 4. Worn swingarm and rear cushion related bearings. 5. Loose nuts or bolts on rear suspension. 	Replace. Replace. Replace. Replace. Retighten.
Rear suspension too soft	<ol style="list-style-type: none"> 1. Weakened shock absorber spring. 2. Rear suspension adjuster improperly set. 3. Oil leakage of shock absorber. 	Replace. Adjust. Replace.
Rear suspension too stiff	<ol style="list-style-type: none"> 1. Rear suspension adjuster improperly set. 2. Shock absorber shaft bent. 3. Swingarm bent. 4. Worn swingarm and rear cushion related bearings. 	Adjust. Replace. Replace. Replace.
Noisy rear suspension	<ol style="list-style-type: none"> 1. Loose nuts or bolts on rear suspension. 2. Worn swingarm and rear cushion related bearings. 	Retighten. Replace.

SCHEMA ELETTRICO - WIRING DIAGRAM - ESQUEMA ELECTRICO



LEGEND

1. Generator
2. C.D.I. unit
3. Front cylinder coil (R)
4. Rear cylinder coil (L)
5. Spark plugs
6. Thermistor
7. Control unit
8. Max solenoid 1
9. Min solenoid
10. Max solenoid 2
11. Exhaust valves motor
12. Throttle sensor
13. Output regulator
14. Neutral switch
15. Side stand switch
16. Fuses
17. Battery
18. Front headlights
19. Instrument panel
20. Tail light
21. Blinking
22. Rear indicator (R)
23. Rear indicator (L)
24. Horn
25. Light switch (R)
26. Light switch (L)
27. Oil level sensor
28. Front stop switch
29. Rear stop switch
30. Ignition switch
31. Lights relay switch
32. Number plate light
33. Exhaust valves motor check
34. Front parking light
35. High-beam headlight
36. Dipped headlight
37. Front indicator (R)
38. Front indicator (L)
39. Rev counter
40. Instruments light
41. Oil level LCD light
42. Chronometer/coolant temperature/clock display
43. Instruments light
44. Parking light warning light
45. High-beam headlight warning light
46. Neutral light
47. Indicators light
48. Front cylinder pick-up (R)
49. Rear cylinder pick-up (L)
50. Multiple connectors

CABLE COLOURS

- | | |
|----|------------|
| Ar | orange |
| Az | light blue |
| B | blue |
| Bi | white |
| G | yellow |
| Gr | grey |
| M | brown |
| N | black |
| R | red |
| V | green |
| Vi | purple |

LEGENDA

1. Generatore
2. Centralina CDI
3. Bobina cilindro ant. (R)
4. Bobina cilindro post. (L)
5. Candele
6. Termistore
7. Centralina di controllo
8. Solenoide del massimo 1
9. Solenoide del minimo
10. Solenoide del massimo 2
11. Motorino valvole scarico
12. Sensore acceleratore
13. Regolatore di tensione
14. Interruttore folle
15. Interruttore cavalletto laterale
16. Fusibili
17. Batteria
18. Fari anteriori
19. Cruscotto
20. Fanale posteriore
21. Intermitenza
22. Indicatore di direzione post. dx
23. Indicatore di direzione post. sx
24. Claxon
25. Interruttore dx luci
26. Interruttore sx luci
27. Sensore livello olio
28. Interruttore stop anteriore
29. Interruttore stop posteriore
30. Interruttore di accensione
31. Relé luci
32. Luce targa
33. Check motorino valvole scarico
34. Lampada di posizione ant.
35. Lampada abbagliante
36. Lampada anabbagliante
37. Indicatore di direzione ant. dx
38. Indicatore di direzione ant. sx
39. Contagiri
40. Luce strumenti
41. Spia LCD livello olio
42. Display cronom./temp. H2O/orologio
43. Luce strumenti
44. Spia luci di posizione
45. Spia luci abbaglianti
46. Spia cambio in folle
47. Spia indicatori di direzione
48. Pick up cilindro ant. (R)
49. Pick up cilindro post. (L)
50. Connettori multipli

COLORE DEI CAVI

- | | |
|----|-----------|
| Ar | arancione |
| Az | azzurro |
| B | blu |
| Bi | bianco |
| G | giallo |
| Gr | grigio |
| M | marrone |
| N | nero |
| R | rosso |
| V | verde |
| Vi | viola |

ALEYENDA

1. Generador
2. Centralita C.D.I.
3. Bobina del cilindro delantero (R)
4. Bobina del cilindro trasero (L)
5. Bujías
6. Termistor
7. Centralita de control
8. Solenoide del máximo 1
9. Solenoide del mínimo
10. Solenoide del máximo 2
11. Motor de las válvulas de escape
12. Sensor del acelerador
13. Regulador de tensión
14. Interruptor del punto muerto
15. Interruptor del caballete lateral
16. Fusibles
17. Batería
18. Faros delanteros
19. Salpicadero
20. Faro trasero
21. Intermitencia
22. Indicador de dirección trasero derecho
23. Indicador de dirección trasero izquierdo
24. Bocina
25. Interruptor derecho de las luces
26. Interruptor izquierdo de las luces
27. Sensor del nivel del aceite
28. Interruptor de stop delantero
29. Interruptor de stop trasero
30. Conmutador de llave
31. Relé de las luces
32. Luz de la matrícula
33. Check motor de las válvulas de escape
34. Lámpara de posición delantera
35. Lámpara de carretera
36. Lámpara de cruce
37. Indicador de dirección delantero derecho
38. Indicador de dirección delantero izquierdo
39. Cuentalrevoluciones
40. Luz de los instrumentos
41. Testigo LCD del nivel del aceite
42. Display cronóm./temp. agua/reloj
43. Luz de los instrumentos
44. Testigo de las luces de posición
45. Testigo de las luces de carretera
46. Testigo del cambio en punto muerto
47. Testigo indicadores de dirección
48. Pick up cilindro delantero (R)
49. Pick up cilindro trasero (L)
50. Conectores múltiples

COLOR DE LOS CABLES

- | | |
|----|-------------|
| Ar | Naranja |
| Az | Azul claro |
| B | Azul marino |
| Bi | Blanco |
| G | Amarillo |
| Gr | Gris |
| M | Marrón |
| N | Negro |
| R | Rojo |
| V | Verde |
| Vi | Violeta |

ELECTRICAL SYSTEM INSPECTION**BATTERY RECHARGING INSPECTION**

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none">– Engine running at 5.000 rpm– Lights on– Press "M" button on multipurpose computer	13 - 15 Volts on display

REGULATOR (with engine off and regulator disconnected)

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none">– Rotation check of generator side connectors– Tester on Ω	Tester indication = \ (infinite)

GENERATOR (with engine off and generator disconnected)

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none">– Rotation check of yellow generator connector cables (left, beside battery)– Tester on Ω	Tester indication = 0,1 - 1 Ω

With engine running at 5.000 rpm

<ul style="list-style-type: none">– Connector check (left, beside battery)– Tester on Volt (AC)– Check that ground cable is connected	Tester indication = 53 Volts upwards
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SPARK PLUGS (no spark)

Test conditions	Indication of proper functioning conditions
First inspection <ul style="list-style-type: none">– Check fuses– Check spark plugs– Check neutral switch– Check lateral stand switch	

With engine off and coil disconnected

Second inspection (coil) <ul style="list-style-type: none">– Inspection from coil high tension cable to coil mass– Tester on $K\Omega$	Tester indication = 5 - 30 $K\Omega$
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SERVICING INFORMATION

With engine off and pick-up disconnected

Third inspection (pick-up) <ul style="list-style-type: none">- Inspection three-way pick-up connector near fuses- Tester on Ω- Inspect from White cable to Brown cable	Tester indication = 20 - 200 Ω
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With engine off and pick-up disconnected

Fourth inspection (pick-up) <ul style="list-style-type: none">- Inspection three-way pick-up connector near fuses- Tester on Ω- Inspect from White cable to Red cable	Tester indication = 20 - 200 Ω
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With engine off and C.D.I. unit disconnected

Fifth inspection (C.D.I.) <ul style="list-style-type: none">- Inspection four-way C.D.I. connector- Tester on $K\Omega$- Inspect from White/Black cable to White/Blue cable	Tester indication = 0,1 - ' (infinite)
Sixth inspection (C.D.I.) <ul style="list-style-type: none">- Inspect from White/Black cable to Yellow/Black cable	Tester indication = 0,1 - ' (infinite)
Seventh inspection (C.D.I.) <ul style="list-style-type: none">- Inspection three-way C.D.I. connector- Tester on $K\Omega$- Rotation inspection of cables:<ul style="list-style-type: none">Brown/White and Red/WhiteRed/White and Black/WhiteBrown/White and Black/White	Indication tester = 1.016 $\Omega \pm 5\%$ 506 $\Omega \pm 5\%$ 509 $\Omega \pm 5\%$

With engine on

Eighth inspection <ul style="list-style-type: none">- Lack of spark in lower cylinder- Disconnect the three-way connector of the rev counter and check spark- Tester on $k\Omega$- Inspect from White/Purple cable to Light Blue/White cable	Tester indication = 0 Ω
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SERVICING INFORMATION

CARBURATION (with engine off and minimum air solenoid disconnected)

Test conditions	Indication of proper functioning conditions
First inspection (minimum air solenoid) <ul style="list-style-type: none">- Inspection of air solenoid with black support- Tester on Ω- Check at air solenoid heads	Tester indication = $39 \Omega \pm 10$

With engine off and main air solenoid disconnected

Second inspection (main air solenoids) <ul style="list-style-type: none">- Inspection of air solenoid with green support- Tester on Ω- Check at air solenoid heads	Tester indication = $35 \Omega \pm 10$
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EXHAUST VALVES CONTROL MOTOR (with engine off and exhaust valves control motor disconnected)

Test conditions	Indication of proper functioning conditions
First inspection <ul style="list-style-type: none">- Inspection two-way motor connector- Tester on Ω- Inspect from Red/Black cable to Black/Red cable Second inspection <ul style="list-style-type: none">- Inspection three-way motor connector- Tester on $K\Omega$- Inspect from White/Black cable to Orange cable	Tester indication = $1 - 60 \Omega$ Tester indication = $3 - 6 K\Omega$

EXHAUST VALVES PHASE CONTROL (with engine off, ignition key at "ON", switch at "RUN" and gear in neutral)

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none">- Earth the free Grey cable near the battery (right)- The valves must time	Check that reference marks comply

SERVICING INFORMATION

THROTTLE SENSOR (with engine off and throttle sensor disconnected)

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none">– Inspection three-way throttle sensor connector– Tester on $K\Omega$– Inspect from Red cable to Black cable	<p>Tester indication = 3,5 – 6,5 $K\Omega$</p> <p>From the Blue cable to the Red cable, the value drops progressively from that measured to almost ` (infinite)</p>

ELECTRONIC REV COUNTER (with engine off and ignition key at "ON")

Test conditions	Indication of proper functioning conditions
<p>First inspection</p> <ul style="list-style-type: none">– Inspection three-way rev counter connector– Tester on Volt– Inspect from White/Black cable to Green/Red cable	<p>Tester indication = voltage equal to battery's</p>

With engine off and all connections made

<p>Second inspection</p> <ul style="list-style-type: none">– Inspection White/Purple cable (signal for rev counter)– Tester on Ω– Inspect from White/Purple cable to Light Blue/White cable (C.D.I.) <p>Third inspection</p> <ul style="list-style-type: none">– Check from White/Purple cable to Light Blue/White cable (near right coil)	<p>Tester indication = 0 Ω</p> <p>Tester indication = 0 Ω</p>
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NOTE:

The earthed cable in the harness is White/Black in colour.

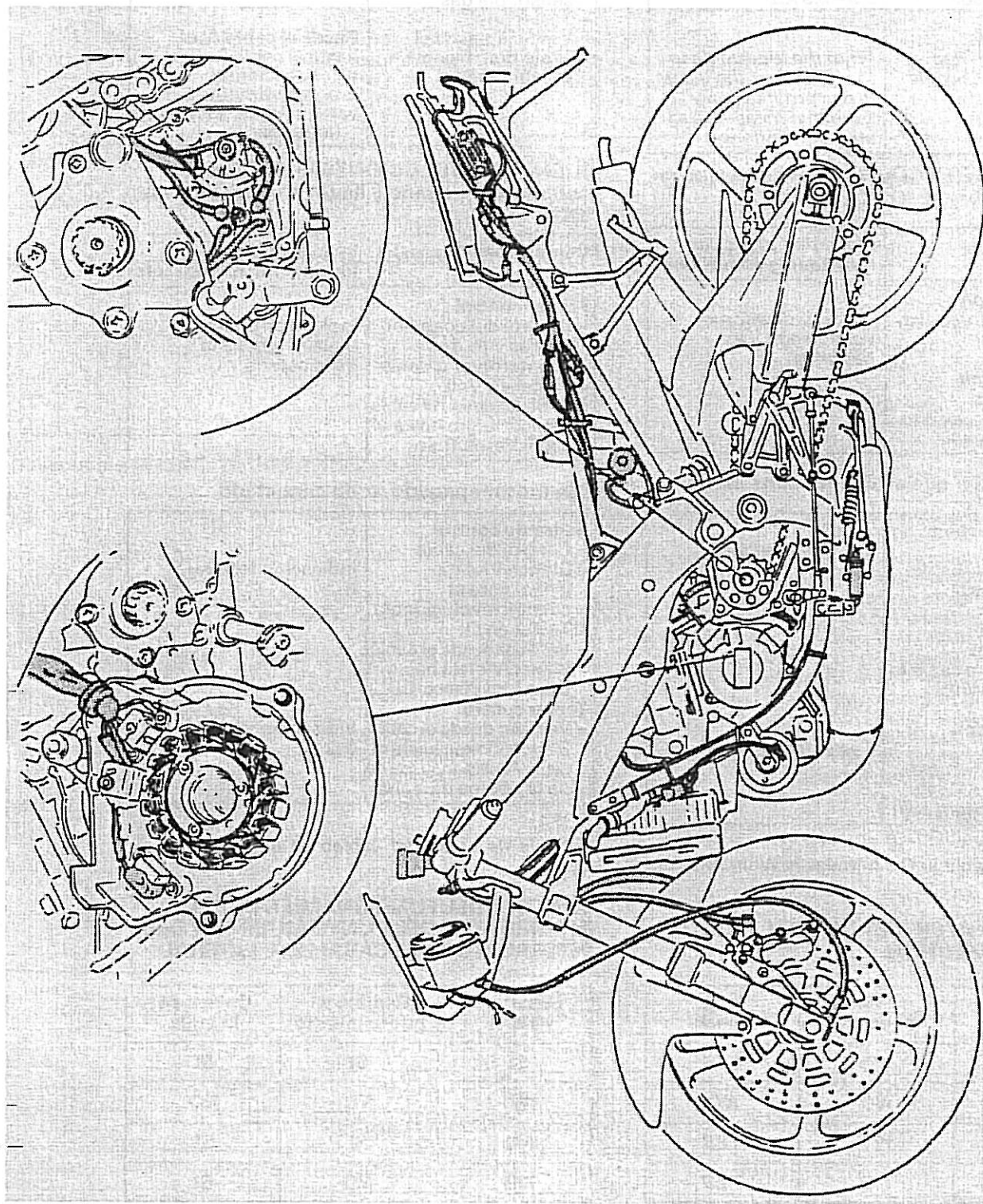
NEUTRAL SWITCH AND LATERAL STAND SWITCH INSPECTION

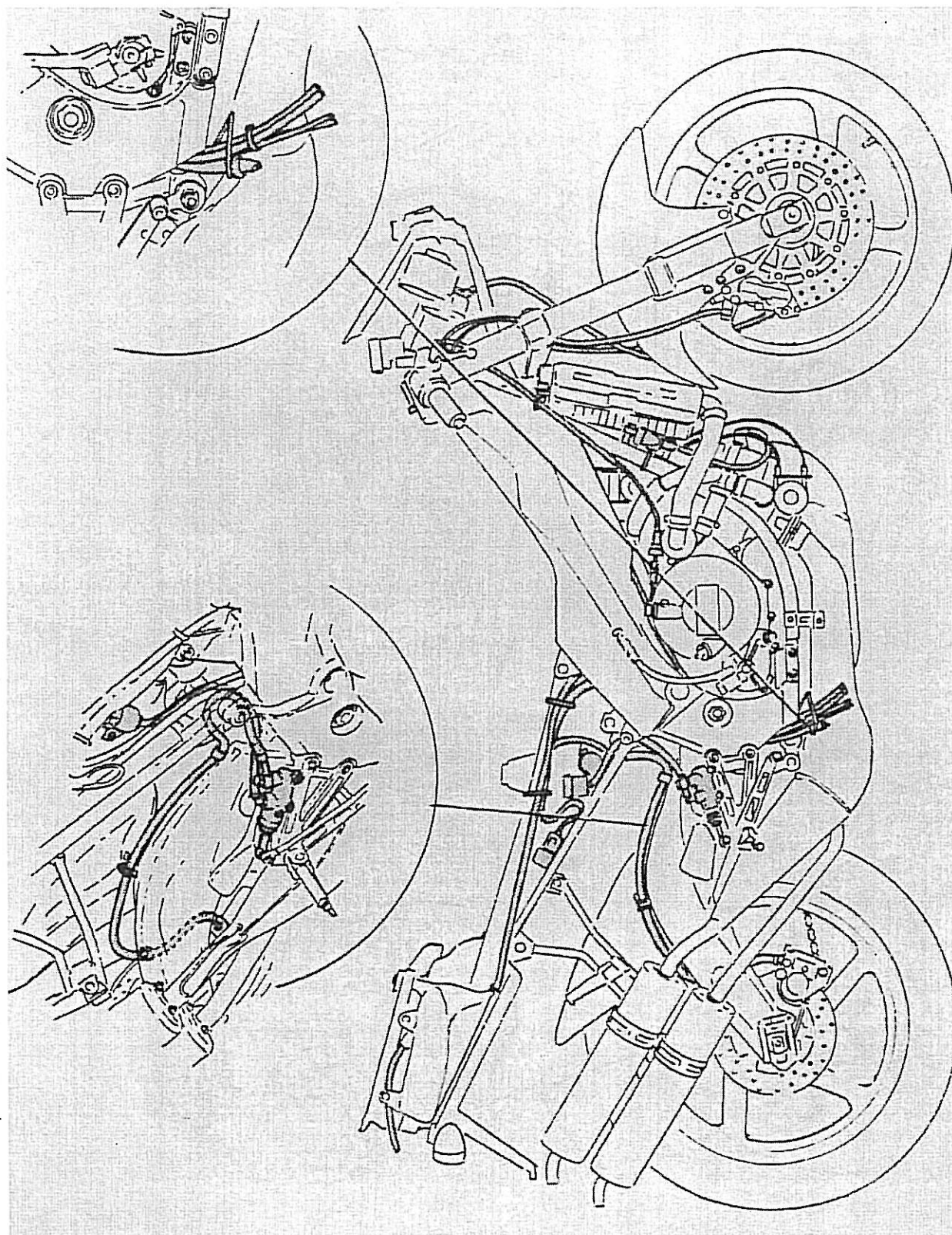
Stand open	Gear in neutral	Plug spark
YES	YES	YES
YES	NO	NO
NO	YES	YES
NO	NO	YES

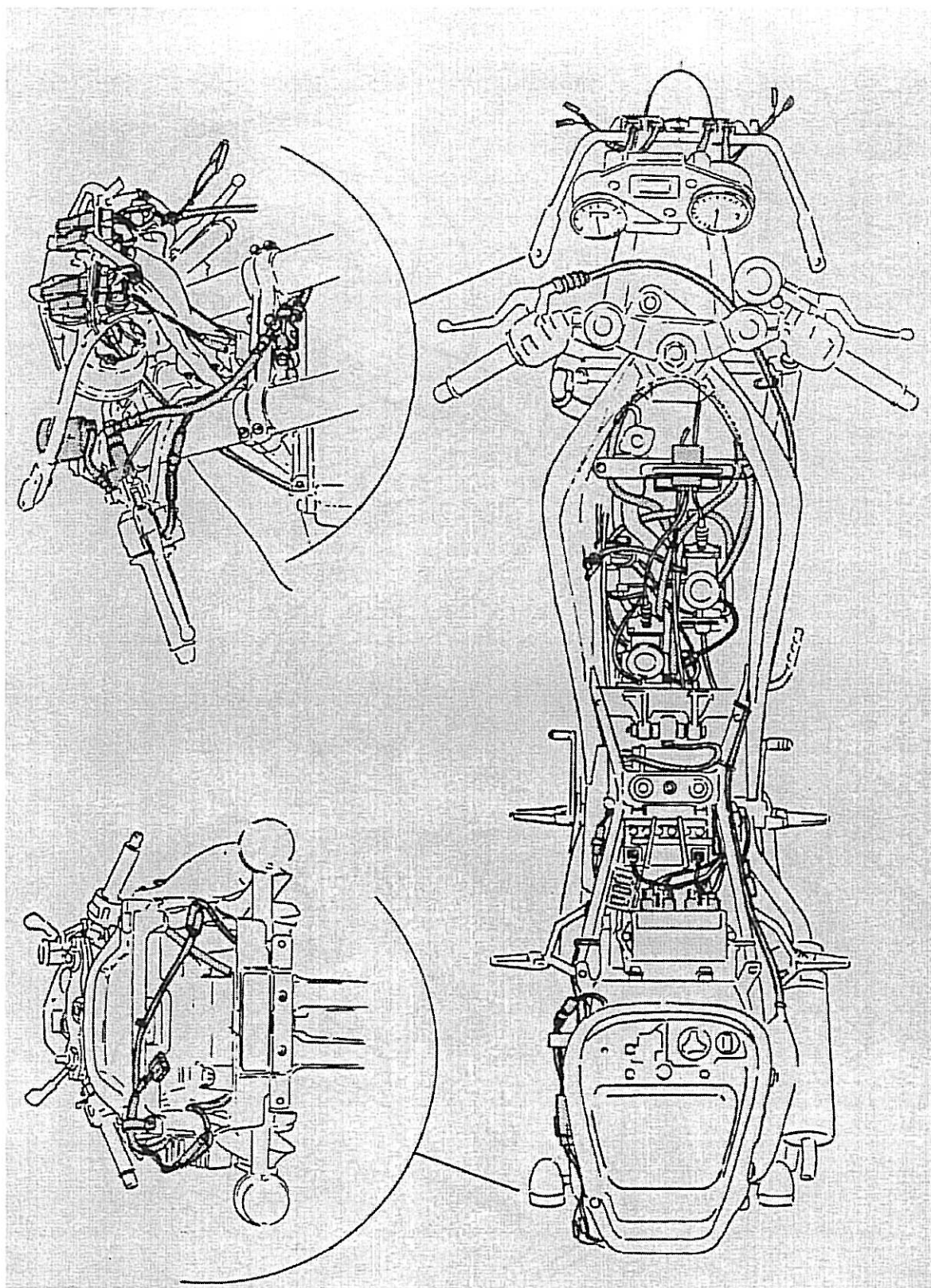
PERCORSO, PASSAGGIO E FISSAGGI CABLAGGIO - CAVI - TUBI

CABLE, WIRE, HOSE ROUTING PASSAGE AND FASTENING

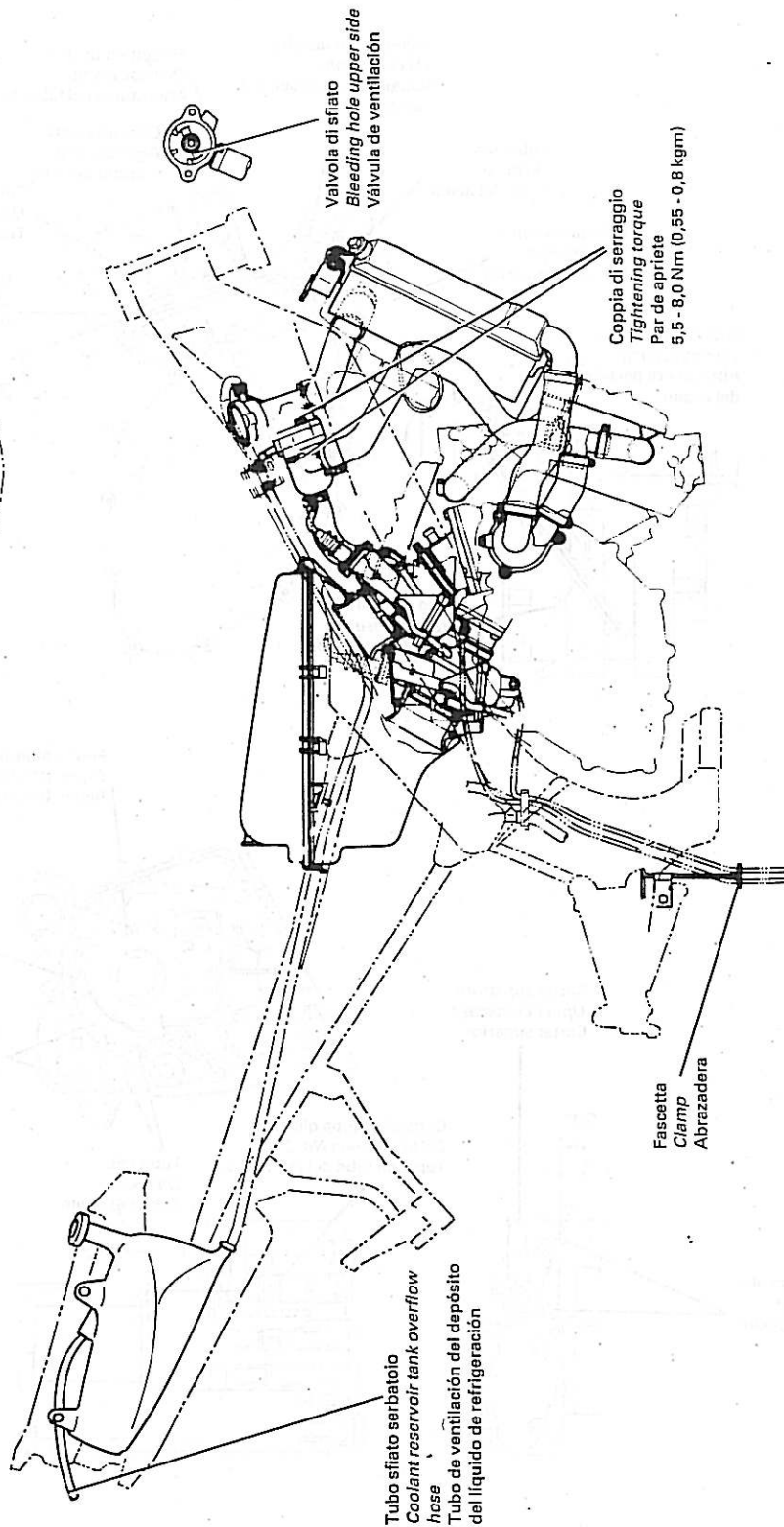
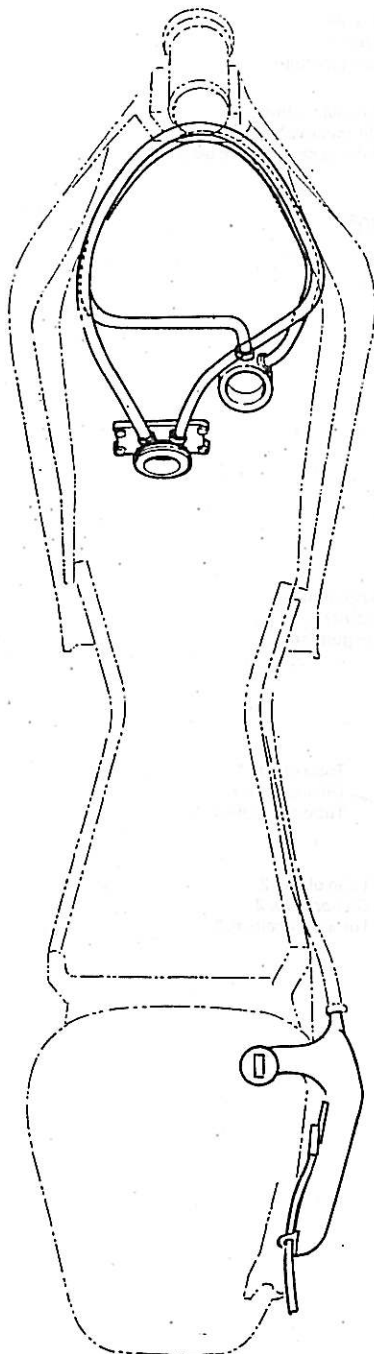
RECORRIDO, PASO Y FIJACIONES DEL CABLEO - CABLES - TUBOS







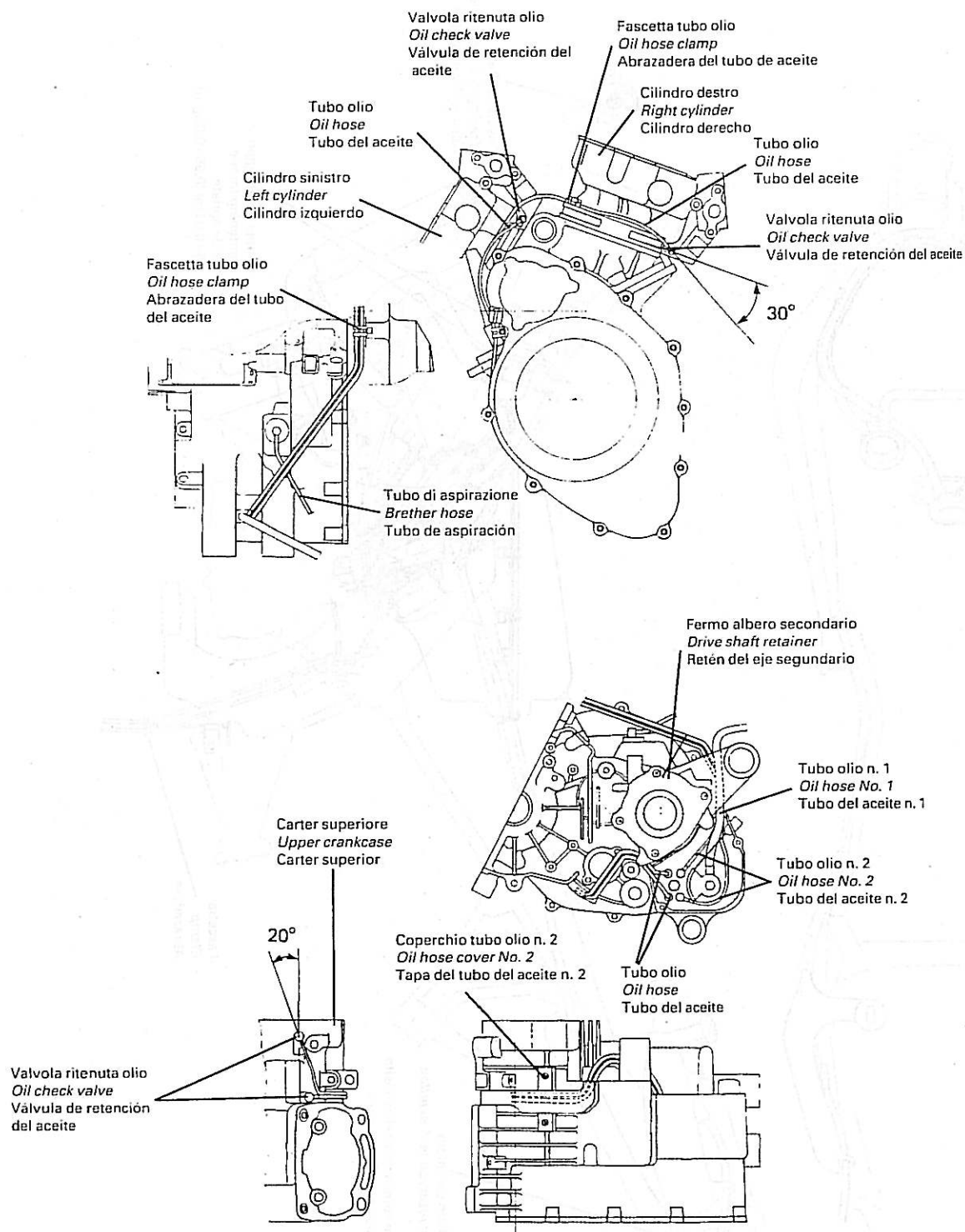
CIRCUITO DI RAFFREDDAMENTO
COOLING CIRCUIT
CIRCUITO DE REFRIGERACION



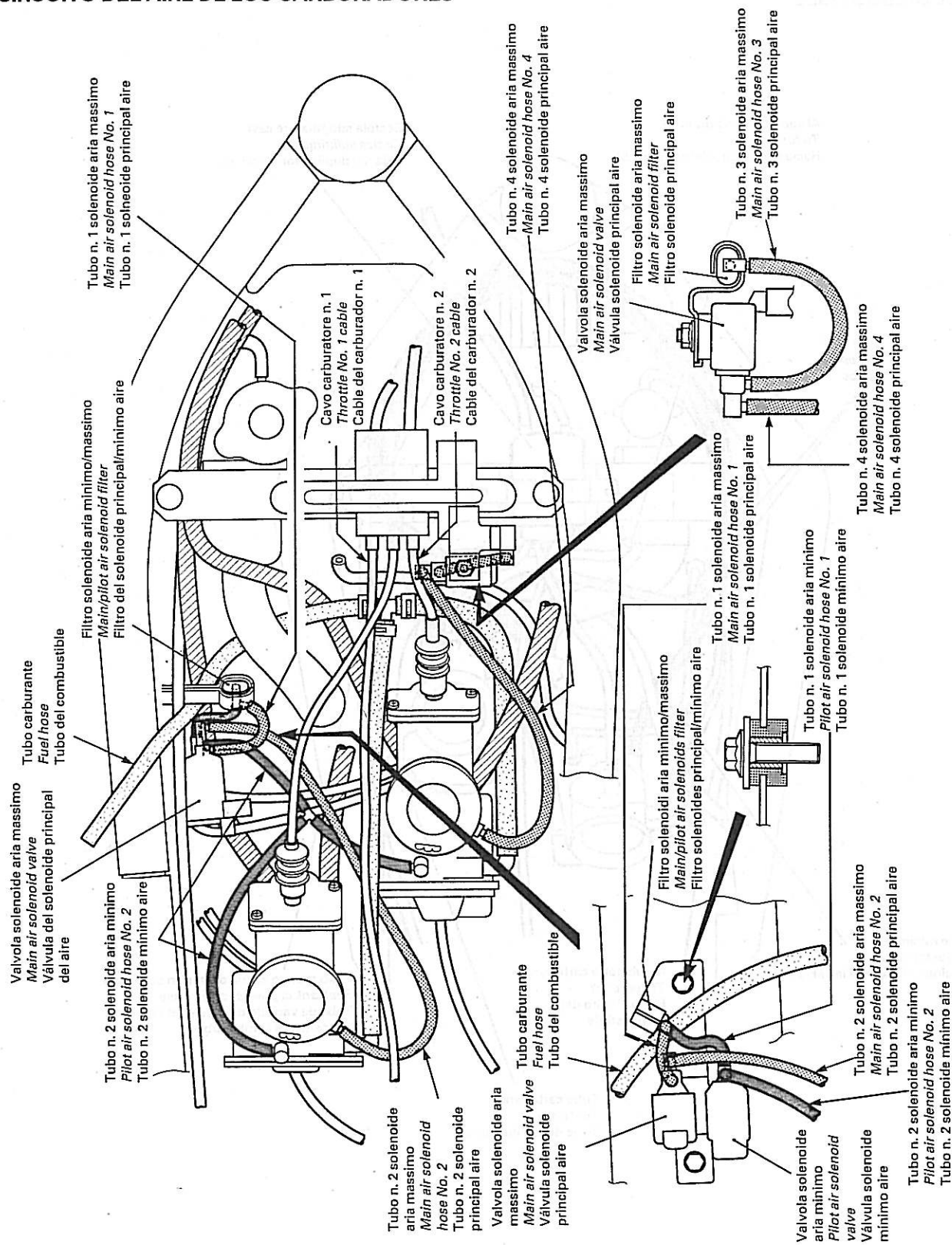
TUBI CIRCUITO OLIO MISCELATORE

MIXER OIL HOSE ROUTING

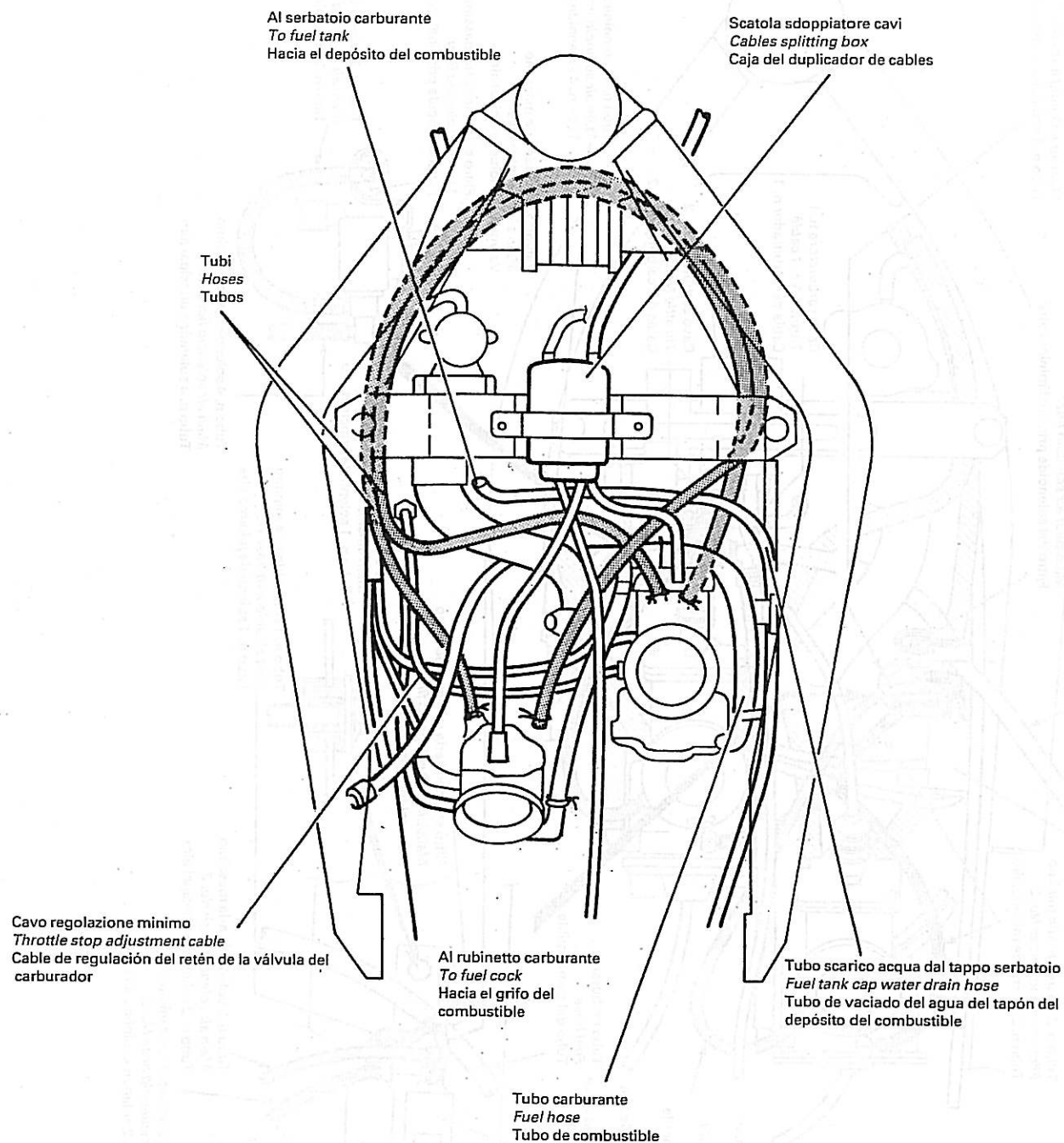
TUBOS DEL CIRCUITO DE ACEITE DEL MEZCLADOR

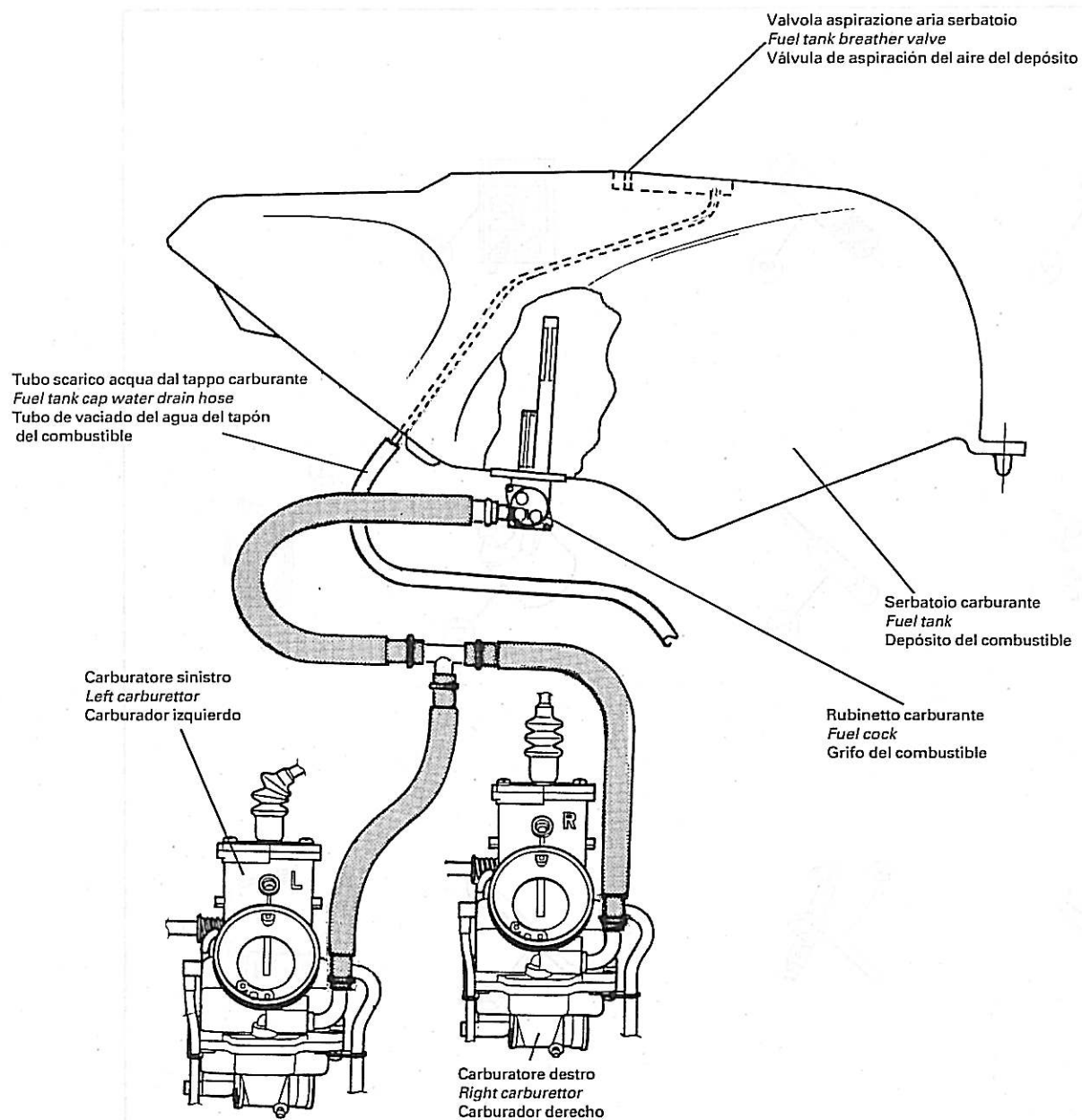


CIRCUITO ARIA CARBURATORI CARBURETTORS AIR CIRCUIT CIRCUITO DEL AIRE DE LOS CARBURADORES

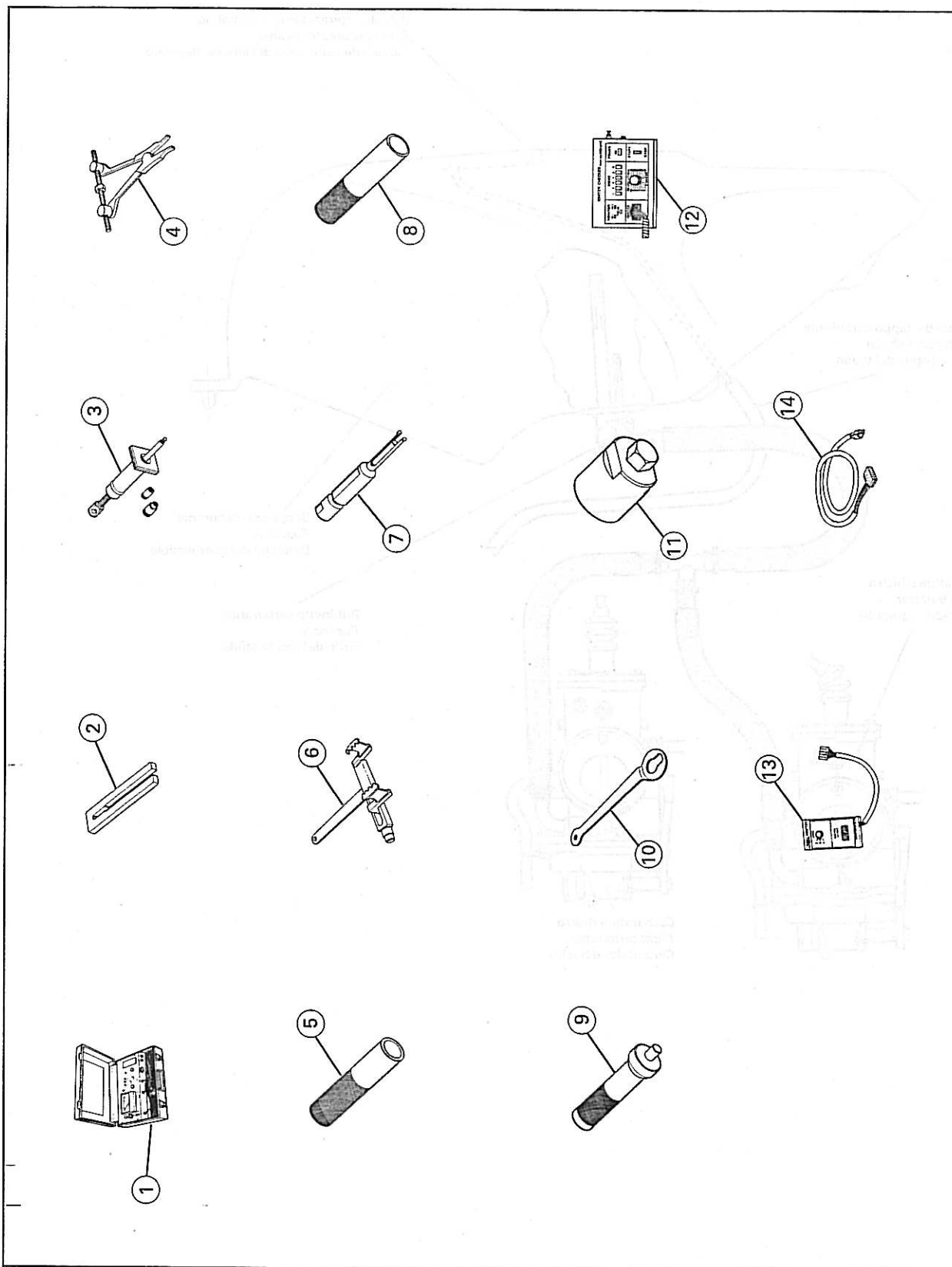


TUBI CARBURANTE
FUEL HOSE ROUTING
TUBOS DEL COMBUSTIBLE





ATTREZZI SPECIALI - SPECIAL TOOLS - HERRAMIENTAS ESPECIALES



POS. N. POS. N. POS. N.	ATTREZZI SPECIALI	SPECIAL TOOLS	HERRAMIENTAS ESPECIALES	N. CODICE N. CODE CODE	POS. N. POS. N. POS. N.
1	Electro tester	Electro tester	Electro tester	86 00 386	1
2	Bloccaggio biella	Connecting rod stopper	Bloqueo de la biela	86 00 387	2
3	Estrattore spinotto	Piston pin puller	Extractor del pasador	86 00 388	3
4	Separatore carter	Crankcase disassembly tool	Separador del carter	86 00 389	4
5	Tampone montaggio cuscinetti (D. 32)	Bearing installer (D. 32)	Tampón de montaje de los cojinetes (D. 32)	86 00 390	5
6	Bloccaggio frizione	Clutch sleeve hub holder	Bloqueo del embrague	86 00 391	6
7	Estrattore (D. 10)	Bearing remover (D. 10)	Extractor (D. 10)	86 00 392	7
8	Tampone montaggio cuscinetti (D. 26)	Bearing installer (D. 26)	Tampón de montaje de los cojinetes (D. 26)	86 00 393	8
9	Tampone montaggio cuscinetti (D. 21,9)	Bearing installer (D. 21,9)	Tampón de montaje de los cojinetes (D. 21,9)	86 00 394	9
10	Fermo volano	Rotor holder	Retén del volante	86 00 395	10
11	Estrattore volano (M33 x 1,5)	Rotor remover (M33 x 1,5)	Extractor del volante (M33 x 1,5)	86 00 396	11
12	Ignition checker	Ignition checker	Ignition checker	86 00 397	12
13	Adattatore elettronico	Adapter	Adaptador electrónico	86 00 398	13
14	Cablaggio per test centralina	P.E.I. tester lead	Cableo para test de la centralita	86 00 399	14

TIGHTENING TORQUES**ENGINE**

<i>Item</i>		<i>Nm</i>	<i>kgm</i>
Transmission oil drain plug	14 mm	20 - 25	2,0 - 2,5
Coolant drain plug		8 - 12	0,8 - 1,2
Exhaust pipe clamp nut		18 - 28	1,8 - 2,8
Muffler mounting bolt		18 - 28	1,8 - 2,8
Engine mounting nut	10 mm	60 - 72	6,0 - 7,2
	8 mm	28 - 34	2,8 - 3,4
Engine mounting bracket bolt		18 - 28	1,8 - 2,8
Down tube		22 - 28	2,2 - 2,8
Kick starter lever bolt		18 - 28	1,8 - 2,8
Cylinder head nut		23 - 27	2,3 - 2,7
Cylinder nut		18 ÷ 22	1,8 ÷ 2,2
Crankcase bolt	6 mm	9 - 13	0,9 - 1,3
	8 mm	20 - 24	2,0 - 2,4
Gearshift arm stopper		15 - 23	1,5 - 2,3
Primary drive gear nut		60 - 80	6,0 - 8,0
Water pump cover bolt		6 - 10	0,6 - 1,0
Transmission cover nut		8 - 12	0,8 - 1,2
Clutch sleeve hub nut		40 - 60	4,0 - 6,0
Clutch spring bolt		8 - 12	0,8 - 1,2
Clutch cover bolt		6 - 10	0,6 - 1,0
Magneto rotor nut		85 - 105	8,5 - 10,5
Water pump impeller bolt		7 - 9	0,7 - 0,9
Water temperature gauge		6 - 10	0,6 - 1,0
Radiator mounting nut		7 - 9	0,7 - 0,9
Carburettor mounting bolt		7 - 9	0,7 - 0,9

CHASSIS

<i>Item</i>	<i>Nm</i>	<i>kgm</i>
Steering stem head nut	60 - 100	6,0 - 10,0
Handlebars set screw (M6)	6 - 10	0,6 - 1,0
Front fork upper clamp screw	25	2,5
Front fork lower clamp screw	25	2,5
Front fork cap bolt	20	2,0
Front axle shaft	80	8,0
Front axle clamp screws	10	1,0
Handlebars mounting bolt	15 - 25	1,5 - 2,5
Front brake master cylinder mounting bolt	5 - 8	0,5 - 0,8
Front caliper mounting bolt	45 - 55	4,5 - 5,5
Front and rear caliper housing bolt	25 - 29	2,5 - 2,9
Front brake caliper hose union bolt	17 - 20	1,7 - 2,0
Air bleeder valve (front and rear)	12 - 16	1,2 - 1,6
Front and rear disc bolt (with medium Loctite® thread restrainer)	15 - 25	1,5 - 2,5
Swingarm pin	85 - 110	8,5 - 11,0
Swingarm pin adjuster bush	contact + 1/4 turn of bush	
Rear shock absorber mounting nut (upper)	80	8,0
Rear shock absorber mounting bolt (lower)	45 - 50	4,5 - 5,0
Rear shock absorber connecting rod (upper and lower) fastening nuts	90	9,0
Chassis double connecting rod pin nut	90	9,0
Rear brake caliper (to the support) fastening screws	25	2,5
Rear brake caliper housing bolt	8 - 12	0,8 - 1,2
Rear axle nut	85 - 115	8,5 - 11,5
Rear sprocket nuts	20 - 30	2,0 - 3,0
Front footrest bolt	35	3,5
Rear brake master cylinder hose union bolt	13 - 17	1,3 - 1,7
Rear brake caliper hose union bolt	17 - 20	1,7 - 2,0
Front engine fastening screw	50	5,0
Upper engine fastening screw	50	5,0
Lower engine fastening screw	25	2,5

TECHNICAL SPECIFICATIONS

CYLINDER - PISTON - PISTON RING

Unit: mm

Item	Standard			Limit
Piston to cylinder clearance	0,055 - 0,071			0,120
Cylinder bore	56,000 - 56,023			Nicks or scratches
Piston diameter	55,936 - 55,961 Measure at 19 mm from the skirt end			55,880
Cylinder distortion	-			0,05
Cylinder head distortion	-			0,05
Piston ring free end gap	1st	T	Approx. 5,0	4,0
	2nd	T	Approx. 6,0	4,8
Piston ring end gap	1st and 2nd		0,15 - 0,30	0,70
Piston ring to groove clearance	1st and 2nd		0,02 - 0,06	-
Piston pin bore	16,002 - 16,010			16,036
Piston pin O.D.	15,995 - 16,000			15,980

CONROD - CRANKSHAFT

Item	Standard	Limit
Conrod small end I.D.	20,003 - 20,011	20,047
Conrod deflection	-	3,0
Crank web to web width	48,5 ^{+0,2} ₋₀	-
Crankshaft runout	-	0,05

MIXER OIL PUMP

Item	Standard	Limit
Oil pump reduction ratio	4,897 (59/23 x 27/11 x 21/27)	-
CCl pump discharge rate	4,8 - 6,0 ml for 2 minutes at 2.000 rpm	-

CLUTCH

Item	Standard	Limit
Clutch lever play	2 - 3 (at lever stop)	-
Drive plate thickness	2,99 - 3,01	2,69
Drive plate claw width	15,8 - 16,0	15,3
Driven plate distortion	-	0,1
Clutch spring free length	-	34,8

THERMOSTAT - RADIATOR

<i>Item</i>	<i>Standard</i>	<i>Limit</i>
Thermostat valve opening temperature	50 ± 2°C	—
Thermostat valve lift	Over 7 mm at 65°C	—
Radiator cap valve opening pressure	110 kPa (1,1 kg/cm ²)	—

TRANSMISSION

<i>Item</i>	<i>Standard</i>		<i>Limit</i>
Primary reduction ratio	2,565 (59/23)		—
Final reduction ratio	3,071 (43/14)		—
Gear ratios	Low	2,454 (27/11)	—
	2nd	1,625 (26/16)	—
	3rd	1,235 (21/17)	—
	4th	1,045 (23/22)	—
	5th	0,916 (22/24)	—
	Top	0,840 (21/25)	—
Shift fork to groove clearance	0,1 - 0,3		0,5
Shift fork groove width	No. 1 & No. 2	4,0 - 4,1	—
	No. 3	5,5 - 5,6	—
Shift fork thickness	No. 1 & No. 2	3,8 - 3,9	—
	No. 3	5,3 - 5,4	—

DRIVE CHAIN

<i>Item</i>	<i>Standard</i>		<i>Limit</i>
Drive chain	Type	D.I.D. 520 V6	—
	Links No.	110	—
	20-pitch lenght		304
Drive chain slack	25 - 30		—

CARBURETTOR

Item	Standard	Catalysed version
Carburetor type	MIKUNI TM34SS	
Bore size	34 mm	
I.D. No.	23D4	
Idle rpm	1.300 ± 150 rpm	
Fuel level	7,1 ± 0,5 mm	
Float height	8 ± 1,0 mm	
Main jet (M.J.)	L : # 270, R : # 280	
Jet needle (J.N.)	6GH8 - 55 - 3	
Needle jet (N.J.)	0 - 8	0 - 9
Cut-away (C.A.)	1,5 mm	
Pilot jet (P.J.)	# 27,5	# 20
By - pass (B.P.)	0,6 mm	
Pilot outlet (P.O.)	0,6 mm	
Valve seat (V.S.)	2,5 mm	
Starter jet (G.S.)	# 45	
Power jet	No. 1	L : # 55, R : # 35
	No. 2	0,7 mm
Air screw (A.S.)	-	
Throttle cable play	0,5 - 1 mm	

ELECTRICAL

Item	Specification	
Ignition timing	10° B.T.D.C. at 1.300 rpm	
Spark plug	Standard type	NGK BR9ECM
	Upper heat range type	NGK BR8ECM
	Lower heat range type	NGK BR10ECM
	Gap	0,7 - 0,8 mm
Spark performance	Over 8 mm at 1 atm.	
Ignition coil resistance	Primary	0,17 - 0,5 Ω (B/Y - W/L)
	Secondary	5 - 30 kΩ (Plug cap - Terminal)
Generator coil resistance	0,1 - 1 Ω (Y - Y)	
Magneto coil resistance	Pick-up coil	20 - 200 Ω (Br - W)
		20 - 200 Ω (R - W)
Generator no-load voltage	More than 49 V (AC) at 5.000 rpm (Y - Y)	
Regulated voltage	13,0 - 15,5 V at 5.000 rpm	
Water temperature gauge resistance	50 Ω at 90 ± 95°C	
	15 Ω at 120 ± 130°C	

8 - 53 SERVICING INFORMATION

Item	Specifications	
	Type	12 V - 4 Ah
Battery	Standard electrolyte S.G.	1,30 at 20°C (68°F)
	Main	20 A
	Ignition system	7,5 A
	Others	15 A

WATTAGE**Unit: W**

Item	Specification	
	HI	55 (H3)
Headlight	LO	55 (H1)
Tail/Brake light		5/21
Number plate light		5
Turn indicator		10
Tachometer light		2
Rev counter light		2
Turn indicators warning light		2
High beam warning light		2
Neutral warning light		2
Oil mixer level warning light		Red LED
Parking lights warning light		1,2
Parking light		5
Multifunction computer display light		2

BRAKE - WHEEL**Unit: mm**

Item	Standard		Limit
Brake disc thickness	Front	3,9 - 4,1	3,5
	Rear	4,3 - 4,7	4,0
Wheel rim runout	Axial	-	2,0
	Radial	-	2,0
Wheel axle runout	Front	-	0,25
	Rear	-	0,25
Wheel rim size	Front	3,00" x 17"	-
	Rear	4,50" x 17"	-

<i>Item</i>	<i>Standard</i>		<i>Limit</i>
Tyre size	Front	110/70 ZR 17"	–
	Rear	150/60 ZR 17" or 160/60 ZR 17"	–
Tyre inflation pressure	Front	1,9 bar	–
	Rear	2,2 bar	–
Tyre tread depth	Front	–	2,0
	Rear	–	2,0

SUSPENSION
Unit: mm

<i>Item</i>	<i>Standard</i>	<i>Limit</i>
Front fork stroke	120	–
Front fork spring free lenght	255	247
Rear wheel travel	130	–

FUEL - OIL - COOLANT

<i>Item</i>	<i>Specification</i>
Fuel type	Lead-free petrol R.O.N. min 91
Fuel tank including reserve	16,5 l
reserve	3,5 l
Mixer oil type (synthetic)	ISO - L - ETC ++ A.P.I. - TC ++
Mixer oil tank capacity including reserve	1,6 l
reserve	0,6 l
Transmission oil type (semisynthetic)	SAE 20W/50 - A.P.I. SG - CCMC G-4
Transmission oil capacity	0,7 l
Front fork oil type	Standard SAE 10W (at very low or very high ambient temperatures SAE 5W or SAE 20W)
Brake fluid type	DOT 4 - SAE S1703
Coolant type	Use an anti-freeze & summer coolant compatible with aluminium radiator, mixed with distilled water only, at the ratio of 50 : 50
Cooling system capacity	1,9 l

AGGIORNAMENTI

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9

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POSITION OF SERIAL NUMBERS

These numbers are necessary in order to register the vehicle.

 Do not alter the identification numbers if you do not want to incur severe penal and administrative sanctions. In particular, the alteration of the frame number results in the immediate invalidity of the guarantee.

FRAME NUMBER

The frame number is stamped on the right side of the steering column.

ENGINE NUMBER


The engine number is stamped on the rear part of the engine, near the pinion.

CYLINDER IDENTIFICATION

The two cylinders of this engine are identified as "L" left cylinder and "R" right cylinder.

INSTRUCTIONS FOR USE OF FUEL, LUBRICANTS AND COOLANT

FUEL

 The fuel used for internal combustion engines is extremely inflammable and in certain conditions can become explosive.

It is advisable to perform the operations of refuelling and maintenance in a well-ventilated area with the engine switched off. Do not smoke while refuelling or when near fuel vapours and, in any case, avoid contact with naked flames, sparks and any other source of heat that might cause the fuel to catch fire or to explode. Avoid escape of fuel from the fuel filler as it could ignite on contact with the red-hot surfaces of the engine.

In case fuel has accidentally been spilt, make sure that the area is completely dry before starting the vehicle.

Never fill the tank to the brim as fuel expands under the heat of the sun and reacts to the effects of sun radiation.

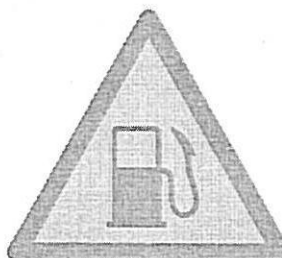
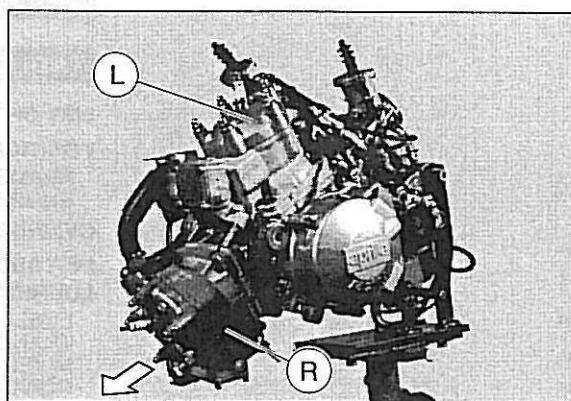
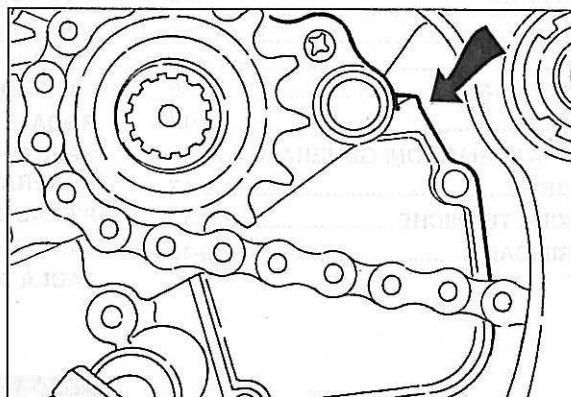
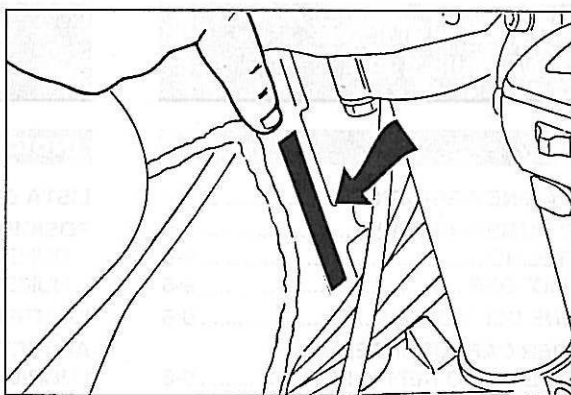
Close the cap securely after refuelling.

Avoid contact of the fuel with the skin and inhalation of the fumes; do not swallow fuel or pour it from one container into another by means of a tube.

DO NOT DISPOSE OF FUEL IN THE ENVIRONMENT.

KEEP FUEL AWAY FROM CHILDREN.

Use only premium grade unleaded petrol according to the DIN 51 607, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.).



TRANSMISSION OIL



The oil can cause serious damage to the skin if handled every day and for long periods. Wash your hands carefully after using the oil.

Do not dispose of the oil in the environment. Put it in a sealed container and take it to the filling station where you usually buy it or to an oil salvage center.

In case any maintenance operation has to be carried out, it is advisable to use latex gloves.

Check the transmission oil level every 4000 km (2500 mi), see p. 2-22 (GEAR OIL).

Change the transmission oil after the first 1000 km (625 mi) and successively every 12000 km (7500 mi), see p. 2-22 (GEAR OIL).

Transmission oil (recommended):

F.C. SAE 75W - 90.

As an alternative to the recommended oil, it is possible to use high-quality oils with characteristics in compliance with or superior to the A.P.I. GL-4.

MIXER OIL

Use synthetic oil with ISO-L-ETC++A.P.I. TC++ specifications for unleaded gasoline.

Mixer oil (recommended):

MAX 2T COMPETITION.

This oil is formulated to give best engine performance with least combustion chamber deposits, least preignition, maximum spark plug life and best lubrication.

FORK OIL



Fork oil may cause serious damage to the skin if handled daily and for long periods.

It is advisable to wash your hands thoroughly after using.

Do not dispose of oil in the environment.

Deliver it to or have it collected by the nearest used oil recovery firm or by the supplier.

In case any maintenance operation has to be carried out, it is advisable to use latex gloves.

By changing the setting of the damping elements and/or the viscosity of the oil they contain, it is possible to partially vary the response of the suspension.

Standard oil viscosity: SAE 20W.

F.A. is available in two viscosity degrees that can be chosen according to the kind of vehicle attitude required (SAE 5W soft, 20W rigid).

It is possible to use the two products in variable percentages until obtaining the desired response.

The viscosity of F.A. does not depend on its temperature excessively and therefore its damping response is almost constant.


Recommended fork oil: F.A. 5W or F.A. 20W fork oil.


If an intermediate performance is desired (between those of F.A. 5W and IP F.A. 20W, the products can be mixed as follows:

SAE 10W F.A. 5W 67% of volume, +
 F.A. 20W 33% of volume

SAE 15W F.A. 5W 33% of volume, +
 F.A. 20W 67% of volume


BRAKE FLUID

 This vehicle is provided with front and rear disc brakes, with separate hydraulic circuits. The following information refers to a single braking system, but is valid for both.

 Brake fluid may cause irritation if it comes into contact with the skin or eyes. Carefully wash the part of the body that has come into contact with the fluid. Consult an oculist or a physician if the fluid comes into contact with your eyes.


DO NOT DISPOSE OF BRAKE FLUID IN THE ENVIRONMENT.


KEEP BRAKE FLUID AWAY FROM CHILDREN

 When using the brake fluid, take care not to spill it on the plastic or painted parts, since it can damage them.

Check every 1000 km (625 mi) the brakes fluid level; see p. 2-30 (BRAKES); change it every year.

Recommended brake fluid:

 F.F. DOT 5 (compatible DOT 4)

 To avoid serious damage to the braking system, do not use fluids other than the recommended ones nor mix different fluids for topping up.


Do not use brake fluid taken from old or already opened containers. Do not use brake fluid left from previous repairs if they were done some time ago. Sudden variations in clearance or an elastic resistance in the brake levers may be due to trouble in the hydraulic circuits.

Make sure that the brake discs and the friction pads are completely free of grease or oil, especially after maintenance or checking operations.

Check that the brake cables are not twisted or worn. Make sure that neither water nor dust accidentally enter the circuit.


In case maintenance operations are to be performed on the hydraulic circuit, it is advisable to use latex gloves.

COOLANT

 The coolant is noxious: do not swallow it; if the coolant gets in contact with the skin or the eyes, it can cause serious irritations. If the coolant gets in contact with your skin or eyes, rinse with plenty of water and consult a doctor. If it is swallowed, induce vomit, rinse mouth and throat with plenty of water and consult a doctor without delay.

DO NOT DISPOSE OF BRAKE FLUID IN THE ENVIRONMENT.

KEEP BRAKE FLUID AWAY FROM CHILDREN

 Be careful not to spill the coolant on the red-hot parts of the engine: it may catch fire and send out invisible flames.

In case maintenance operations are to be performed, it is advisable to use latex gloves.

Do not remove the expansion tank cap when the engine is hot as the coolant is under pressure and at a very high temperature.

Do not use vehicle if the coolant level is below the minimum prescribed.

Check coolant level every 2000 km (1250 mi) and change it every 2 years, see p. 2-24 (COOLING SYSTEM).

The coolant is composed of 50% water and 50% anti-freeze. This mixture is ideal for most running temperatures and ensures good protection against corrosion.

It is advisable to keep the same mixture in the hot season as well, since in this way losses due to evaporation are reduced and it is not necessary to top up so frequently. The mineral salt deposits left in the radiator by evaporated water are thus lessened and the efficiency of the cooling system remains unaltered.


If the outdoor temperature is below 0°, check the cooling circuit frequently and if necessary increase the anti-freeze concentration (up to maximum 60%).


Use distilled water for the cooling solution so as not to damage the engine.

Recommended coolant:  ECOBLU -40°

On the basis of the desired freezing temperature of the coolant mixture, add to the water the percentage of coolant indicated in the following table:

Freezing point °C	Coolant of the volume %
-20°	35
-30°	45
-40°	55

 The characteristics of the various antifreeze liquids are different. Be sure to read the label on the product to learn the degree of protection it guarantees.


 Use only antifreeze and anticorrosive without nitrite in order to ensure protection at least -35°C.

RUNNING-IN

The running-in of the engine is important to ensure its correct functioning.


If possible, drive on hilly roads and/or roads with many bends, so that the engine, the suspensions and the brakes undergo a more effective running-in.

During running-in, change speed. In this way the components are first loaded and then relieved and the engine parts can thus cool down. Even if it is important to stress the engine components during running-in, take care not to exceed.

 Only after the first 1500 km (937 mi) of running-in you can expect the best performance levels from the vehicle.

Keep to the following indications:

- ◆ Do not open the throttle completely if the speed is low, both during and after the running-in.
- ◆ During the first 100 km (62 mi) put on the brakes with caution, avoiding sharp and prolonged brakings. This ensures a correct bedding-in of the pads on the brake disc.
- ◆ During the first 800 km (500 mi) never exceed 6000 rpm.


 After the first 1000 km (625 mi), carry out the checks indicated in the column "After running-in" of the REGULAR SERVICE INTERVALS CHART, see p. 9-25 (PERIODIC SERVICE CHART FOR THE COMPONENTS), in order to avoid hurting yourself or other people and/or damaging the vehicle.

- ◆ Between the first 800 km (500 mi) and 1600 km (1000 mi) drive more briskly, change speed and use the maximum acceleration only for a few seconds, in order to ensure better coupling of the components; never exceed 9000 rpm (see table).
- ◆ After the first 1600 km (1000 mi) you can expect better performance from the engine, however, without exceeding the maximum allowed rpm (12000 rpm).

Engine maximum rpm recommended	
Mileage km (mi)	rpm
0÷800 (0÷500)	6000
800÷1600 (500÷1000)	9000
oltre 1600 (1000)	12000

PRECAUTIONS AND GENERAL INFORMATION

Follow with care these recommendations when repairing, disassembling and reassembling the vehicle.

 The use of naked flames is forbidden for any type of operation.

Before commencing any service or inspection operation on the vehicle, switch off the engine and remove the key, wait until the engine and the exhaust system have cooled down and, if possible, raise the vehicle with the suitable equipment onto firm flat ground.

In order to avoid burns, be careful not to touch any parts of engine or exhaust system which have not cooled down completely.

The vehicle is constructed of inedible parts.

Do not bite, suck, chew or swallow any part of the vehicle for any reason whatever.

If not expressly described, the reassembly of the units is carried out by reversing the order of operations. Do not run the engine in closed or badly ventilated places.

Handle fuel with the greatest caution.

Never use fuel as a solvent for cleaning the vehicle.

Disconnect the negative cable (-) from the battery when electric welding.

When two or more persons are working together, make sure that each is working in safe conditions.

- Use only original **aprilia** SPARE PARTS.
- Use the recommended lubricants.
- Use, when necessary, the special tools **OPI** designed for this vehicle.
- Always use the centre stand, if the vehicle is provided with it.
- In order to carry out certain interventions we recommend using a stand **OPI** to hold the vehicle in a vertical position.
- When tightening screws and nuts, begin with those having greater diameters or with inner ones, proceeding diagonally. Tighten screws or nuts in successive passages before applying driving torque.
- Clean and wash carefully any disassembled parts with low inflammability detergents.
- Whenever possible, lubricate the parts before reassembly.
- Make sure that each component has been reassembled correctly.
- Always replace gaskets, grommets, circlips, O-rings and split pins with new ones.
- Before disconnecting the joints (pipes, cables, etc.), mark the positions on all of them and mark them with different distinguishing signs. Each piece must be marked clearly, in order not to have problems during installation.

The bearings must rotate freely, without halting a/o noise otherwise they must be replaced.

 Never use a circlip twice. When a circlip is removed, it must be replaced with a new one.

When assembling a new circlip be careful not to stretch its ends more than strictly necessary to put it on the shaft.

After installing a circlip, make sure that it is completely and firmly inserted in its seat.

PARTI DI RICAMBIO

In caso di sostituzione, utilizzare solo Ricambi Originali **aprilia**.
I Ricambi Originali **aprilia** sono di alta qualità, progettati e costruiti espressamente per i veicoli **aprilia**.



L'impiego di ricambi **NON** originali **aprilia** può causare problemi di prestazioni e danneggiamenti.

PIEZAS DE REPUESTO

En caso de substitución, utilice sólo Repuestos Originales **aprilia**. Los Repuestos Originales **aprilia** son de alta calidad, proyectados y fabricados expresamente para vehículos **aprilia**.



Utilizar repuestos **NO** originales **aprilia**, puede causar daños y problemas de rendimientos.

SPARE PARTS

For any replacement, use **aprilia** Genuine Spare Parts only.
aprilia Genuine Spare Parts are high-quality parts, expressly designed and manufactured for **aprilia** vehicles.



Failure to use **aprilia** Genuine Spare Parts may result in incorrect performance and damages.

CARATTERISTICHE TECNICHE**FICHA TECNICA****TECHNICAL SPECIFICATIONS**

DIMENSIONI / DIMENSIONES / DIMENSIONS	
Lunghezza max / Longitud máx. / Max. length	1975 mm
Larghezza max / Anchura máx. / Max. width	690 mm
Altezza max (al cupolino) / Altura máx. (hasta la cúpula) / Max. height (front part of the fairing included)	1180 mm
Altezza alla sella / Altura hasta el sillín / Saddle height	810 mm
Interasse / Distancia entre los ejes / Distance between centres	1360 mm
Altezza libera minima dal suolo / Altura libre mínima del suelo / Min. ground clearance	135 mm
Peso in ordine di marcia / Peso en orden de marcha / Weight ready for starting	167 kg
MOTORE / MOTOR / ENGINE	
Tipo / Tipo / Type	Bicilindrico a V di 90° 2 tempi con aspirazione lamellare e valvola alla luce di scarico. Lubrificazione separata con miscelatore automatico a titolo variabile (0,9 - 2%) / Bicilíndrico en V de 90° de 2 tiempos con aspiración laminar y válvula en la abertura de escape. Lubricación separada con mezclador automático de flujo variable (0,9 - 2%) / 90°V two-cylinder with laminar suction and valve on the exhaust port. Separate lubrication with automatic, variable oil titer mixer (0.9-2%).
Numero cilindri / Número cilindros / Number of cylinders	2
Cilindrata complessiva / Cilindrada total / Total displacement	249,25 cm ³
Alésaggio e corsa / Diámetro y carrera / Bore and stroke	56 mm / 50,6 mm
Rapporto di compressione / Relación de compresión / Compression ratio	12 ± 0,7 : 1
Avviamento / Arranque / Starting	a pedale / por pedal / With pedal
N° giri del motore al minimo / N° revoluciones del motor al mínimo / Idling engine	1300 ± 100 giri/min / rpm / rpm
Frizione / Embrague / Clutch	multidisco in bagno d'olio con comando a mano sul lato sinistro del manubrio / multidisco en baño de aceite con mando manual en el lado izquierdo del manillar / multidisc in oil bath, with manual control on the left side of the handlebar
Cambio / Cambio / Change gear	meccanico a 6 rapporti con comando a pedale sul lato sinistro del motore / mecánico con 6 relaciones con mando de pedal en el lado izquierdo del motor / mechanical, 6 gears with foot control on the left side of the engine
Raffreddamento / Refrigeración / Cooling	a liquido / por líquido / liquid-cooled
Filtro aria / Filtro aire / Air filter	con elemento filtrante in poliuretano / con elemento filtrante de poliuretano / with polyurethane filter element
Sistema di lubrificazione / Sistema de lubricación / Lubrication system	pompa olio con circuito separato / bomba del aceite con circuito separado / oil pump with separate circuit
CAPACITÀ / CAPACIDAD / CAPACITY	
Carburante (inclusa riserva) / Combustible (reserva incluida) / Fuel (reserve included)	19,5 l
Riserva carburante / Reserva combustible / Fuel reserve	3,6 l (riserva meccanica) / 3,6 l (reserva mecánica) / 3,6 l (mechanical reserve)
Olio miscelatore (inclusa riserva) / Aceite mezclador (reserva incluida) / Mixer oil (reserve included)	1,6 l
Riserva olio miscelatore / Reserva aceite mezclador / Mixer oil reserve	0,3 l
Olio cambio / Aceite cambio / Change gear oil	700 cm ³
Olio forcella (stelo destro e stelo sinistro) / Aceite horquilla (barra derecha y barra izquierda) / Fork oil (right fork tube and left fork tube)	431 cm ³
Liquido refrigerante / Líquido refrigerante / Coolant	1,9 l (50% acqua + 50% antigelo con glicole etilenico) / 1,9 l (50% agua + 50% anticongelante con glicol etilénico) / 1,9 l (50% water + 50% antifreeze with ethylene glycol)
Posti / Asientos / Seats	2
MAX CARICO VEICOLO / MÁX. CARGA VEHÍCULO / VEHICLE MAX. LOAD (pilota + passeggero + bagaglio) / (piloto + pasajero + equipaje) / (driver + passenger + luggage)	160 kg


TRASMISSIONE						
RAPPORTI DI TRASMISSIONE	Rapporto	Primaria	Secondaria	Rapporto finale	Rapporto totale	
1 ^a		23/59 = 1 : 2,565	11 / 27 = 1 : 2,454	14 / 42 = 1 : 3,00 (14/43 = 1 : 3,071)	1 : 18,889	(1 : 19,330)
2 ^a			16 / 26 = 1 : 1,625		1 : 12,505	(1 : 12,803)
3 ^a			17 / 21 = 1 : 1,235		1 : 9,506	(1 : 9,728)
4 ^a			22 / 23 = 1 : 1,045		1 : 8,045	(1 : 8,231)
5 ^a			24 / 22 = 1 : 0,916		1 : 7,054	(1 : 7,215)
6 ^a			25 / 21 = 1 : 0,840		1 : 6,464	(1 : 6,617)
TRANSMISION						
RELACIONES DE TRANSMISION	Relación	Primaria	Secundaria	Relacion final	Relacion total	
1 ^a		23/59 = 1 : 2,565	11 / 27 = 1 : 2,454	14 / 42 = 1 : 3,00 (14/43 = 1 : 3,071)	1 : 18,889	(1 : 19,330)
2 ^a			16 / 26 = 1 : 1,625		1 : 12,505	(1 : 12,803)
3 ^a			17 / 21 = 1 : 1,235		1 : 9,506	(1 : 9,728)
4 ^a			22 / 23 = 1 : 1,045		1 : 8,045	(1 : 8,231)
5 ^a			24 / 22 = 1 : 0,916		1 : 7,054	(1 : 7,215)
6 ^a			25 / 21 = 1 : 0,840		1 : 6,464	(1 : 6,617)
TRANSMISSION						
GEAR RATIOS	Ratio	Primary	Secondary	Final ratio	Total ratio	
1 st		23/59 = 1 : 2.565	11 / 27 = 1 : 2.454	14 / 42 = 1 : 3.00 (14/43 = 1 : 3.071)	1 : 18.889	(1 : 19.330)
2 nd			16 / 26 = 1 : 1.625		1 : 12.505	(1 : 12.803)
3 th			17 / 21 = 1 : 1.235		1 : 9.506	(1 : 9.728)
4 th			22 / 23 = 1 : 1.045		1 : 8.045	(1 : 8.231)
5 th			24 / 22 = 1 : 0.916		1 : 7.054	(1 : 7.215)
6 th			25 / 21 = 1 : 0.840		1 : 6.464	(1 : 6.617)
CATENA DI TRASMISSIONE / CADENA DE TRANSMISION / DRIVE CHAIN						
Tipo / Tipo / Type				Senza fine (senza maglia di giunzione) con maglie sigillate / Sin fin (sin enganche), sellada / Sealed, an endless chain (in which a ring link joint is not used)		
Modello / Modelo / Model				DID 520 V6		
CARBURATORI / CARBURADORES / CARBURETTORS						
Modello / Modelo / Model				N° 2 carburatori tipo MIKUNI TM 34		
Diffusore / Difusor / Choke tube				Ø 34 mm		
ALIMENTAZIONE / ALIMENTACION / FUEL SUPPLY						
Carburante / Combustible / Fuel				Benzina super senza piombo secondo DIN 51 607, numero di ottano minimo 95 (N.O.R.M.) e 85 (N.O.M.M.) / Gasolina super sin plomo según DIN 51 607, mínimo octano 95 (N.O.R.M.) y 85 (N.O.M.M.) / unleaded petrol according to the DIN 51607 standard, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.)		
TELAIO / BASTIDOR / FRAME						
Tipo / Tipo / Type				Bitrave a elementi fusi e in lamiera stampata / Doble viga de elementos fundidos y de chapa estampada / Two-beam, with cast and stamped sheet elements		
Angolo inclinazione sterzo / Angulo inclinación dirección / Steering inclination angle				25° 30'		
Avancorsa / Lanzamiento / Fore stroke				102 mm		
SOSPENSIONI / SUSPENSIONES / SUSPENSIONS						
Anteriore / Delantera / Front				Forcella telescopica regolabile a funzionamento idraulico / Horquilla telescópica ajustable con funcionamiento hidráulico / Hydraulically operated adjustable telescopic fork		
Escursione / Carrera / Stroke				120 mm		
Posteriore / Trasera / Rear				Monoammortizzatore idraulico regolabile / Monoamortiguador hidráulico ajustable / Hydraulic adjustable mono-shock absorber		
Escursione / Carrera / Stroke				64 mm		
FRENI / FRENOS / BRAKES						
Anteriore / Delantera / Front				A doppio disco - Ø 298 mm - con trasmissione idraulica / De doble disco - Ø 298 mm - con transmisión hidráulica / Two-disc brake - Ø 298 mm - with hydraulic transmission		
Posteriore / Trasero / Rear				A disco - Ø 220 mm - con trasmissione idraulica / De disco - Ø 220 mm - con transmisión hidráulica / Disc brake - Ø 220 mm - with hydraulic transmission		
RUOTE / RUEDAS / WHEELS						
CERCHI / LLANTAS / RIMS						
Tipo / Tipo / Type				in lega leggera / de aleación ligera / light alloy		
Anteriore / Delantera / Front				3,5 x 17"		
Posteriore / Trasera / Rear				4,5 x 17"		
PNEUMATICI / NEUMATICOS / TYRES						
ANTERIORE / DELANTERA / FRONT				120 / 60 ZR x 17"		
POSTERIORE / TRASERA / REAR				150 / 60 ZR x 17"		
PRESSIONE DI GONFIAGGIO STANDARD / PRESION DE HINCHADO ESTANDARD / STANDARD INFLATION PRESSURE						
Anteriore / Delantera / Front				190 kPa (1,9 bar)		
Posteriore / Trasera / Rear				220 kPa (2,2 bar)		
PRES. DI GONFIAGGIO CON PASSEGGERO / PRESION DE HINCHADO CON PASAJERO / INFLATION PRES. WITH PASSENGER						
Anteriore / Delantera / Front				190 ± 10 kPa (1,9 ± 0,1 bar)		
Posteriore / Trasera / Rear				240 ± 10 kPa (2,4 ± 0,1 bar)		

ACCENSIONE / ENCENDIDO / IGNITION	
Tipo / Tipo / Type	C.D.I. / C.D.I. / C.D.I.
Anticipo d'accensione / Avance de encendido / Spark advance	10° ± 2° (prima del P.M.S. / antes del P.M.S. / before TDC)
Candela standard / Bujía estándar / Standard spark plug	NGK BR9 ECM
In alternativa (grado termico inferiore) / Alternativa (grado térmico inferior) / Alternative (lower heat rating)	NGK BR8 ECM
In alternativa (grado termico superiore) / Alternativa (grado térmico superior) / Alternative (higher heat rating)	NGK BR10 ECM
Distanza elettrodi candela / Distancia electrodos bujía / Spark plug gap	0,7 ÷ 0,8 mm
IMPIANTO ELETTRICO / INSTALACION ELECTRICA / ELECTRIC SYSTEM	
Batteria / Batería / Battery	12 V - 4 Ah
Fusibili / Fusibles / Fuses	20 - 15 - 7,5 A
Generatore / Generador / Generator	12 V - 180 W
LAMPADINE / BOMBILLAS / BULBS	
Luce anabbagliante (alogeno) / Luz de cruce (halógena) / Low beam (halogen)	12 V - 55 W H1
Luce abbagliante (alogeno) / Luz larga (halógena) / High beam (halogen)	12 V - 55 W H3
Luce posizione / Luz de posición / Parking light	12 V - 5 W
Indicatori di direzione / Indicadores de dirección / Direction indicators	12 V - 10 W
Luce di posizione posteriore-targa-stop / Luz de posición trasera-placa de matrícula-freno / Rear parking, plate and stop light	12 V - 5/21 W
Illuminazione contagiri / Alumbrado cuentarrevoluciones / Revolution counter	12 V - 2 W
Illuminazione display multifunzione sinistro / Alumbrado display multifunción izquierdo / Left multifunction display	12 V - 2 W
Illuminazione display multifunzione destro / Alumbrado display multifunción derecho / Right multifunction display	12 V - 2 W
SPIE / LUCES INDICADORAS / WARNING LIGHTS	
Indicatori di direzione / Indicadores de dirección / Direction indicators	12 V - 3 W
Cambio in folle / Cambio en punto muerto / Gear in neutral	12 V - 3 W
Luci abbaglianti / Luces largas / High beam	12 V - 3 W
Cavalletto abbassato / Caballete bajado / Stand down	12 V - 3 W
Riserva olio miscelatore / Reserva aceite mezclador / Mixer oil reserve	LED
Fuorigiri / Sobre-régimen / Red line	LED

LUBRICANT CHART

Gearbox oil (recommended):  F.C., SAE 75W - 90



As an alternative to the recommended oil, it is possible to use high-quality oils with characteristics in compliance with or superior to the A.P.I. GL-4 specifications.

2 stroke oil (recommended):  MAX 2T COMPETITION


As an alternative to the recommended oil, use high-quality oils with characteristics in compliance with or superior to the ISO-L-ETC++, A.P.I. TC++ specifications.

Fork oil (recommended):  F.A. 5W or  F.A. 20W fork oil.

- If you need an oil with intermediate characteristics in comparison with the two recommended products, these can be mixed as indicated below:


SAE 10W  F.A. 5W 67% of the volume, +  F.A. 20W 33% of the volume.

SAE 15W  F.A. 5W 33% of the volume, +  F.A. 20W 67% of the volume.

Bearings and other lubrication points (recommended):  AUTOGREASE MP.

As an alternative to the recommended product, use high-quality grease for rolling bearings, working temperature range -30 °C.... +140 °C, dripping point 150 °C... 230 °C, high protection against corrosion, good resistance to water and oxidation.

Protection of the battery poles: neutral grease or vaseline.

Spray grease for chains (recommended):  CHAIN SPRAY.

Brake fluid (recommended):  F.F., DOT 5 (DOT 4 compatible).



Use new brake fluid only.

Engine coolant (recommended):  ECOBLU - 40 °C.



Use only antifreeze and anticorrosive without nitrite, ensuring protection at -35 °C at least.

**OPERAZIONI DI MANUTENZIONE
PERIODICA E DI MESSA A PUNTO**

9-2

**OPERACIONES DE MANTENIMIENTO
PERIODICO Y DE PUESTA A PUNTO**

**PERIODIC MAINTENANCE AND
TUNE-UP PROCEDURES**

UPDATES Model 1998

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This section describes the procedures for periodic service on the principal components of the vehicle.



Before beginning any service operations or inspection of the vehicle, switch off the engine and remove the key, wait until the engine and the exhaust system have cooled down and, if possible, lift the vehicles with the proper equipment onto firm and flat ground.

In order to avoid burns, be careful not to touch any parts of the engine or exhaust system which have not cooled down completely.

The vehicle is constructed of non-edible parts.

Do not bite, suck, chew or low any part of the vehicle for any reason whatever.



If not expressly described otherwise, reassembly of the units is carried out repeating the disassembly operations in the reverse order.



Remember:

1 mile = 1.6 km

1 km = 0.625 miles

PERIODIC SERVICE PLAN

aprilia recommends respecting the intervals indicated for the periodic service on the various components in order to ensure the best operating conditions of the vehicle.

OPERAZIONI DI MANUTENZIONE PERIODICA E DI MESSA A PUNTO / OPERACIONES DE MANTENIMIENTO PERIODICO Y DE PUESTA A PUNTO / PERIODIC MAINTENANCE AND TUNE-UP PROCEDURES

RS 250

SCHEDA DI MANUTENZIONE PERIODICA

FICHA DE MANTENIMIENTO PERIÓDICO

PERIODIC SERVICE CHART FOR THE COMPONENTS

COMPONENTI COMPONENTES SERVICE	<i>Fine rodaggio 1000 km (625 mi) o 4 mesi / Fin rodaje 1000 km (625 mi) o 4 meses / After running-in 1000 km (625 mi) or 4 months</i>	Ogni 4000 km (2500 mi) o 8 mesi / Cada 4000 km (2500 mi) o 8 meses / Every 4000 km (2500 mi) or 8 months	Ogni 8000 km (5000 mi) o 16 mesi / Cada 8000 km (5000 mi) o 16 meses / Every 8000 km (5000 mi) or 16 months
Batteria - livello liquido / Bateria - nivel líquido / Battery - liquid level	C	C	
Candele / Bujías / Spark plugs	P	P	ogni / cada / every 6000 km (3700 mi): S
Carburatori / Carburadores / Carburetors	C	P	
Catena di trasmissione / Cadena de transmisión / Driving chain		ogni / cada / every 500 km (312 mi): C	
Centrata ruote / Centrado de las ruedas / Wheel truing		C	
Cuscinetti di sterzo e sterzo / Cojinetes de dirección y dirección / Steering bearings and steering	C	C	
Cuscinetti ruote / Cojinetes de las ruedas / Wheel bearings		C	
Filtro aria / Filtro del aire / Air cleaner		P	S
Forcella / Horquilla / Fork			C
Gioco frizione / Juego del embrague / Clutch clearance	R	R	
Impianti frenanti / Sistema de frenado / Braking system	C	C	
Impianto di raffreddamento / Sistema de refrigeración / Cooling system	C	C	
Impianto luci / Instalación de las luces / Lighting system	C	C	
Liquido freni / Líquido de frenos / Brake fluid	ogni / cada / every 1000 km (625 mi): C - ogni anno / cada año / every year: S		
Liquido refrigerante / Líquido refrigerante / Coolant	ogni / cada / every 2000 km (1250 mi): C - ogni 2 anni / cada 2 años / every 2 year: S		
Livello olio miscelatore / Nivel aceite mezclador / Mixer oil level	ogni / cada / every 500 km (312 mi): C		
Olio forcella / Aceite de la horquilla / Fork oil	dopo i primi / tras los primeros / after the first 4000 km (2500 mi) e ogni / cada / every 20000 km (12500 mi): S		
Olio cambio / Aceite cambio / Transmission oil	S	C	ogni / cada / every 12000 km (7500 mi): S
Perno leva avviamento / Perno palanca arranque / Start lever pin	ogni / cada / every 8000 km (5000 mi): C (*)		
Pistoni e segmenti / Embolos y segmentos / Pistons and linings	ogni / cada / every 8000 km (5000 mi): C / ogni / cada / every 16000 km (10000 mi): S		
Pompa miscelatore e spurgo aria / Bomba mezclador y purga aire / Mixer pump and air bleeding	R		R
Pressione dei pneumatici / Presión de los neumáticos / Tyre pressure	R	ogni mese / cada meses / every month: R	
Regime minimo di giri motore / Régimen de ralentí / Engine idling rpm	R	R	
Serraggio bulloneria / Apriete del conjunto de pernos / Tightening bolts and nuts	C	C	
Silenziatori di scarico (esclusa versione catalitica) / Silenciadores de escape (versión catalítica excluida) / Exhaust silencers (catalytic version excluded)	P	P	
Sospensioni e assetto / Suspensiones y posición / Suspensions and position	C		C
Spia LED riserva olio miscelatore / testigo LED reserva aceite mezclador / 2 stroke oil reserve warning light LED	C	C	
Spurgo liquido freni / Purga del líquido de frenos / Brake fluid bleeding	C		
Tensione e lubrificazione catena / Tensión y lubricación cadena / Drive chain tension and lubrication	ogni / cada / every 500 km (312 mi): C		
Tubi carburante / Tubos del combustible / Fuel pipes		C	ogni 4 anni / cada 4 años / every 4 year: S
Valvole di scarico / Válvulas de escape / Exhaust valves /	C	C	P + R

C = controllare e pulire, regolare, lubrificare o sostituire se necessario / controle y limpie, ajuste, lubrique o sustituya si es necesario / check and clean, adjust, lubricate or change, if necessary.
P = pulire / limpie / clean S = sostituire / sustituya / change R = regolare / ajuste / adjust
Eseguire le operazioni di manutenzione più frequentemente se il veicolo viene utilizzato in zone piovose, polverose o su percorsi accidentati / Si el vehículo se utiliza en zonas lluviosas, polvorientas o en carreteras accidentadas, realice las operaciones de mantenimiento más frecuentemente / Carry out service operations more frequently if the vehicle is used in rainy, dusty areas or on uneven roads.
(*) Utilizzare grasso / utilice grasa / use the grease MOLYCOTE 6 Rapidplus (grasso idrorepellente / grasa hidrófuga / water repellent grease).

POINTS TO LUBRICATE

Correct lubrication is important for a good performance and long life of the vehicle.



Before lubricating, completely clean all parts, removing rust, grease, dirt and dust.

The exposed parts subject to rust are to be lubricated with engine oil or grease, see p. 9-20 (LUBRICANT CHART).

The points to be lubricated are indicated in the "LUBRICATION CHART".

LUBRICATION CHART

KEY

- 1) Exhaust valves control cable
- 2) Brake lever holder
- 3) Throttle cable
- 4) Throttle grip
- 5) Kick starter pin
- 6) Rear brake link pin
- 7) Clutch lever holder
- 8) Swing arm pin
- 9) Drive chain
- 10) Gearshifting
- 11) Side stand pin
- 12) Steering stem bearing

RS 250

SCHEDA DI LUBRIFICAZIONE

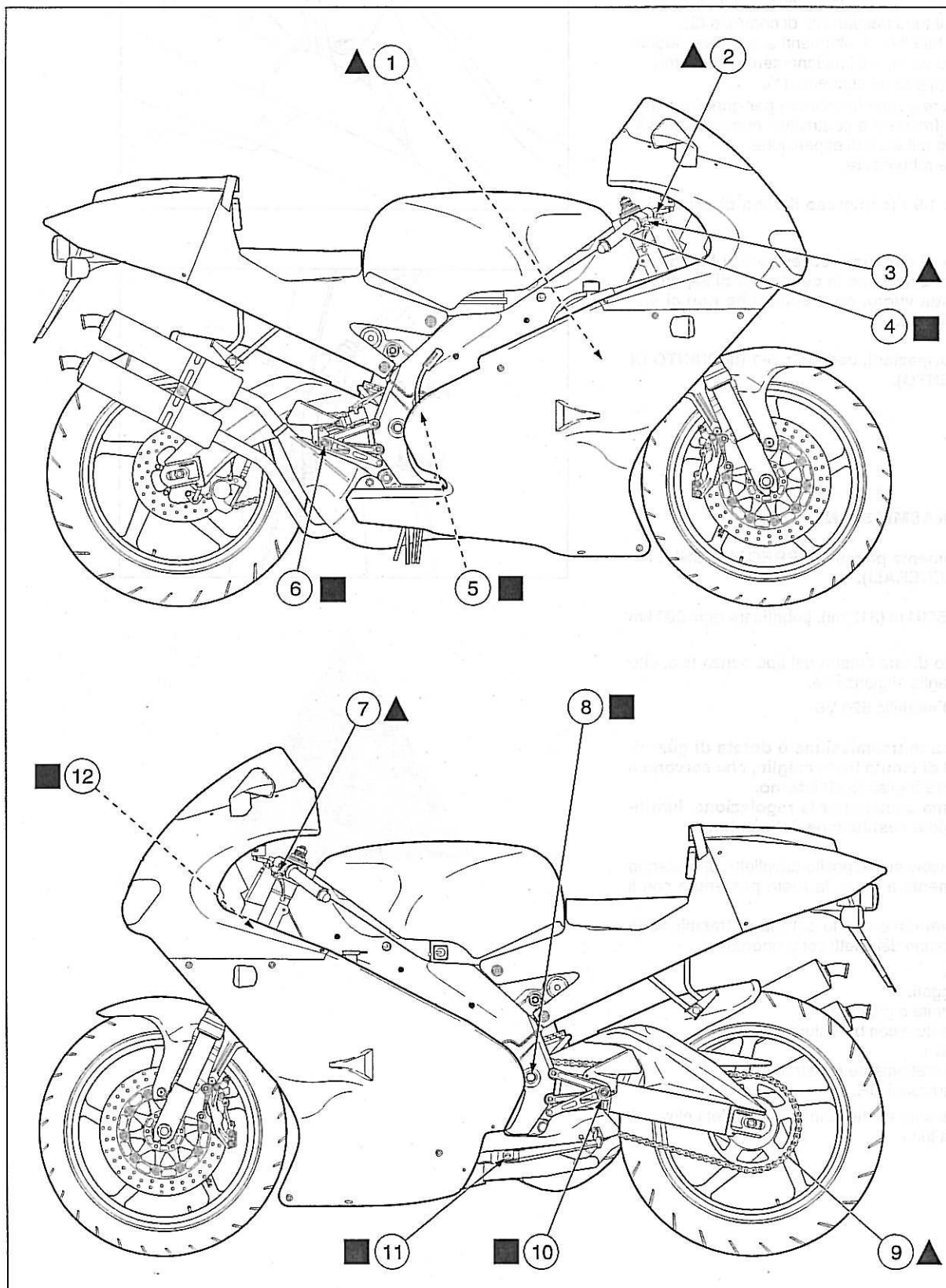
■ = Grasso
▲ = Olio

FICHA DE LUBRICACIÓN

■ = Grasa
▲ = Aceite

LUBRICATION CHART

■ = Grease
▲ = Oil



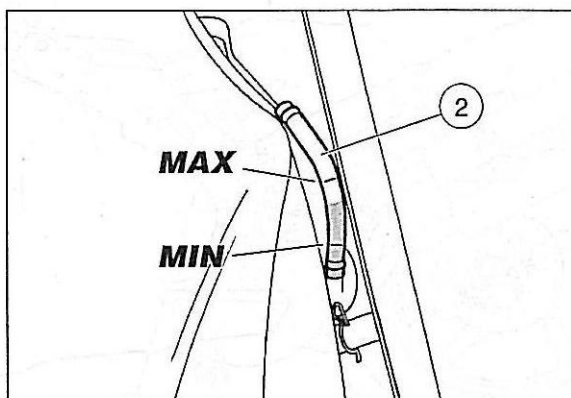
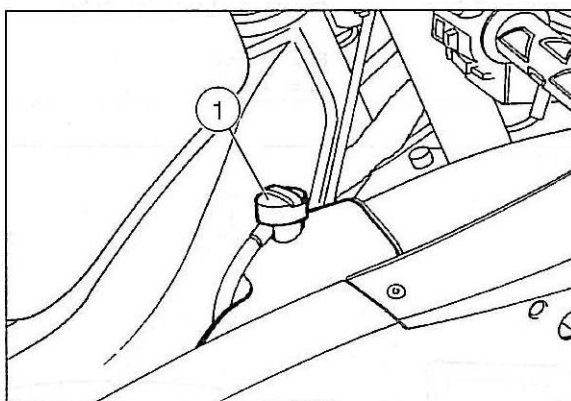
- ◆ Keep the vehicle in vertical position, with the two wheels resting on the ground.
- ◆ Unscrew and remove the filling plug (1).
- ◆ Top up with coolant, see p. 9-20 (LUBRICANT CHART) until the coolant level is included between the "MIN" and "MAX" marks stamped on the transparent pipe (2).
Do not exceed this level, otherwise the fluid will flow out of the tank when the engine is running.
- ◆ Put back the filling plug (1).
- ◆ Start the engine and let it run for a few minutes, then let it cool down and check the level of coolant in the expansion tank again.
- ◆ If necessary, top up.

Total quantity: 1.9 l/(including the expansion tank).



In case of excessive consumption of coolant and in case the tank remains empty, make sure that there are no leaks in the circuit.

For further information see p. 5-2 (COOLING SYSTEM).



DRIVING CHAIN

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

Check every 500 km (625 mi). Lubricate every 500 km (625 mi).

The vehicle is fitted with an endless chain, which does not utilise the connecting link.

Chain type: DID mod. 520 V6



The driving chain is equipped with O rings between the links designed to keep the grease on the inside.

Use the maximum caution in adjusting, lubricating, washing and replacing the chain.

Position the vehicle on the special stand and slowly rotate, manually, the rear wheel with the gear in neutral.

Visually check that the chain presents none of the defects listed below:

- ◆ Pins loosened
- ◆ Rollers damaged
- ◆ Links rusted or seized
- ◆ Links deformed or with rims
- ◆ Excessive wear
- ◆ Chain not adjustable correctly
- ◆ Leak of O rings

If the chain presents even one of the listed defects, it must be replaced.



CHECKING THE BRAKE PAD WEAR

Carefully read p. 9-13 (BRAKE FLUID).

The following information refer to a single braking system, but are valid for both.

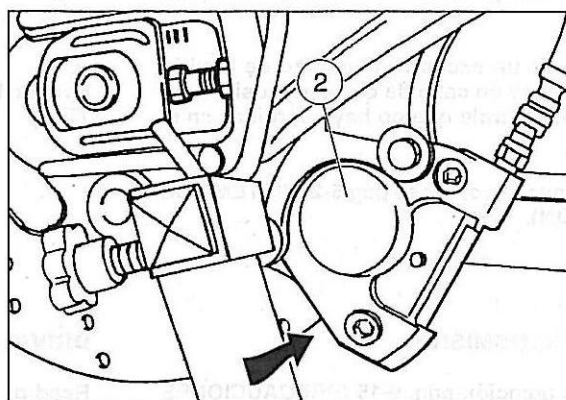
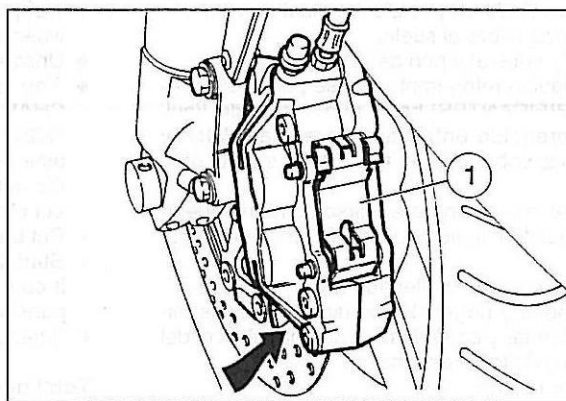
Check the brake pad wear after the first 1000 km (625 mi) and successively every 4000 km (2500 mi).
The wear of the brake pads depends on the use, on the kind of drive and on the road.



Check the wear of the brake pads, especially before every trip.

To carry out a rapid checking of the wear of the pads, proceed as follows:

- ◆ Position the vehicle on the stand.
- ◆ Carry out a visual checking of the friction material thickness by looking between the brake caliper and the pads.
Proceed:
 - from below, on the front part, for the front brake calipers (1);
 - from below, on the rear part, for the rear brake caliper (2).
- ◆ If the thickness of the friction material (even of one pad only) has reduced to about 1 mm, replace both pads.
 - Front pad (3).
 - Rear pad (4).



REAR BRAKE ADJUSTMENT

The brake pedal is positioned ergonomically during the assembly of the vehicle.
If necessary, it is possible to adjust the height of the brake pedal:

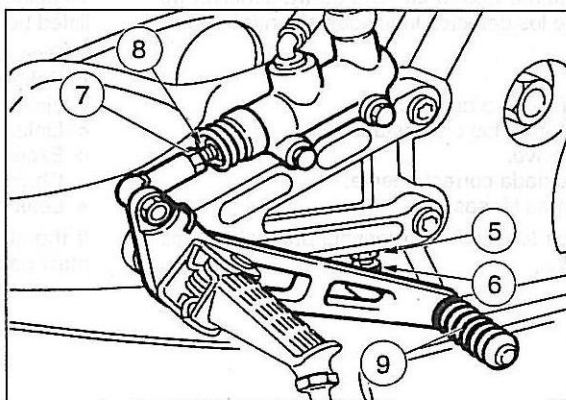
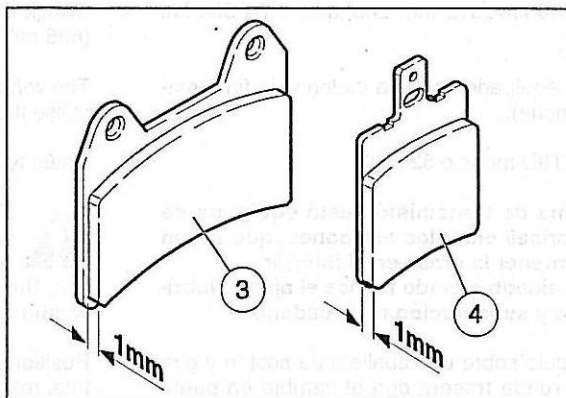
- ◆ Loosen the lock nut (5).
- ◆ Screw the brake adjuster (6) completely.
- ◆ Screw the lock nut (7) completely on the pump control rod (8).
- ◆ Screw the pump control rod (8) completely, then unscrew it by giving 3-4 turns.
- ◆ Unscrew the brake adjuster (6) until the brake pedal (9) reaches the desired height.
- ◆ Lock the brake adjuster (6) by means of the lock nut (5).
- ◆ Unscrew the pump control rod (8) and bring it in contact with the pump piston.
- ◆ Screw the rod in order to ensure a minimum clearance of 0.5÷1 mm between the pump control rod (8) and the pump piston.



Make sure that there is a certain clearance between the brake adjuster (2) and the point of contact, to prevent the brake from remaining operated and the consequent untimely wear of the braking elements.

Clearance between brake adjuster and point of contact: 0.5 ÷ 1 mm.

- ◆ Lock the pump control rod by means of the lock nut (7).
After the adjustment, make sure that the wheel rotates freely with released brake.



TYRES

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

Check condition of tyres after the first 1000 km (625 mi) and then after every 4000 km (2500 mi).

The inflation pressure must be checked every month and at room temperature.

This vehicle is provided with tubeless tyres.

CONDITION OF TREAD



Check the surface of tyres and their wear in as a faulty condition of the tyres compromises their grip as well as the manoeuvrability of the vehicle.

Change the tyre if worn or if an eventual puncture in the area of the tread is larger than 5 mm.

LIMIT OF TREAD THICKNESS

front: 2 mm
rear: 2 mm

INFLATION PRESSURE



Periodically check the pressure of the tyres at room temperature. If the tyres are hot, the measurement is not correct.

Measure pressure without fail after every long journey.

If the inflation pressure is too high, the bumps in the road/ground are not absorbed and are therefore transmitted to the handlebar, compromising the comfort of the drive as well as reducing roadholding in curves.

If, contrarily, the inflation pressure is insufficient, the sides of the tyres are more exposed and may slip on the rim or even become detached from it, with the consequent loss of control of the vehicle.

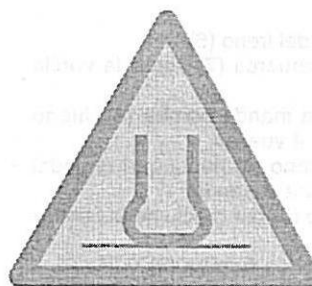
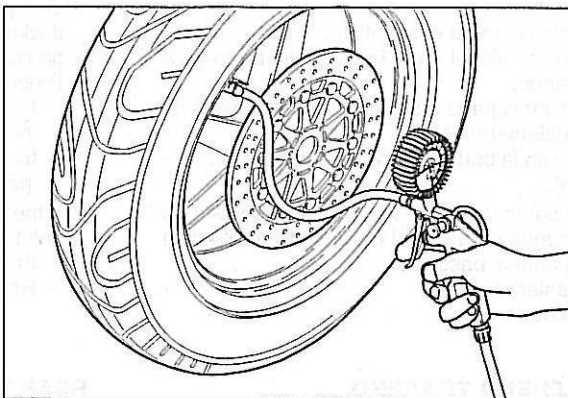
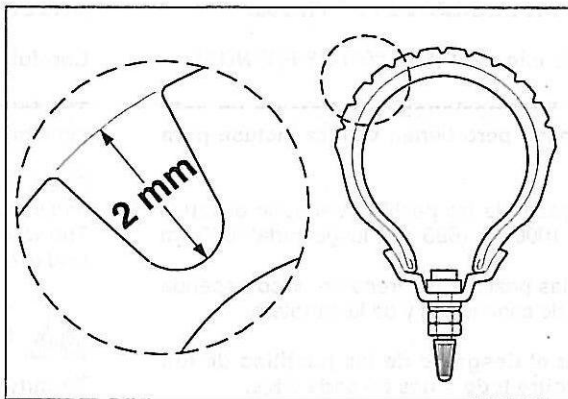
In case of abrupt braking, the tyres can come away from the rims.

Moreover the vehicle may easily skid in curves.

Inflation pressure

Front: 190 kPa (1.9 bar)
[at full load 190±10 kPa (1.9 ±0.1 bar)]

Rear: 220 kPa (2.2 bar)
[at full load 240±10 kPa (2.4±0.1 bar)]





After repairing a tyre, have the wheel balanced.

Make sure the tyres always have their valve sealing caps to prevent them from suddenly going flat. The operations of changing, repairing, maintenance and balancing are very important and must be performed with the proper equipment and necessary experience.

When tyres are new they may still be covered with a slippery film therefore drive carefully for the first kilometres.

Do not oil tyres with unsuitable liquids.



This vehicle is equipped with standard tyres:

front..... 120/60 ZR

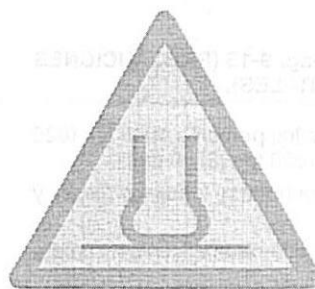
rear 150/60 ZR

The size of the tyres is indicated in the log-book and any dissimilarity is punishable by law.

Using tyres with different dimensions may cause the instability of the vehicle, endangering its driving safety and manoeuvrability.

Use only tyres recommended by **aprilia**.

For further information see p. 7-22 (TYRES).

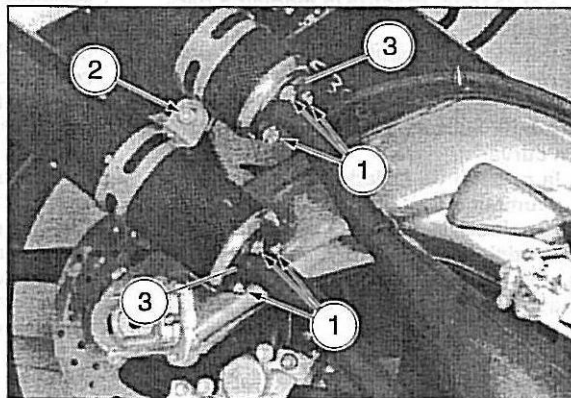


EXHAUST PIPE SILENCERS

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

Clear after the first 1000 km (625 mi) and subsequently every 4000 km (2500 mi).

- ◆ To assemble the silencers, unscrew the 3 fastening nuts (1) and remove the fastening bolt from the clamps (2).
- ◆ For cleaning purpose, use a metal brush to remove carbon deposits through the silencer inlets.
- ◆ When reassembling the silencers, spread heat-resistant silicone on both surfaces of the gasket (3) and at the base of the 3 fastening sprockets.



STEERING

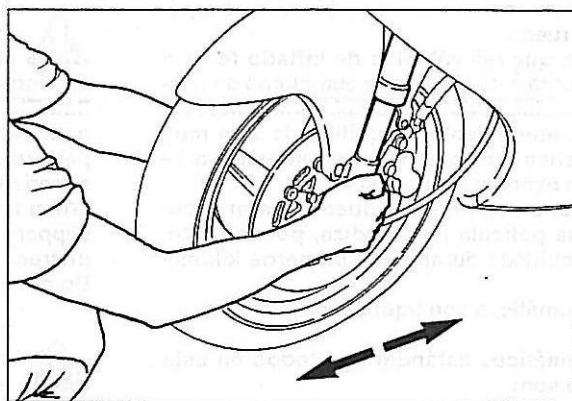
Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

Check after the first 1000 km (625 mi) or 4 months and then after every 4000 km (2500 mi) or 8 months.

To ensure improved handling the steering is equipped with rolling bearings.

The steering must be adjusted correctly to provide smooth rotation of the handlebar and safe driving.

A tight steering hinders the smooth rotation of the handlebar whereas a slack steering implies inadequate stability.



CHECKING THE BEARING TIGHTNESS




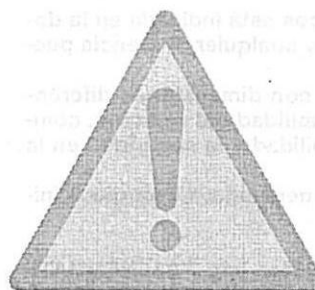
Due to the weight and dimensions of the vehicle, the following operation cannot be performed by one person only.

Proceed with care and make sure that you can support the weight of the vehicle.



Weight of the vehicle without driver (ready for starting): 167 kg.

- ◆ Position the vehicle on the appropriate rear support stand .
- ◆ Raise the front part of the vehicle and have a suitable support (the weight of which should be about 250 mm) placed under the fairing, so that the front wheel can rotate freely and the vehicle cannot fall down.
- ◆ Keep the rear part of the vehicle down.
- ◆ Shake the fork in the direction of travel (see figure).
- ◆ In case you find any slack, adjust the steering.

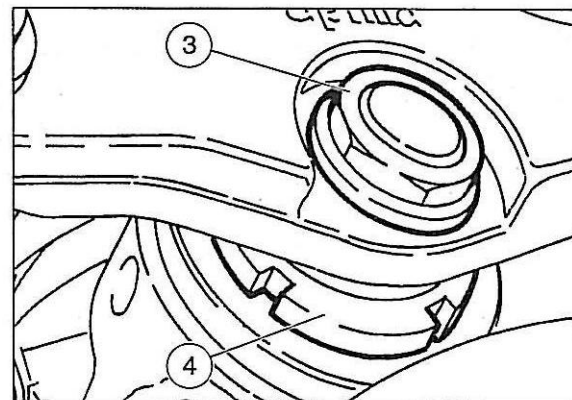
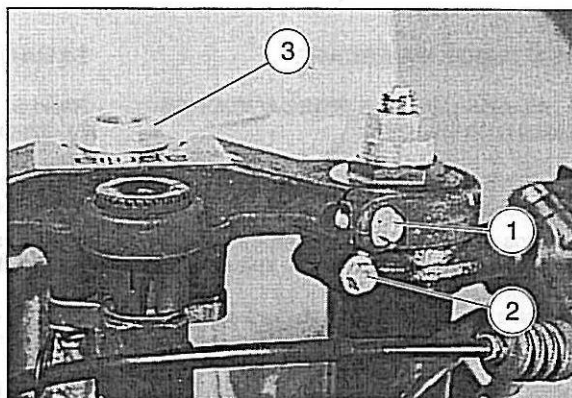


ADJUSTING THE BEARING TIGHTNESS

- ◆ ★ Loosen the screw (1).
- ◆ ★ Loosen the screw (2).
- ◆ Loosen the upper screw (3).
- ◆ Tighten the ring nut (4) with the suitable spanner, eliminating the slack.
- ◆ Repeat the check-up until the inconvenience is remedied.
- ◆ Completely tighten the upper screw (3).
Driving torque of upper screw (3):
 $60 \div 100 \text{ Nm}$ ($1 \div 10 \text{ kgm}$)
- ◆ ★ Tighten the screw (2).
Driving torque of screw (2): 25 Nm (2.5 kgm).
- ◆ ★ Tighten the screw (1).
Driving torque of screw (1): 25 Nm (2.5 kgm).



On completion of operation make sure that the rotation of the handlebar is smooth in order to avoid damage to the balls and the loss of manoeuvrability of the vehicle.



INSPECTING THE FRONT SUSPENSION

FRONT SUSPENSION

The front suspension consists of an hydraulic fork connected to the steering column by means of two plates. For the setting of the vehicle attitude, each rod of the fork is provided with an upper screw (1) for the adjustment of the hydraulic braking with extended shock absorber, a lower screw (2) for the adjustment of the hydraulic braking with compressed shock absorber and an upper nut (3) for the adjustment of the spring preload.

It is possible to personalize the attitude of the vehicle, by varying the height of the front part of the vehicle.

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

Change the front fork oil after the first 4000 km (2500 mi) and then every 20000 km (12500 mi).

Carry out the following checks every 8000 km (5000 mi):

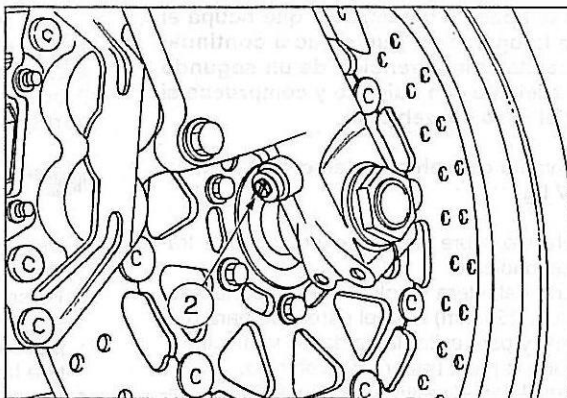
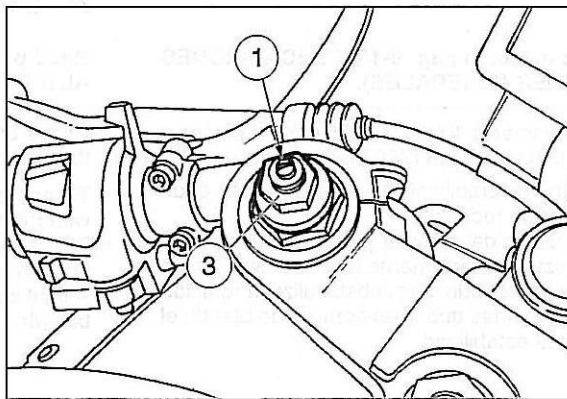
- ◆ With pulled front brake lever, press the handlebar repeatedly, thrusting the fork downwards.
The stroke must be gentle and there must be no trace of oil on the rods.

If the fork can be thrust to the end of its stroke, it is necessary to change the oil, see p. 9-139 (CHANGING THE FORK OIL).

Make sure there are no oil leaks and that the outer surface of the tubes is neither scratched nor grooved.

In this case, change all the damaged components that cannot be repaired, see p. 9-141 (DISASSEMBLING THE WHEEL-HOLDER TUBE - SLIDER UNIT).

- ◆ Check the fastening of all the components and the functionality of the front and rear suspension joints.



ADJUSTING THE FRONT FORK

The standard setting of the front fork is such as to satisfy most driving conditions at low and high speed, either with reduced load and full load.

However, it is also possible to adjust the setting according to the intended use of the vehicle.



For the adjustment, always start from the most rigid setting.

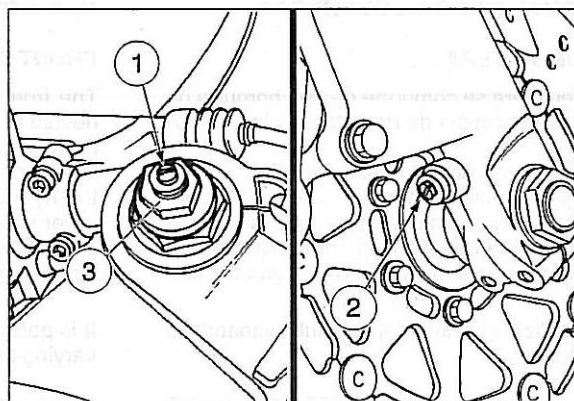
Do not rotate the adjusters (1-2) beyond their limit position, to avoid damaging the thread.

Use the notches (1-2) provided on the adjusters as reference marks for the adjustment of the hydraulic braking with compressed and extended shock absorber.

Give the adjusters (1-2) 1/8 turn at a time and turn the adjusting nut (3) one notch at a time. Test the vehicle repeatedly on the road, until obtaining the optimal adjustment.

Set the same spring preload and hydraulic braking for both rods: a different setting of the rods decreases the stability of the vehicle while riding.

When the spring preload is increased, it is necessary to increase also the hydraulic braking, in order to avoid sudden jerks while riding.



Upper screw adjusters (1) (2.5 turns in total)	By rotating them clockwise (H)	By rotating them anticlockwise (S)
Function	Increase of the hydraulic braking with extended shock absorber	Decrease of the hydraulic braking with extended shock absorber
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider

Lower screw adjusters (2) (3 turns in total)	By rotating them clockwise (H)	By rotating them anticlockwise (S)
Function	Increase of the hydraulic braking with compressed shock absorber	Decrease of the hydraulic braking with compressed shock absorber
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider

Upper adjusting nuts (3) (8 notches in total)	By rotating them clockwise (screwing)	By rotating them anticlockwise (unscrewing)
Function	Spring preload increase	Spring preload decrease
Attitude	The vehicle is more rigid	The vehicle is less rigid
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider

ADJUSTING THE HEIGHT OF THE FRONT PART OF THE VEHICLE

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

- ◆ Position the vehicle on the appropriate rear **OPT** and centre **OPT** support stands.



Prepare appropriate shims to be positioned between the front tyre and the support (1).

The number of shims varies in accordance with the vehicle attitude required (maximum three shims, corresponding to the number of possible variations, in 5 mm progression).

Thickness of each element: 5 mm.

- ◆ Position a support (1) under the front tyre, in order to keep the front part of the vehicle in the correct position after releasing it.
- ◆ Remove the front part of the fairing, see p. 9-103 (REMOVING THE FRONT PART OF THE FAIRING)
- ◆ ★ Loosen the two screws (2) that fasten the lower plate (3) to the fork (4) completely.

Screw (2) driving torque: 25 Nm (2.5 kgm)

- ◆ ★ Loosen the screw (5) that fastens the upper plate (6) to the fork (4) completely.

Screw (5) driving torque: 25 Nm (2.5 kgm)

- ◆ ★ Loosen the screw (7) that fastens the half-handlebar (8) to the fork (4) completely.

Screw (7) driving torque: 25 Nm (2.5 kgm)



Due to the weight of the front part of the vehicle, the following operations must be performed by two persons. Fix the operating procedure before starting work.

The removal must be carried out very carefully.

- ◆ Grasp the front part of the vehicle firmly and raise it moderately in the direction in which the fork (4) is inserted on the two fastening plates (3-6).
- ◆ Position one or more shims between the tyre and the support (1), in accordance with the variation to be obtained.
- ◆ Release the front part of the vehicle.



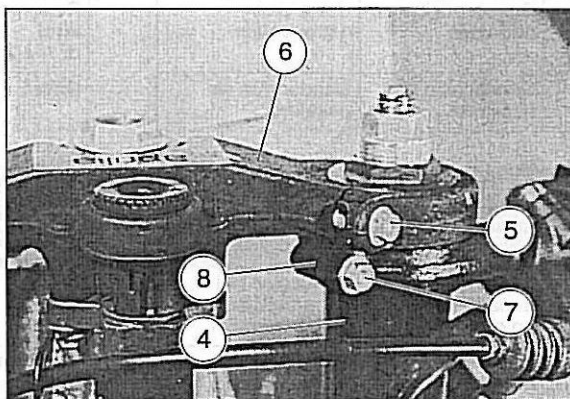
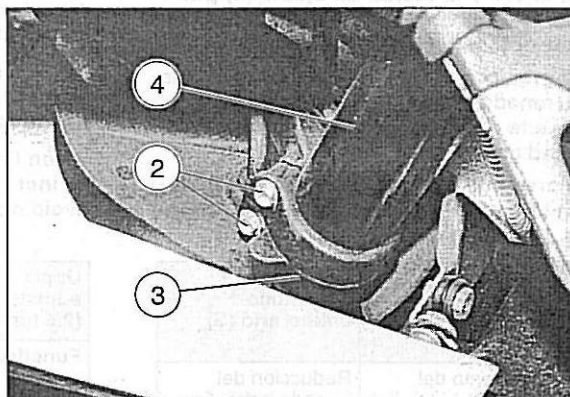
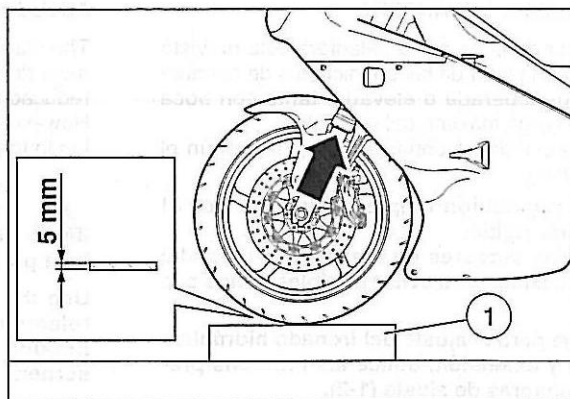
The upper part of each fork slider is provided with three reference notches corresponding to three different positions.

- ◆ Check on the upper plate if the appropriate notches provided on the fork sliders correspond with the variation to be obtained.



In the upper part of both fork sliders the same correspondence between reference notch and upper plate must be observed.

The variation in one sense or the other must always remain within the limit of the space included between the first and last reference notch.



Change of the height of the front part of the vehicle	By increasing	By decreasing
Attitude	The vehicle is higher	The vehicle is lower
Recommended kind of road	Slow/twisted route	Quick route
Notes	Rider and passenger	Solo rider

INSPECTING REAR SUSPENSION

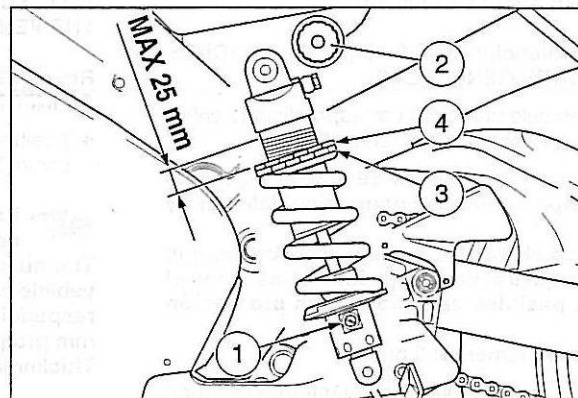
REAR SUSPENSION

The rear suspension consists of a spring-shock absorber unit, fixed to the frame by means of silent-blocks and to the rear fork by means of lever systems. For the setting of the vehicle attitude, the shock absorber is provided with a screw adjuster (1) for the adjustment of the hydraulic braking with extended shock absorber, a knob adjuster (2) for the adjustment of the hydraulic braking with compressed shock absorber, a ring nut for the adjustment of the spring preload (3) and a locking ring nut (4).

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).


Check after the first 1000 km (625 mi) and then after every 8000 km (5000 mi) or 16 months.

- ◆ Check the tightening of all the components and the functionality of the rear suspension joints.




ADJUSTING THE REAR SHOCK ABSORBER

The standard setting of the rear shock absorber is such as to satisfy most driving conditions at low and high speed, either with reduced load and full load. However, it is also possible to adjust the setting according to the intended use of the vehicle.

 **For the adjustment, always start from the most rigid setting.**
Do not rotate the screw adjuster (1) beyond its limit position, to avoid damaging the thread.
Make sure that the screw adjuster (1) always snaps and is not in any intermediate position.

The adjusting ring nut (3) must not be screwed for more than 25 mm from the beginning of the thread (see figure). If this measure is exceeded, even the slightest unevenness on the road surface will cause sudden jerks and it will be useless to adjust the screw (1).

- ◆ Slightly unscrew the locking ring nut (4) by means of the appropriate spanner **OPT.**
- ◆ Act on the adjusting ring nut (3) (shock absorber spring preload adjustment) (see figure).
- ◆ If necessary, adjust the screw (1) (adjustment of the hydraulic braking with extended shock absorber) (see table).
- ◆ Once the optimal attitude has been obtained, tighten the locking ring nut (4) completely.

 **Adjust the spring preload and the hydraulic braking with extended shock absorber according to the conditions of use of the vehicle.**
When the spring preload is increased, it is necessary to increase also the hydraulic braking with extended shock absorber, in order to avoid sudden jerks while riding.

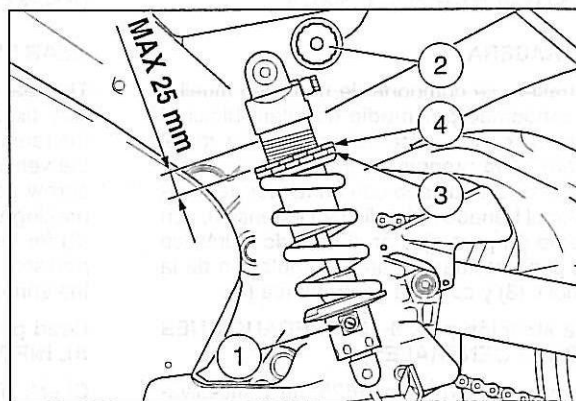




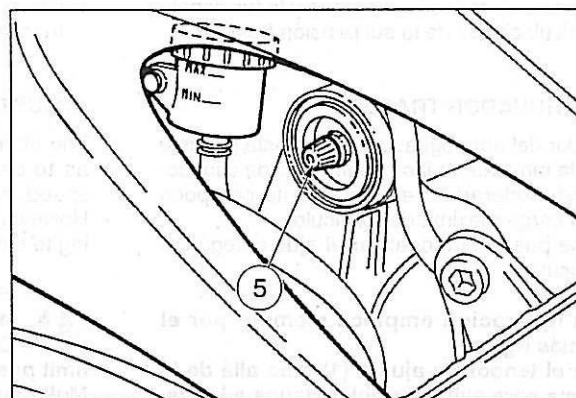
If the vehicle attitude is set for full-load riding, it is advisable not to rotate the screw (1) leftwards (anticlockwise), in order to avoid sudden jerks while riding.

In order not to affect the correct attitude of the vehicle, neither remove the small plug (5), nor adjust the underlying valve, otherwise there will be a nitrogen outflow; danger of accident.

Turn the screw adjuster (1) 2-3 clicks at a time, the knob adjuster (2) 5-6 clicks at a time and the adjusting ring nut (3) one turn at a time. Test the vehicle repeatedly on the road, until obtaining the optimal adjustment.



Screw adjuster (1) (about 18 clicks)	By rotating it clockwise (H)	By rotating it anticlockwise (S)
Function	Increase of the hydraulic braking with extended shock absorber	Decrease of the hydraulic braking with extended shock absorber
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider



Knob adjuster (2) (about 42 clicks)	By rotating it clockwise (+)	By rotating it anticlockwise (-)
Function	Increase of the hydraulic braking with compressed shock absorber	Decrease of the hydraulic braking with compressed shock absorber
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider

Adjusting ring nut (3)	By screwing it	By unscrewing it
Function	Spring preload increase	Spring preload decrease
Attitude	The vehicle is more rigid	The vehicle is less rigid
Recommended kind of road	Smooth or normal roads	Roads with uneven surface
Notes	Rider and passenger	Solo rider

MOTORE

MOTOR

ENGINE

9-3

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ENGINE REMOVAL AND REINSTALLATION TO CHASSIS

ENGINE REMOVAL

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).



Let the engine cool down until it reaches room temperature.

The procedure of engine removal is sequentially explained in the following steps, and engine installation is effected by reversing the removal procedure.

- ◆ Turn the ignition switch to position "0".
- ◆ Remove the side fairings, see p. 9-101 (REMOVING THE SIDE FAIRINGS).
- ◆ Remove the inner fairings, see p. 9-101 (REMOVING THE INNER FAIRINGS).
- ◆ Remove the front part of the lower fairing see p. 9-103 (REMOVING THE FRONT PART OF THE LOWER FAIRING).
- ◆ Remove the rider saddle, see p. 9-105 (REMOVING THE RIDER SADDLE).
- ◆ Remove the fuel tank, see p. 9-107 (REMOVING THE FUEL TANK).



To clean the outer parts of the engine, use a degreaser, brushes and cloths.
Do not use corrosive detergents and solvents or penetrants, in order to avoid damaging the rubber and plastic parts.

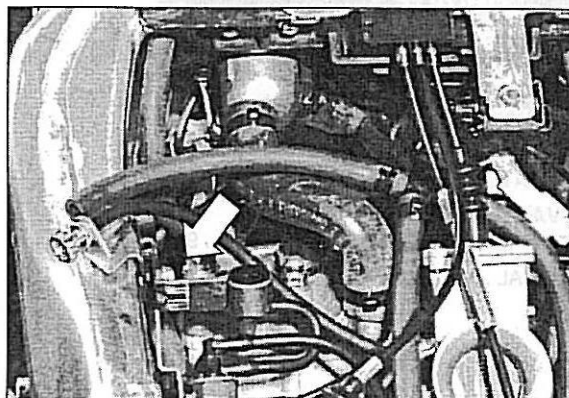
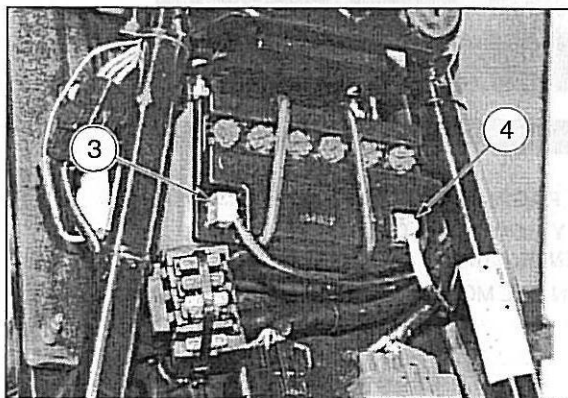
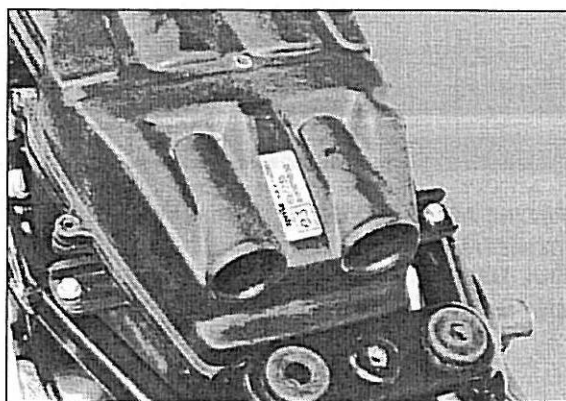
If it is necessary to use a steam cleaning machine, do not direct high pressure water or air jets towards the following parts: wheel hubs, controls on the right and left side of the handlebar, brake pumps, instruments and indicators, silencer outlets, glove compartment, ignition switch/steering lock, electrical components.

- ◆ Clean the engine thoroughly.
- ◆ Drain the transmission oil completely, see p. 2-22 (TRANSMISSION OIL).
- ◆ Unscrew and remove the screws (1) of the air filter case (2).
- ◆ Disconnect the battery negative terminal (-) (3).
- ◆ Disconnect the battery positive terminal (+) (4).




Upon reassembly, connect first the positive cable (+) and then the negative cable (-).
Always connect the battery breather pipe, to prevent the sulphuric acid vapours from corroding the electric system, painted parts, rubber elements or gaskets when they exit the breather pipe itself.


- ◆ Remove the support of the idle speed adjusting knob.
- ◆ Shift the hose clip sideways and disconnect the intake pulse control hoses.

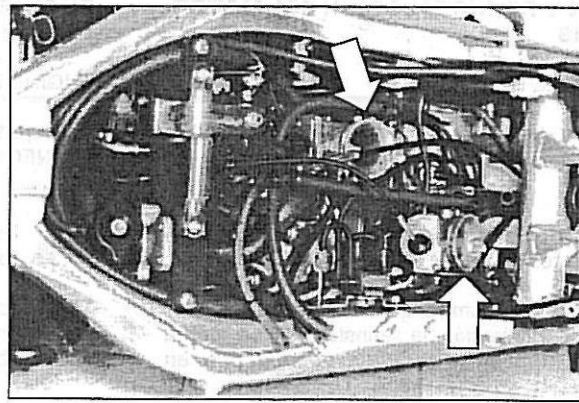


- ◆ Loosen the carburettor clamp screws.
- ◆ Move the air cleaner case rearward, and remove carburettor.

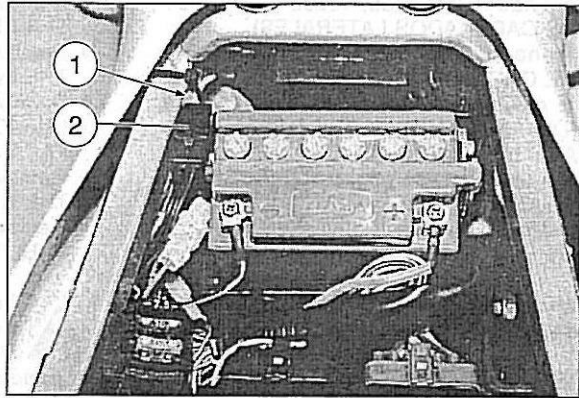
 Plug all the engine openings, pipes and p couplings, in order to avoid any accidental trodution of foreign matters.

Mark the cables, couplings, pipes, etc., in order avoid confusing them during the reassembly.


 Release all the cables and pipes from the n vant fastening clamps.
Get other clamps to be used for the reassembly.

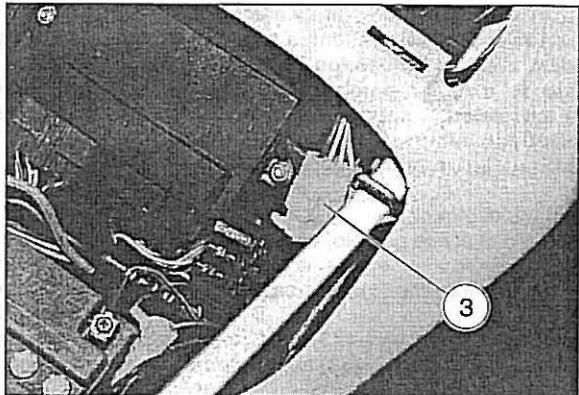


- ◆ Cut the cable clamps and disconnect the electric connectors:
 - Neutral warning light switch connector (1)
 - Generator connector (2)

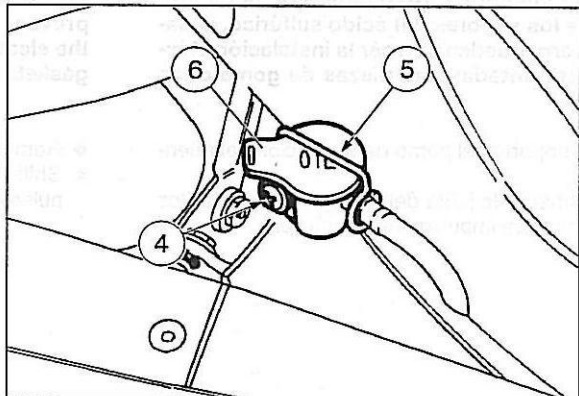


- Regulator / rectifier (3) connector
- ◆ Disconnect the spark plug caps.
- ◆ Disconnect the other connections of the wiring.


 Upon reassembly, make sure that the ele connectors are correctly coupled.




- ◆ Withdraw the transmission breather pipe.
- ◆ Unscrew and remove the screw (4).
- ◆ Remove the clip (5).
- ◆ Remove the cover (6).




- ◆ Position a container with at least 2 l capacity under the filter coupling (1), to gather the oil.

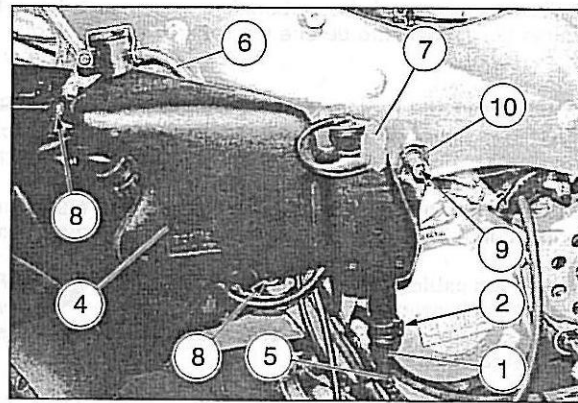
 **Get a screwdriver-type pipe clamp, to replace the original one (special type without screw).**

- ◆ Cut the clamp (2) of the filter (1).

 **Upon reassembly, replace the clamp with a new one.**

- ◆ Disconnect the filter (1) from the mixer oil tank (4).


 **Position and fix the filter (1) vertically, so that the residual oil left in the pipe (5) cannot flow out.**



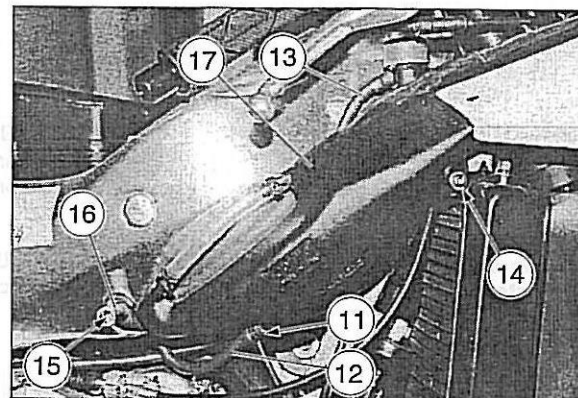
- ◆ Gather the oil in the container.
- ◆ Withdraw the breather pipe (6).
- ◆ Disconnect the electric connector of the sensor (7).
- ◆ Unscrew and remove the two screws (8).
- ◆ Unscrew and remove the screw (9) and take the special bushing (10).
- ◆ Remove the mixer oil tank (4).



- ◆ Drain the coolant completely, see p. 2-24 (CHANGING THE COOLANT).
- ◆ Move the clamp (11) and withdraw the mixer oil pipe (12).
- ◆ Withdraw the breather pipe (13).
- ◆ Unscrew and remove the screw (14).
- ◆ Unscrew and remove the screw (15) and take the special bushing (16).
- ◆ Remove the expansion tank (17) complete with air intake.

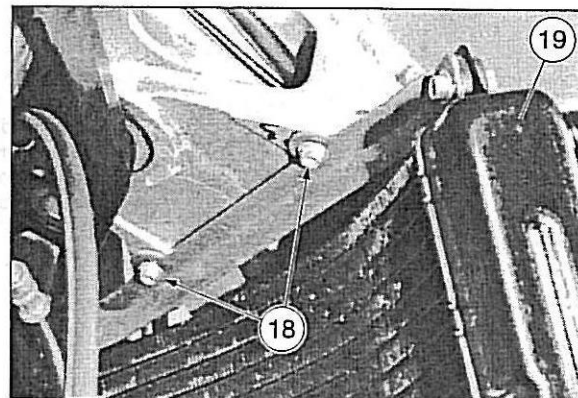
 **Prepare screwdriver-type pipe clamps, which must be used to replace the original ones (special type without screw).**

- ◆ Cut the head of the radiator pipe clamps on the engine side.
- ◆ Unscrew and remove the two screws (18).



Driving torque of the radiator fastening screws: 10 Nm (1 kgm).

- ◆ Remove the radiator (19) by rotating and lifting it frontally.



IMPIANTO DI RAFFREDDAMENTO
SISTEMA DE REFRIGERACION
COOLING SYSTEM

9-5

UPDATES
Model 1998

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COOLING SYSTEM**DESCRIPTION**

The engine is cooled by the coolant set in forced recirculation through jackets formed in the cylinders and heads, and through the radiator. To make the fluid circulate, a high-capacity centrifugal pump is used. The radiator is of the tube and fin type in aluminium material and is characterized by lightness in weight and good heat dispersion.

The thermostat is of wax pellet type, complete with a valve as the means of temperature-dependent regulation over the flow of water through the radiator.

The valve is actuated by the temperature-sensitive wax contained in the pellet.

Referring to the following illustration, the thermostat is in closed condition, so that water recirculates through the route comprising pump, engine, by-pass holes of the thermostat and only partially radiator.

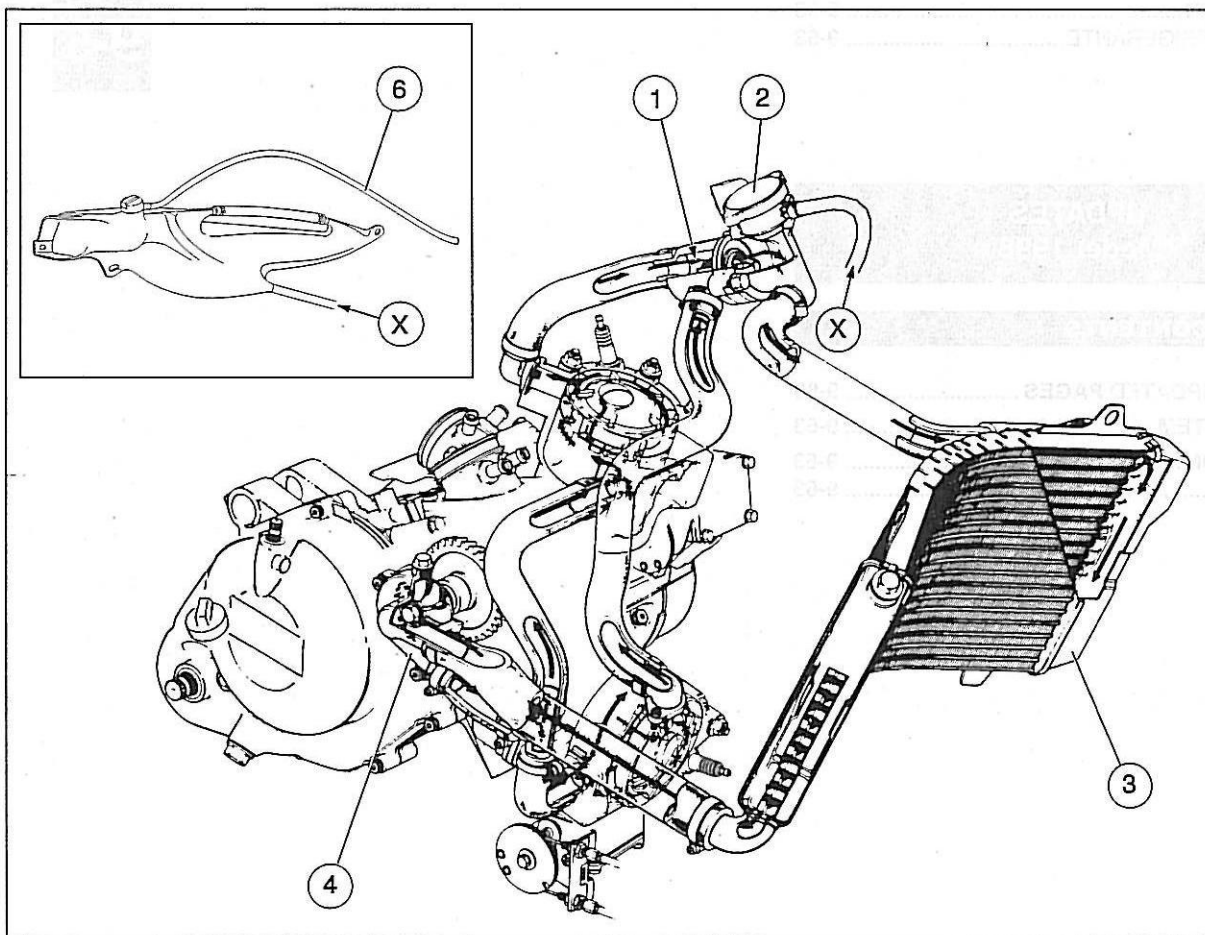
As the coolant temperature rises to 50 °C (122 °F) and the thermostat valve unseats, the normal water flow is established. At about 65 °C (149 °F) of rising coolant temperature, the thermostat becomes completely open and most of the heat is released to the atmosphere through the radiator core.

COOLANT

For any information regarding the coolant, see p. 9-13 (COOLANT).

Key:

- 1) Thermostat.
- 2) Radiator cap.
- 3) Radiator.
- 4) Water pump.
- 5) Reservoir tank.
- 6) Reservoir tank breather hose.



IMPIANTO ELETTRICO
INSTALACION ELECTRICA
ELECTRICAL SYSTEM

9-6

UPDATES Model 1998

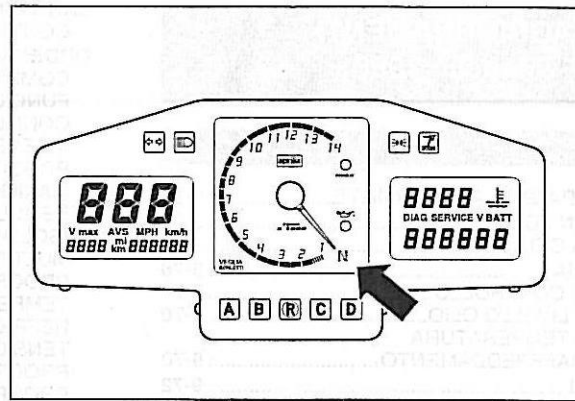
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NEUTRAL WARNING LIGHT

In the event of anomalous functioning, proceed as follows.

- The light stays on (ever with gear engaged):
 - ◆ Check the electric connections.
 - ◆ Check and/or replace the neutral switch.
 - ◆ Check and/or replace the control unit.
- The light fails to go on in neutral:
 - ◆ Check the electric connections.
 - ◆ Check and/or replace the neutral switch.
 - ◆ Check and/or replace the control unit.



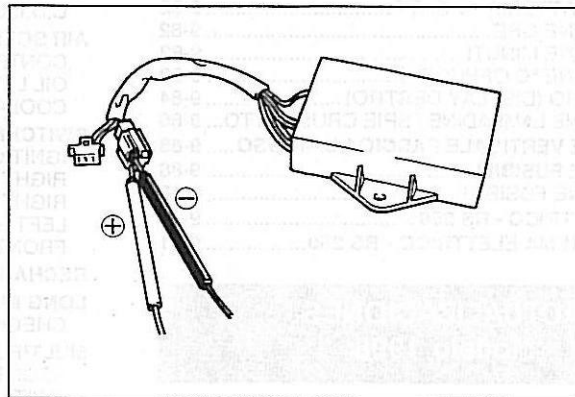
C.D.I. UNIT

Checking with a pocket tester.

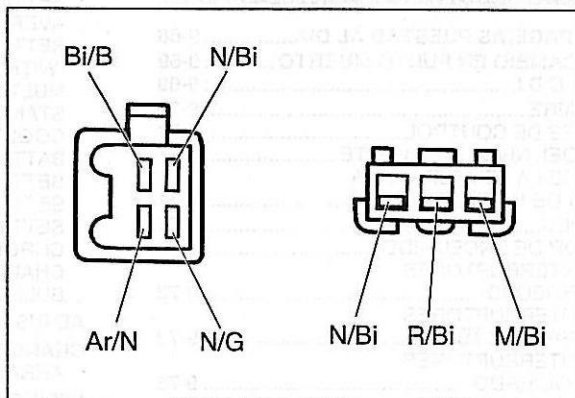
- ◆ Connect the \oplus and the \ominus probe with each lead wire of the C.D.I. unit, check continuity and measure the resistance value.
- ◆ If the continuity and the resistance values are as shown in the following table, the C.D.I. unit may be judged to be normal (see "CAUTION").
- ◆ Measure the resistance between the leads.
- ◆ Tester range: x k Ω .



		Terminal \oplus of the tester on:					
		M/Bi	R/Bi	N/Bi	Ar/N	Bi/B	N/G
Terminal \ominus of the tester on:	M/Bi		0,1- ∞	0,1- ∞	∞	∞	∞
	R/Bi	0,1- ∞		0,1- ∞	∞	∞	∞
	N/Bi	0,1- ∞	0,1- ∞		∞	∞	0
	Ar/N	1- ∞	1- ∞	∞		∞	1- ∞
	Bi/B	1- ∞	1- ∞	1- ∞	∞		1- ∞
	N/G	1- ∞	1- ∞	1- ∞	∞	∞	
	N/Bi	0,1- ∞	0,1- ∞	0	∞	∞	∞



! Whilst the C.D.I. unit contains diodes, condensers and other electronic components, the measuring method indicated is only approximate. It is advisable to make a further inspection, replacing the unit with another known to function correctly, or perform the controls envisaged in the paragraph on the control unit (with the ignition checker).



AIR SOLENOIDS

CONTROL PROCEDURE

With a pocket tester set as an ohmmeter, check that the resistance has the value indicated.

Resistance standard value	
Min air solenoid (1)	$39 \pm 10 \Omega$
Max air solenoids (2)	$35 \pm 10 \Omega$

OIL LEVEL GAUGE

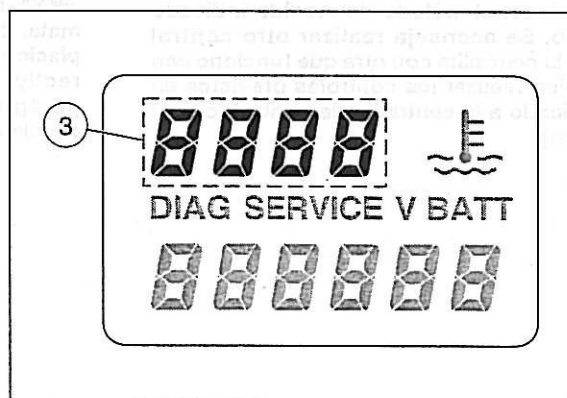
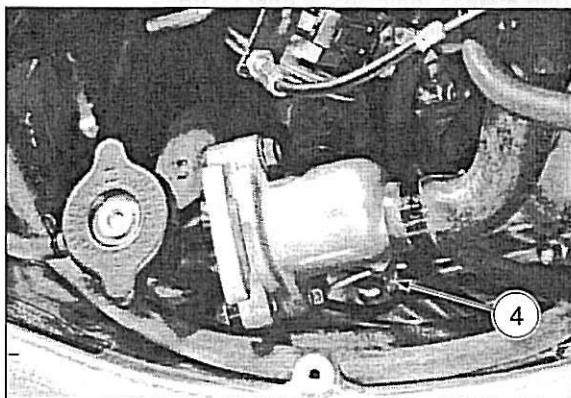
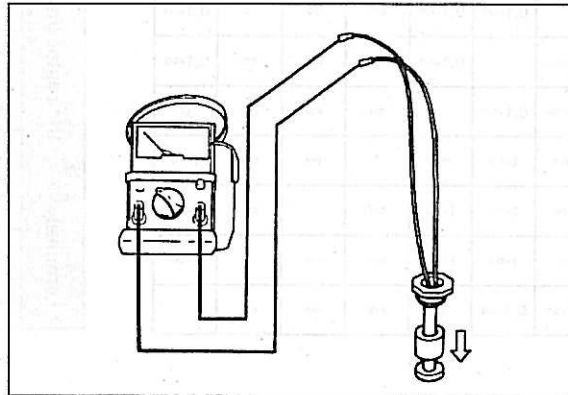
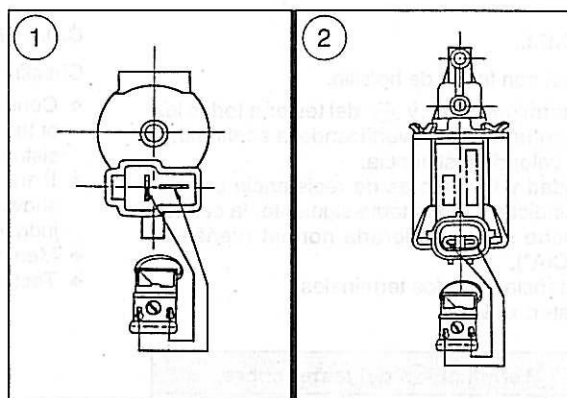
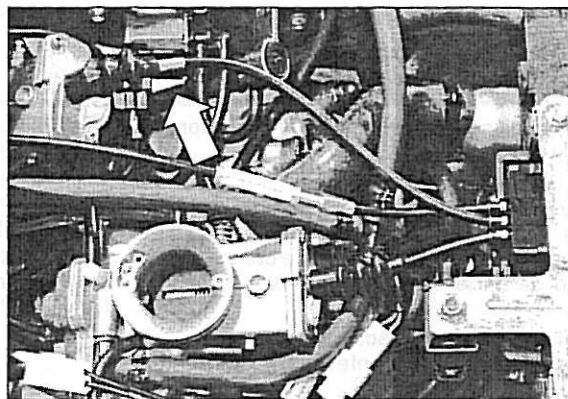
Using a pocket tester check the oil level switch for continuity between Vi and Bi/N lead wires.

If the tester does not show the value of $0 - 1 \Omega$ when the switch float is in bottom, file the contact surface or replace the unit.

When the ignition key is turned to position "O", the mixer oil reserve warning light "oil" must come on for 1 second and then go out (if the oil reserve is not being used).

COOLANT TEMPERATURE GAUGE

- 3) Temperature gauge display
- 4) Thermistor

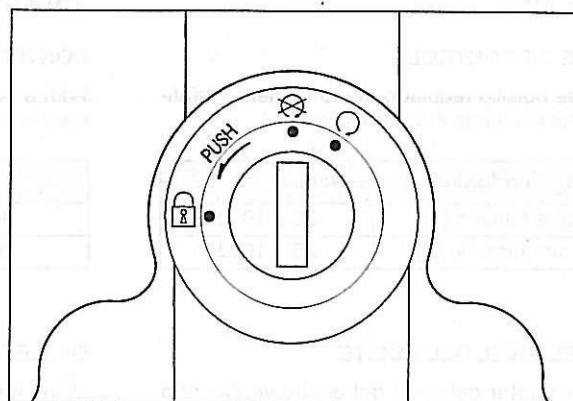


SWITCHES

Using a tester, check the continuity of the switches, referring to the specific diagram below.
In case any anomalies are observed, change the corresponding switch set.

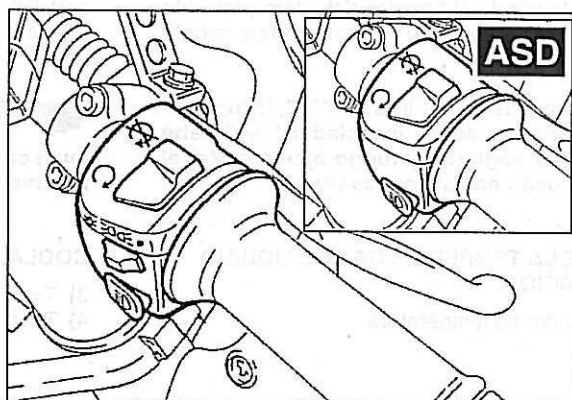
IGNITION SWITCH

Pos.	cables			
	Ar	V	B	Bi/R
○	○	○		
⊗			○	○
⊕			○	○



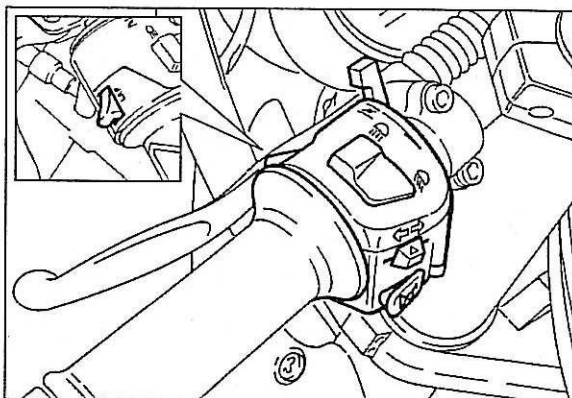
RIGHT SIDE SWITCH SET

Pos.	cables						
	Ar/R	Ar/Ni	Gr/G	G/Bi	V/R	M/G	V/R
●							
☀						○	○
☀☀				○	○	○	○
☀☀☀			○		○		
○	○	○					
☒							














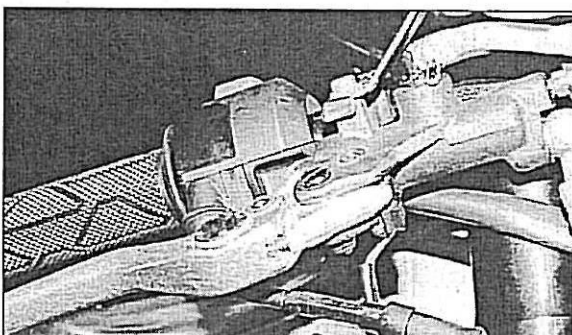
RIGHT SIDE SWITCH SET ASD

Pos.	cables				
	Ar/R	Ar/N	Gr/G		V/R
☀			○	○	○
○	○	○			
⊗					



LEFT SIDE SWITCH SET

Pos.	cables								
	G/Bi	Gr/Bi	Gr/G	Bi/V	G/R	G/Az	Gr/B	Bi/N	N/Vi
									
									
LAP									
									
									
									



FRONT BRAKE STOPLIGHT SWITCH

Pos.	cables	
	N	N
ON	○	○
OFF		

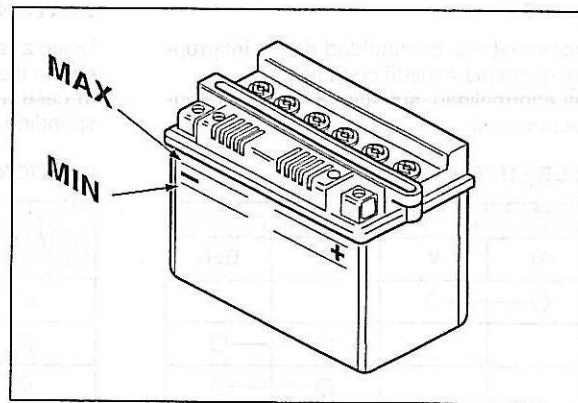
RECHARGING THE BATTERY

Carefully read p. 2-8 (BATTERY).

- ◆ Remove the battery.
- ◆ Remove the element plugs.
- ◆ Connect the battery with a battery charger.
- ◆ A recharge with an amperage equal to 1/10th of the battery capacity is recommended.
- ◆ After the recharging operation, check the electrolyte level again and if necessary top up with distilled water.
- ◆ Put back the element plugs.



Reassemble the battery only 5/10 minutes after disconnecting the recharge apparatus, since the battery continues to produce gas for a short lapse of time.



LONG INACTIVITY OF THE BATTERY



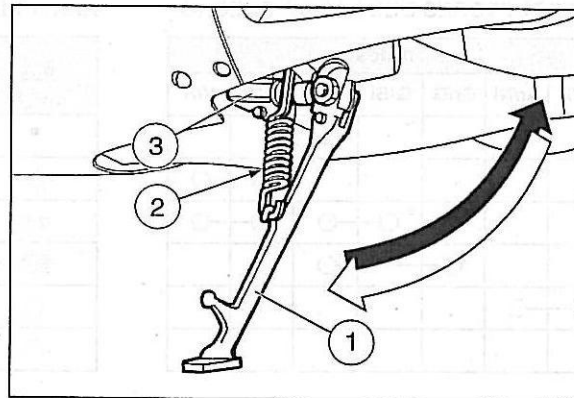
If the vehicle remains unused for more than 20 days, disconnect the 20A fuse, in order to avoid the battery deterioration resulting from the current consumption due to the multifunction computer.

If the vehicle remains unused for a long period:

- ◆ Remove the battery and put it in a cool and dry place.
- ◆ Recharge it completely, by using a trickle charge, see above (RECHARGING THE BATTERY).

If the battery remains on the vehicle, disconnect the cables from the terminals.

It is important to check the charge periodically (about once a month), during the winter or when the vehicle remains unused, in order to prevent the deterioration of the battery.



CHECKING THE STAND SWITCH

The side stand (1) must rotate freely, without any hindrance.

Carry out the following checks:

- ◆ The springs (2) must not be damaged, worn, rusty or weakened.
- ◆ The side stand must rotate freely, if necessary grease the joint, see p. 9-20 (LUBRICANT CHART).

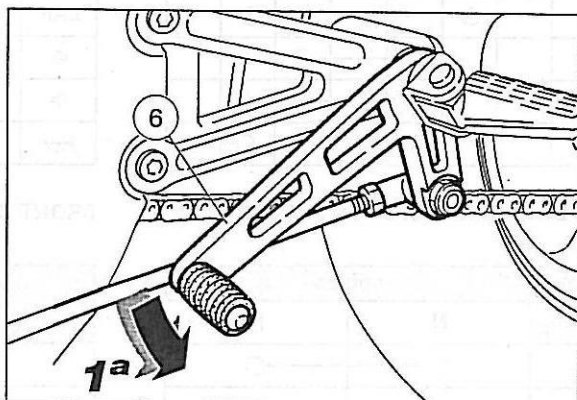
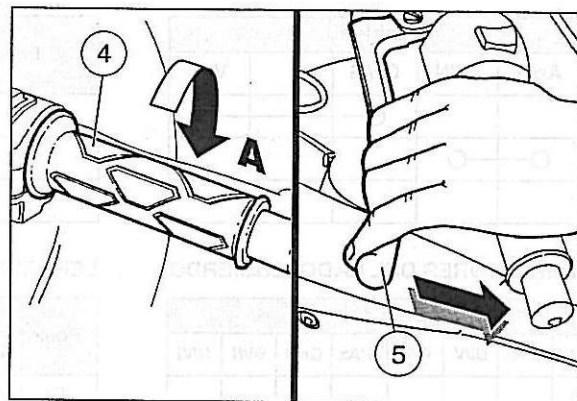
The side stand (1) is provided with a safety switch (3) that has the function to prevent or interrupt the operation of the engine with the gears on and the side stand (1) down. To check the proper functioning of the safety switch (3), proceed as follows:

- ◆ Seat on the vehicle in driving position.
- ◆ Fold the side stand (1).
- ◆ Start the engine.
- ◆ With released throttle grip (4) (Pos. A) and engine idling, pull the clutch lever (5) completely.
- ◆ Engage the first gear, pushing the shifting lever (6) downwards.
- ◆ Lower the side stand (1), thus operating the safety switch (3).

At this point:

- the engine must stop;
- the "side stand down" warning light "I" must come on.

If the engine does not stop, change the switch (3).



MULTIFUNCTION COMPUTER

KEY

- A) Left multifunction digital display (speedometer – odometer)
- B) Multifunction computer programming keys
- C) Right multifunction digital display (coolant temperature – clock – battery voltage – chronometer)

When the ignition key (1) is rotated to position "O", the following warning lights come on on the dashboard:

- red line warning light LED "max" (2).
- red mixer oil reserve warning light LED (3) - for about 0.5 seconds.

The pointer (4) of the revolution counter shifts to the maximum value (rpm) set by the user.

After about 3 seconds the red line warning light LED "max" (2) goes off; the pointer (4) of the revolution counter returns to its initial position.

In this way the component operation is tested.



After the first 1000 km (625 mi) and successively every 4000 km (2500 mi), the writing "SERVICE" (5) appears on the right display. In this case contact an **aprilia** Official Dealer, who will carry out the operations indicated in the regular service intervals chart, see p. 9-25 (PERIODIC SERVICE CHART FOR THE COMPONENTS).

To make the writing "SERVICE" disappear, press the "LAP" push button (6) and then the push button **R** and keep them pressed for about 5 seconds.

With the ignition key (1) in position "O" the standard settings on the dashboard are the following:

Right display: Clock (7), coolant temperature in °C (8).

Left display: Instantaneous speed in km/h (9), trip 1 (trip odometer) (10), total kilometres/miles odometer (11).

Upon installation of the battery or of the 20A fuse:

- The revolution counter pointer (4) makes 12 clockwise clicks, thus checking the operation of the revolution counter itself.
- The instantaneous, maximum and average speed function is set in "km/h".
- The coolant temperature is set in °C.
- The digital clock is set to zero.
- The red line is set at 6000 rpm, indicated by the coming on of the red line warning light LED "max" (red) (2).



If necessary, carry out the appropriate adjustments.

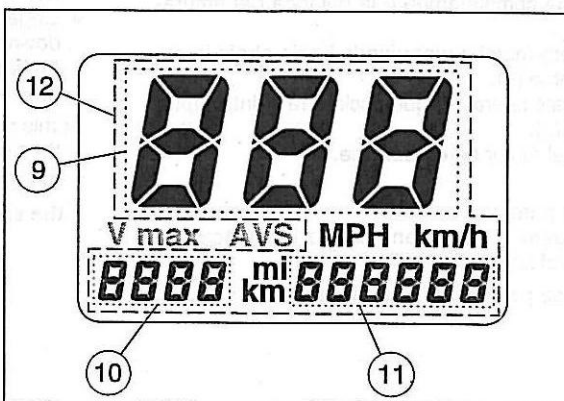
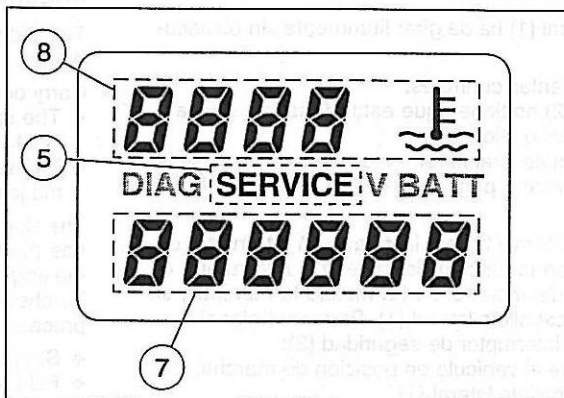
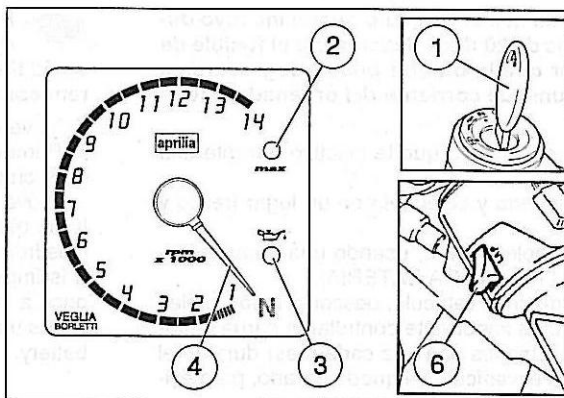
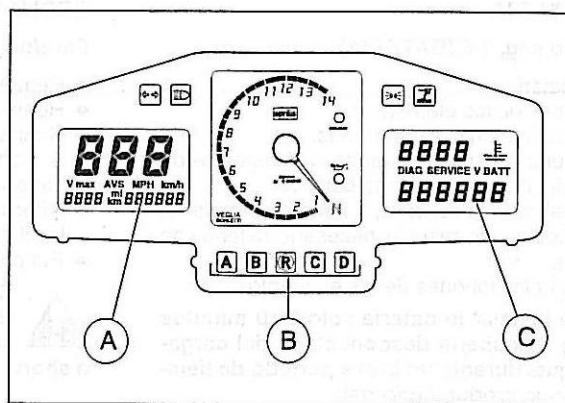
SEGMENT OPERATION CHECK

- ◆ Press the push buttons **A** and **B** at the same time.
- ◆ Rotate the ignition key (1) from position "ON" to position "O".


All the segments will remain on until the push buttons **A** and **B** are released.

SWITCHING FROM KM TO MI (FROM KM/H TO MPH) AND VICEVERSA (LEFT DISPLAY)

- ◆ Press the push button **A** until, after about 5 seconds, all the writings (12) on the left display start blinking.
- ◆ Release the push button **A**.
- ◆ Press the push button **B** to change the unit of measurement from "km" to "mi" (from "km" to "MPH") and viceversa.
- ◆ To confirm the setting, press the push button **A** for about 5 seconds.



SETTING THE INSTANTANEOUS, MAXIMUM AND AVERAGE SPEED (LEFT DISPLAY)

 Two seconds after the vehicle has started moving, the instantaneous speed is automatically shown on the display, even if a different function is set.


When the ignition key is rotated to position "O", the instantaneous speed (1) and the partial number of kilometres/miles covered (trip 1) (2) appear on the left display.

Resetting "trip 1" (2): with the odometer set on the instantaneous speed function, press the push button **R** for about 2 seconds.

- ◆ To display the maximum speed (3) and the distance "trip 1" (2), press the push button **B** for about 1 second.


The writing "V max" (4), the maximum speed (3) and the distance "trip 1" (2) are displayed.

Resetting the maximum speed (3): with the odometer set on the "V max" function, press the push button **R** for about 2 seconds.

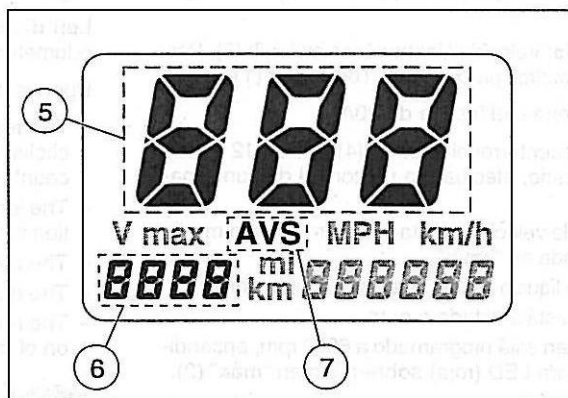
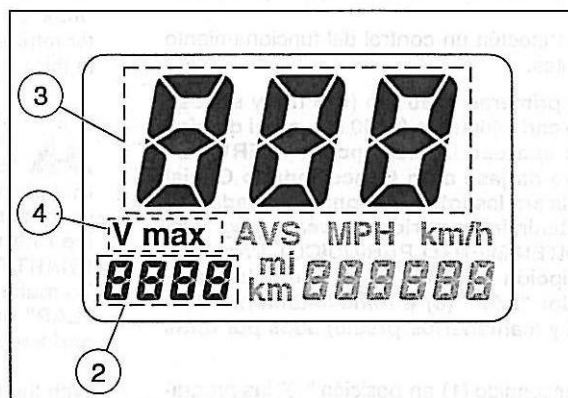
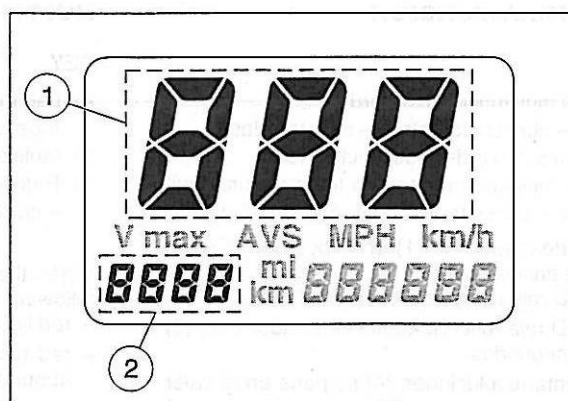
 The measurement of the maximum speed is relevant to the distance covered from the last setting to zero for the maximum speed itself. The distance "trip 1" (2) shown on the display indicates the number of kilometres/miles covered from the last setting to zero.

- ◆ To display the average speed (5) and the distance "trip 2" (6), press the push button **B** again for about 1 second.
- ◆ The writing "AVS" (7), the average speed (5) and the distance "trip 2" (6) are displayed.

Resetting the average speed (5) and the distance "trip 2" (6): with the odometer set on the "AVS" function, press the push button **R** for about 1 second.

 The measurement of the average speed is relevant to the distance "trip 2" (odometer). The distance "trip 2" (6) shown on the display indicates the number of kilometres/miles covered from the last setting to zero. If more than 1000 km (625 mi) are covered without setting "trip 2" to zero, the value of the average speed will be wrong.

To display the instantaneous speed (1) and the distance "trip 1" (2), press the push button **B** again.



SETTING THE RED LINE THRESHOLD (WITH ENGINE OFF ONLY)

When the maximum rpm set is exceeded, the red line warning light LED "max" (2) positioned on the dashboard starts blinking.

If the push button **C** is pressed for less than one second, the pointer (1) of the revolution counter (1) shifts to the red line value set for 3 seconds, after which it returns to its initial position.

For the setting:

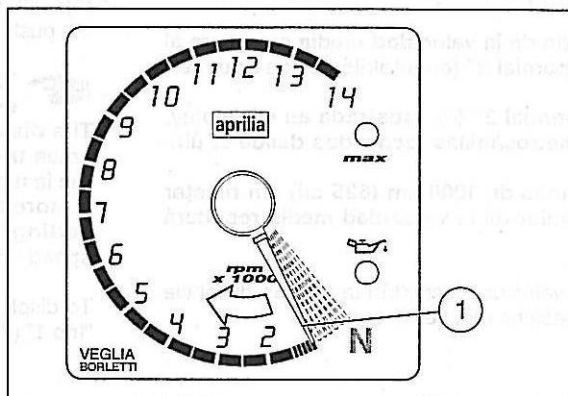
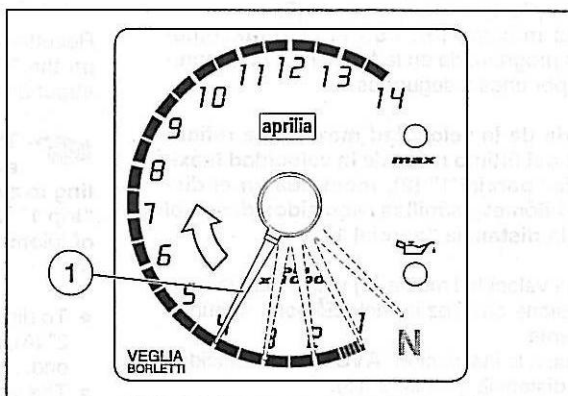
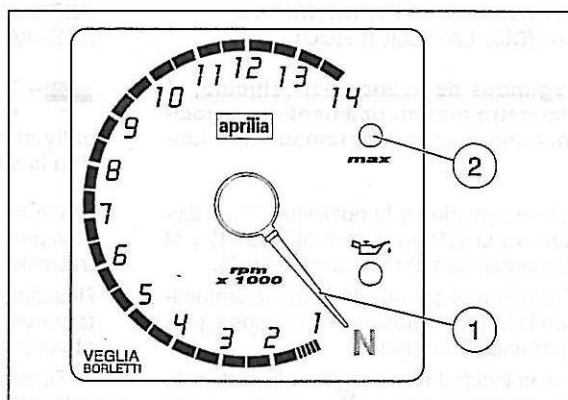
- ◆ Press the push button **C**, release it and press it again within 3 seconds.

The pointer (1) moves increasing the value by 1000 rpm at each step, as long as **C** is kept pressed; when it has reached the maximum value, it starts again from the beginning.

✎ It is not possible to set the red line at values lower than 2000 rpm or higher than 14000 rpm.

- ◆ Press the push button **C** until the desired rpm value has been set.
- ◆ If the push button **C** is released and then pressed again within 3 seconds, intermittently, the pointer (1) moves increasing the value by 100 rpm per pulsation; when it has reached the maximum value, it starts again from the beginning.
- ◆ To confirm, release the push button **C**.
After 3 seconds, the red line threshold setting is stored.

✎ The setting is confirmed by the coming on of the red line warning light LED "max" (2).

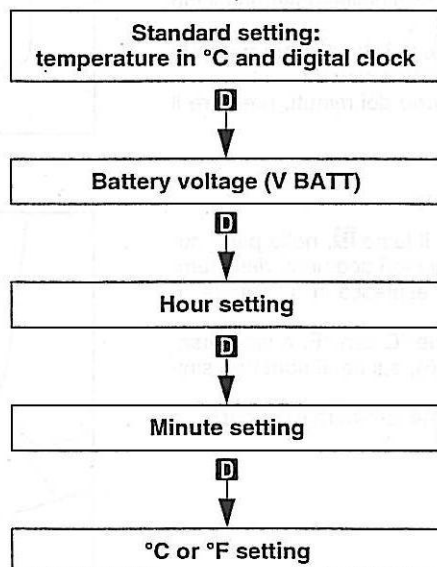


MULTIFUNCTION (RIGHT DISPLAY)

The right display (multifunction) includes the coolant temperature in °C (°F) (1) and the digital clock (2) as standard settings.

✎ When the engine is cold, the writing "cold" blinks.

By pressing the push button **D**, the following functions can be obtained in sequence:



STANDARD SETTING: COOLANT TEMPERATURE AND DIGITAL CLOCK

The coolant temperature value (1) is shown in the upper part of the right display.

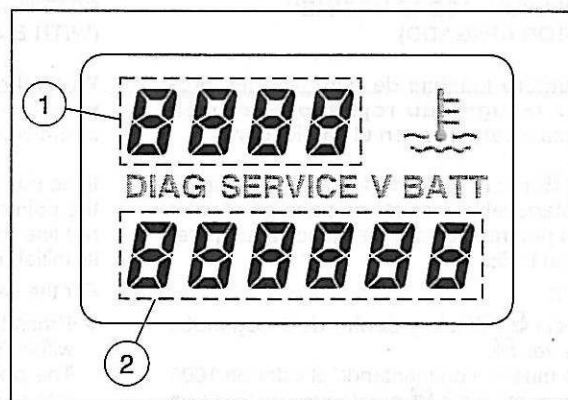
It is possible to switch from °C to °F and viceversa, see below (SETTING °C OR °F).

- When the temperature is below 35°C (95°F), the writing "c o l d" (1) blinks on the right display.
- When the temperature is over 115°C (239°F), the value (1) blinks on the right display, even if a function different from the standard setting has been set.
- When the temperature is over 130°C (266°F), the writing "L L L" (1) appears on the right display.

Thermometer range: 0 - 130°C (32 - 266 °F).

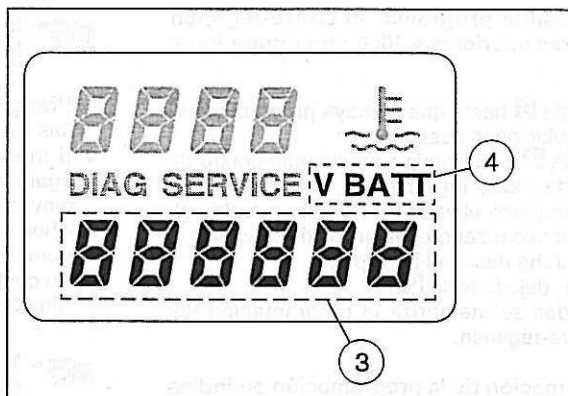
The digital clock (2) appears in the lower part of the right display.

To set or modify hour and minutes, see below (SETTING THE HOUR) and (SETTING THE MINUTES).



BATTERY VOLTAGE - VBATT

- ◆ If the push button **D** is pressed once, the battery voltage expressed in volt (3) appears in the lower part of the right display, while the coolant temperature (1) is displayed in the upper part.
- The writing "V BATT" (4) is displayed.
- The recharge circuit functions correctly if at 4000 rpm the battery voltage with low beam on is included between 13 and 15 V.

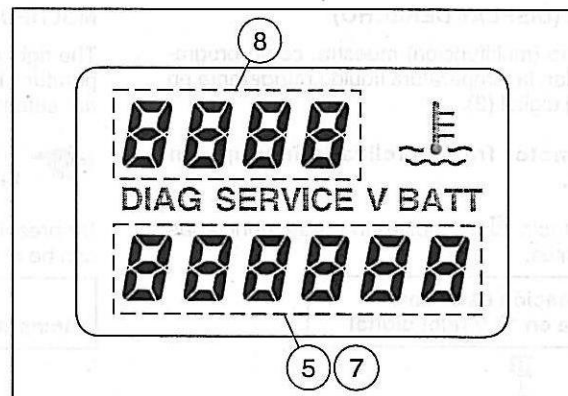


SETTING THE HOUR

- ◆ When the push button **D** is pressed for the second time, the hour segments (5) start blinking in the lower part of the right display (digital clock).
- ◆ To modify the hour setting, press the "LAP" push button (6) on the left part of the handlebar.
- ◆ To confirm the hour setting, press the push button **D**.

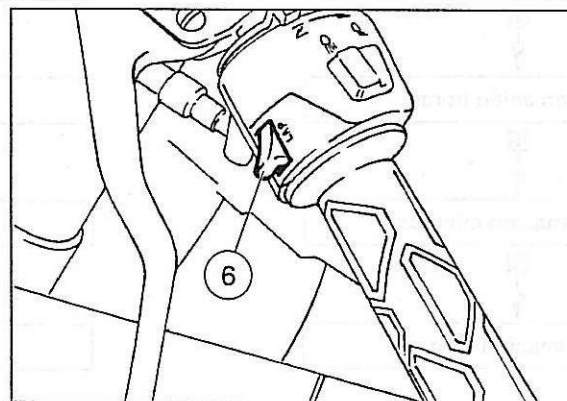
SETTING THE MINUTES

- ◆ When the push button **D** is pressed for the third time, the minute segments (7) start blinking in the lower part of the right display (digital clock).
- ◆ To modify the minute setting, press the "LAP" push button (6) on the left part of the handlebar.
- ◆ To confirm the minute setting, press the push button **D**.



SETTING °C OR °F

- ◆ When the push button **D** is pressed for the fourth time, the segments of the coolant temperature in °C or °F (8) start blinking in the upper part of the display.
- ◆ To modify from °C to °F setting, or vice versa, press the "LAP" push button (6) on the left part of the handlebar.
- ◆ To confirm the setting, press the push button **D**.



CHRONOMETER (RIGHT DISPLAY)

The chronometer makes it possible to measure the time per lap with the vehicle on a racetrack and to store the data, in such a way as to be able to consult them successively.

When the "CHRONOMETER" function has been selected, it is not possible to recall the following functions:

- ◆ Maximum speed "**V max**".
- ◆ Average speed "**AVS**".
- ◆ Distance "trip 2".
- ◆ To operate the chronometer, press the "LAP" push button (1) and, within 0.7 seconds, the push button **D**.
- ◆ To start timing, press the "LAP" push button (1) and release it immediately.
- ◆ To store the time acquired, press the "LAP" push button (1).

The "LAP" push button (1) is not enabled for 10 seconds and the last time stored (2) is shown on the display.

After which, the chronometer with the current timing (3) is displayed, starting from 10 seconds.

- ◆ To display the first time stored (4), press the push button **E**.
- ◆ To be able to see the stored times in sequence, press the "LAP" push button (1).


The writings **L 1**, **L 2**, **L 3**, **L 4**, etc. (5) are displayed.

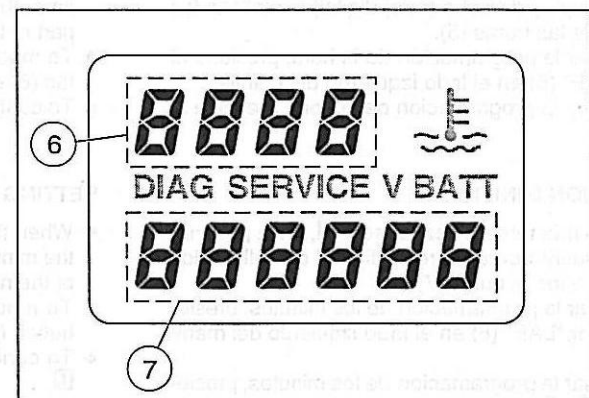
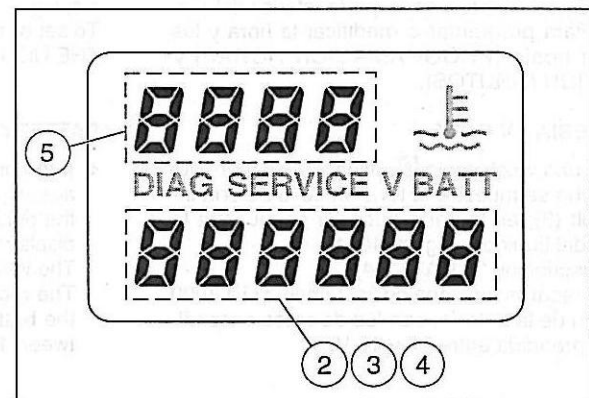
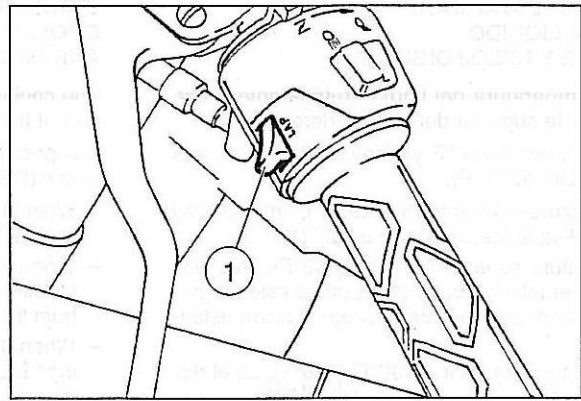
- ◆ To start timing again, press the push button **E**.

 **It is possible to store max. 40 times, after which the "LAP" push button (1) is not effective any longer.**

- ◆ To set the memory to zero, press the push button **A** and the "LAP" push button (1) at the same time for 2 seconds.
- ◆ To leave the chronometer function, press the "LAP" push button (1) and the push button **D**.

The coolant temperature (6) and the digital clock (7) appear on the right display (multifunction).

 **When the engine is cold, the writing "**c a l d**" is displayed.**








CHANGING THE DASHBOARD BULBS/WARNING LIGHTS

Before changing a bulb/warning light and/or a LED, check the fuses, see p. 9-89 (CHANGING THE FUSES).

To change the fuses, proceed as follows:


- ◆ Remove the front part of the fairing, see p. 9-103 (REMOVING THE FRONT PART OF THE FAIRING).
- ◆ Loosen and remove the three dashboard fastening nuts.
- ◆ Remove the dashboard.
- ◆ Unscrew and remove the eight fastening screws (1).
- ◆ Remove the rear cover (2).
- ◆ Withdraw the bulb socket and if necessary change the bulb:

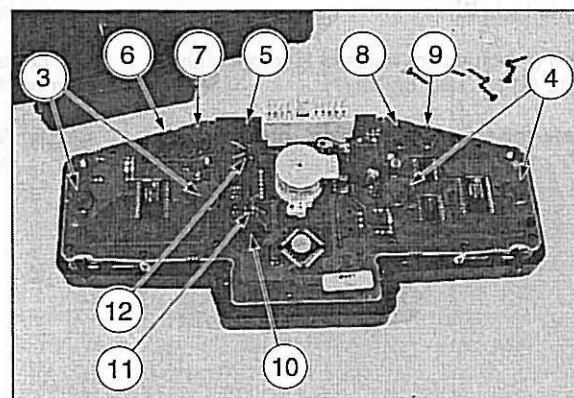
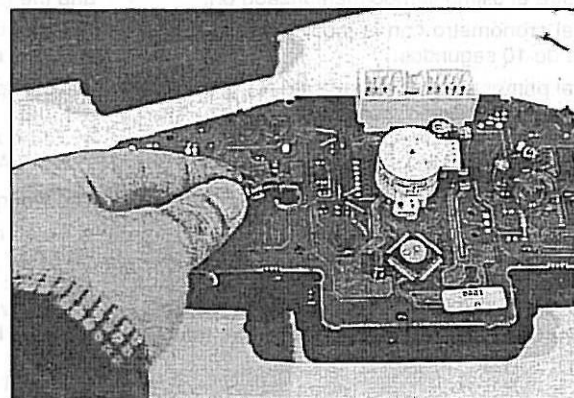
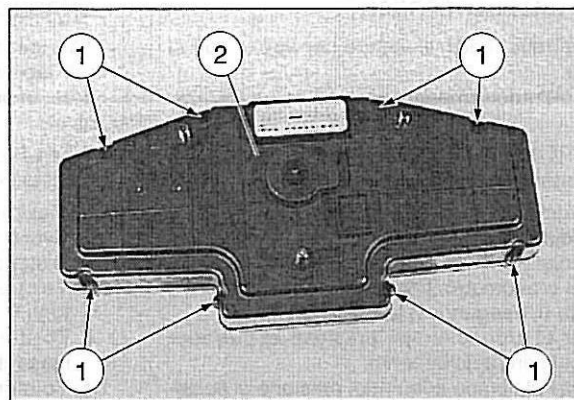
Pos.	Description
3	Right display bulbs
4	Left display bulbs
5	Revolution counter bulb

Pos.	Warning light	Description
6		Side stand down
7		Parking lights and low beam
8		high beam
9		direction indicators
10		gears in neutral

! If the fault persists after changing the bulb/warning light, check the relevant sensor/switch.

The two LEDs (11) and (12) cannot be removed.

Pos.	LED	Description
11		mixer oil reserve
12	<i>max</i>	red line



ADJUSTING HEADLIGHT BEAM

For a rapid check on the correct direction of the beam, place the vehicle on flat ground 10 metres away from a wall.

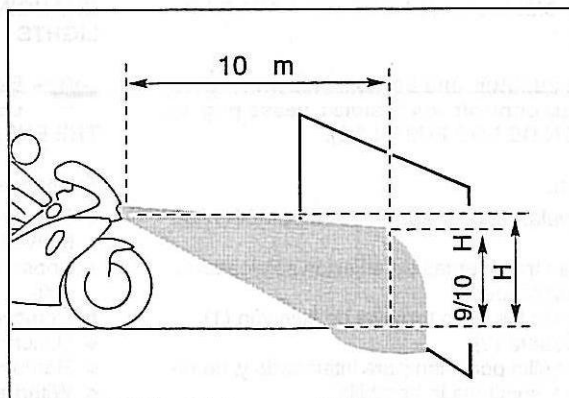
Turn on the low beam, sit on the vehicle and make sure that the beam projected on the wall is slightly under the horizontal line of the headlight (approx. 9/10 of the total height - see figure).

To adjust the headlight beam:

- ◆ Adjust the screw (1) with an 8 mm fixed spanner.

By **SCREWING IT** (clockwise), you set the beam upwards.

By **UNSCREWING IT** (anticlockwise), you set the beam downwards.



CHANGING THE FUSES



Do not repair faulty fuses.

Never use fuses different from the recommended ones.

The use of unsuitable fuses may cause damages to the electric system or, in case of short circuit, even a fire.



If a fuse blows frequently, there probably is a short circuit or an overload in the electric system. In this case it is advisable to consult an **aprilia** Official Dealer.

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

If an electric component does not work or works irregularly, or if the vehicle fails to start, the fuses must be checked:

- ◆ Turn the ignition switch to the "OFF" position to prevent any accidental short circuit.
- ◆ Remove saddle, see p. 9-105 (REMOVING THE RIDER SADDLE).

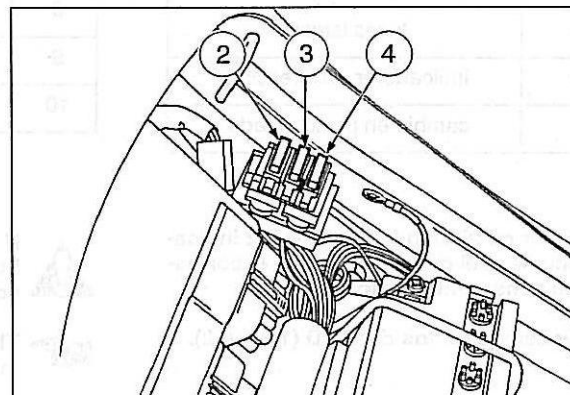
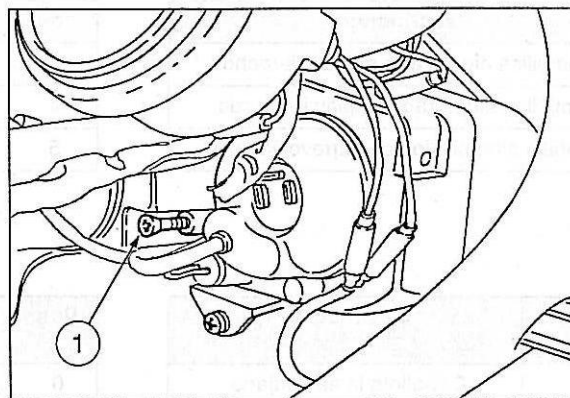


The removal of the 30A fuses requires the setting to zero of the following functions: digital clock and red line setting. To reset these functions, see p. 9-77 (MULTIFUNCTION COMPUTER).

- ◆ Extract one fuse at a time and check to see if the filament (5) is interrupted (see figure).
- ◆ Before replacing a fuse, try to discover the cause of the trouble, if possible.
- ◆ Replace the damaged fuse with a new one having the same amperage.

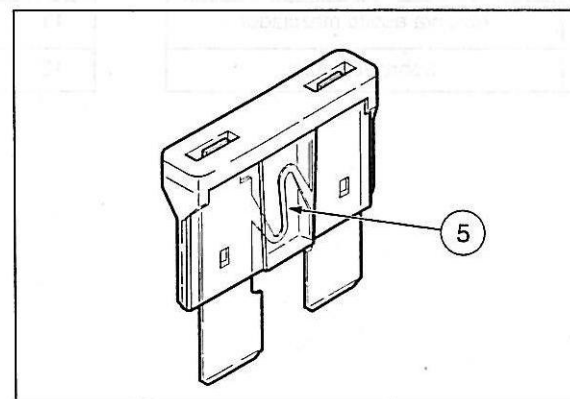


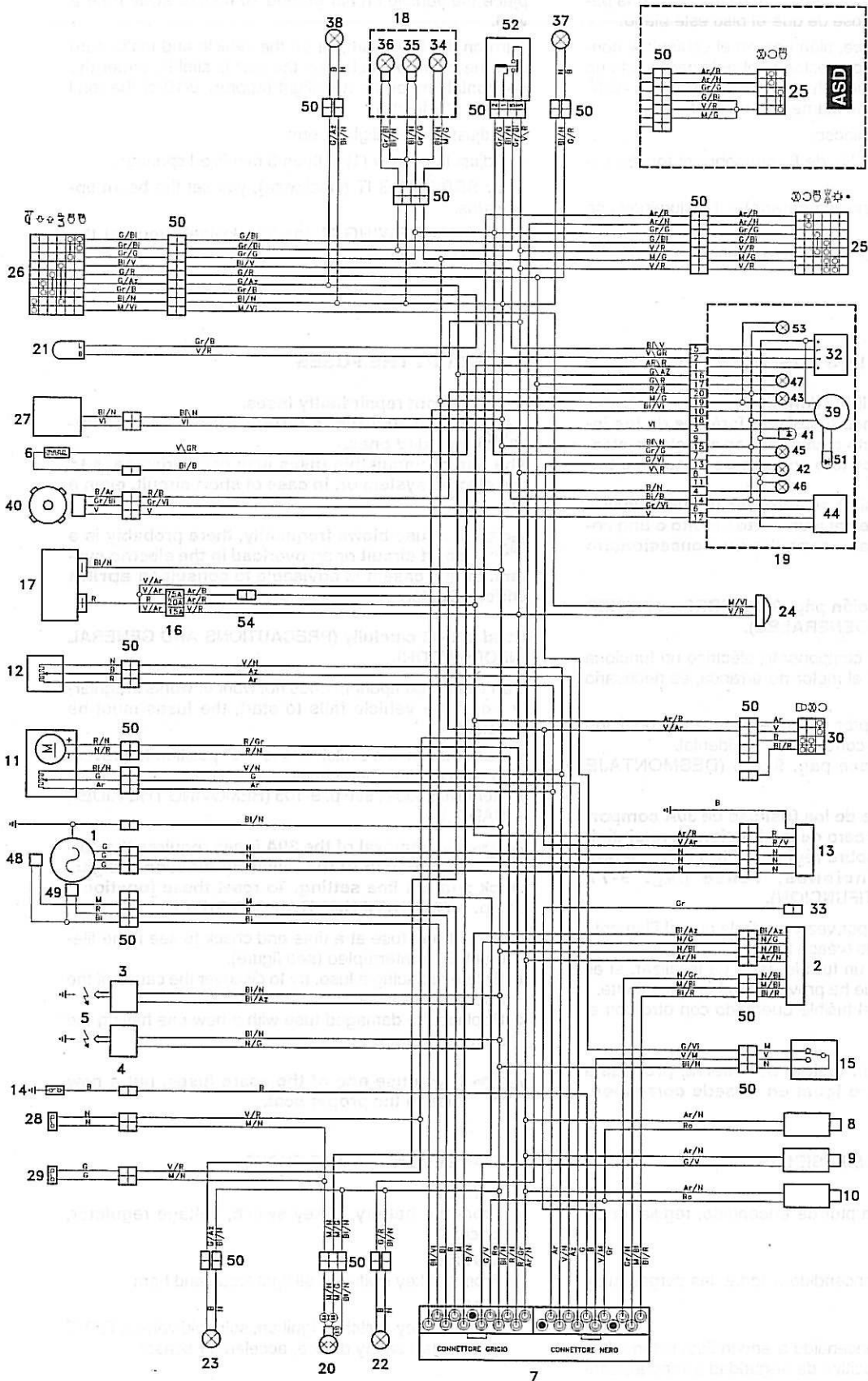
If you use one of the spare fuses, put a new fuse in the proper seat.



ARRANGEMENT OF THE FUSES

- 2) **20A fuse**
From the battery to key switch, voltage regulator, clock.
- 3) **15A fuse**
From the key switch to all light loads and horn.
- 4) **7.5A fuse**
From the key switch to ignition, solenoid valves, RAVE motor, start safety device, accelerator sensor.





WIRING DIAGRAM KEY RS 250

- 1) Generator
- 2) CDI
- 3) Front cylinder Ignition coil
- 4) Rear cylinder Ignition coil
- 5) Spark plugs
- 6) Coolant temperature thermistor
- 7) Control electronic unit
- 8) Max. 1 solenoid valve
- 9) Min. solenoid valve
- 10) Max. 2 solenoid valve
- 11) Rave motor
- 12) Accelerator sensor
- 13) Voltage regulator
- 14) Neutral switch
- 15) Side stand switch
- 16) Fuses
- 17) Battery
- 18) Headlight
- 19) Dashboard
- 20) Rear light
- 21) Blinking
- 22) Rear right direction indicator
- 23) Rear left direction indicator
- 24) Horn
- 25) Right dimmer switch
- 26) Left dimmer switch
- 27) 2 stroke oil reserve sensor
- 28) Front stoplight switch
- 29) Rear stoplight switch
- 30) Ignition switch
- 32) Multifunction display (right side)
- 33) RAVE motor CHECK connector
- 34) Front parking light
- 35) High beam bulb
- 36) Low beam bulb
- 37) Front right direction indicator
- 38) Front left direction indicator
- 39) Revolution counter
- 40) Speed sensor
- 41) 2 stroke oil reserve warning light LED
- 42) Side stand down warning light
- 43) Dashboard lights
- 44) Multifunction display (left side)
- 45) High beam warning light
- 46) Neutral warning light
- 47) Direction indicator warning light
- 48) Front cylinder pick-up
- 49) Rear cylinder pick-up
- 50) Multiple connectors
- 51) Red line warning light LED
- 52) Light relay
- 53) Lights on warning light
- 54) Anti-theft device installation point

CABLE COLOURS

- Ar Orange
- Az Light blue
- B Blue
- Bl White
- G Yellow
- Gr Grey
- M Brown
- N Black
- R Red
- V Green
- Vi Violet

9-7

9-7

UPDATES Model 1998

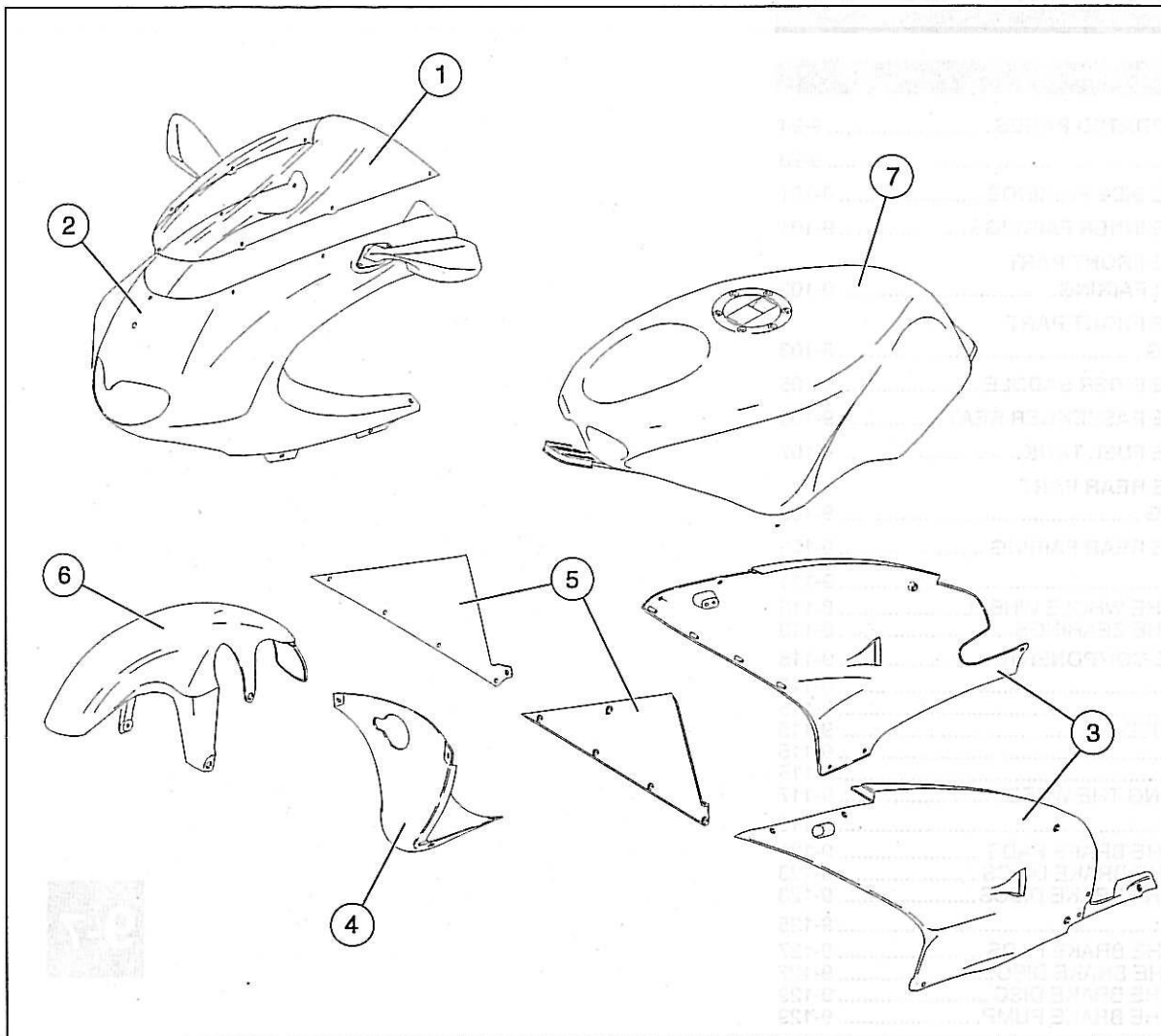
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CARROZZERIA

CARROCERIA

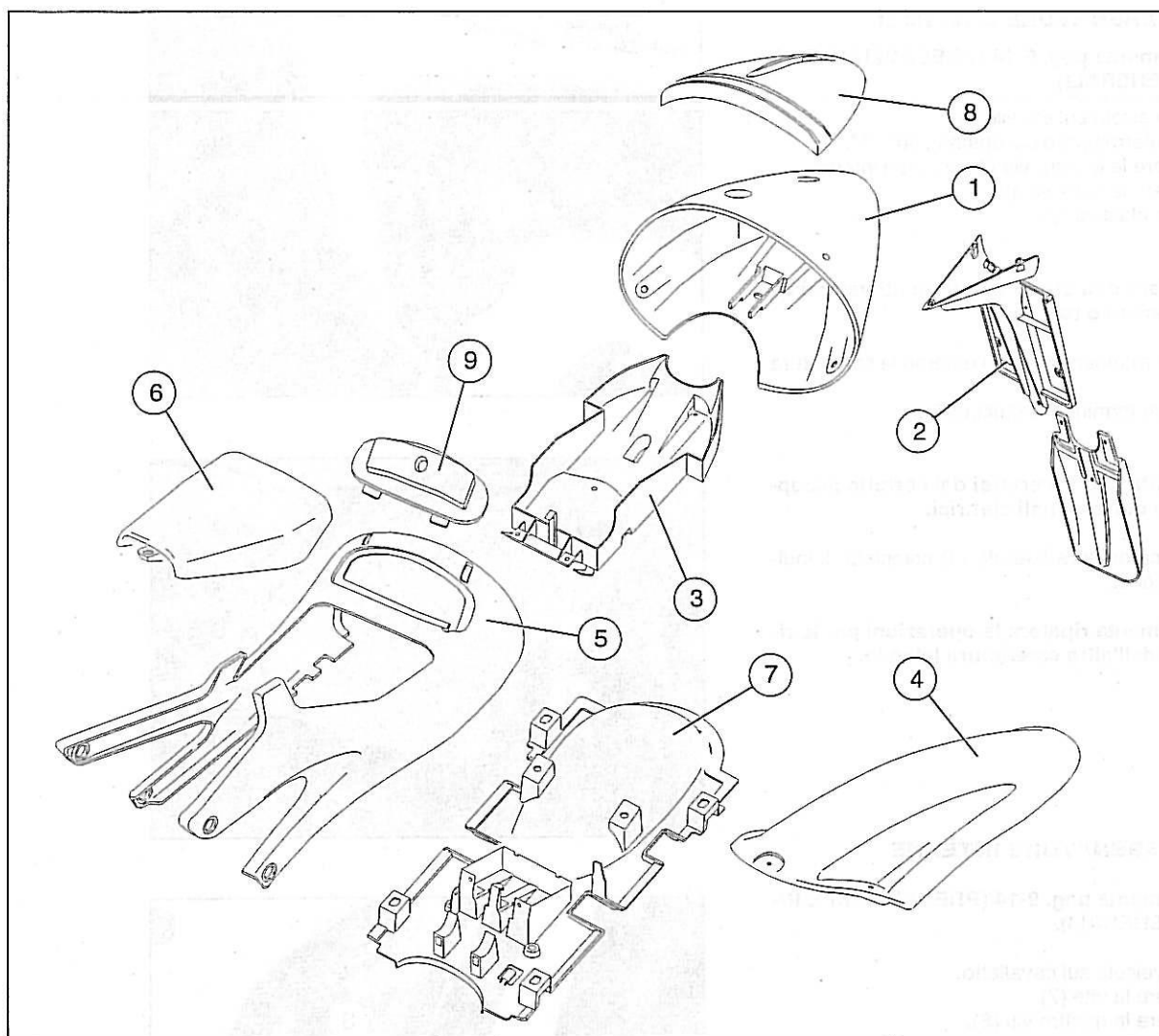
BODY



- 1) Parabrezza
- 2) Cupolino
- 3) Carenature laterali
- 4) Puntale carenatura
- 5) Carenature interne
- 6) Parafango anteriore
- 7) Serbatoio carburante

- 1) Cúpola
- 2) Carenado frontal
- 3) Carenados laterales
- 4) Parte delantera del carenado inferior
- 5) Carenados interiores
- 6) Guardabarros delantero
- 7) Depósito combustible

- 1) Windshield
- 2) Front part of the fairing
- 3) Side fairings
- 4) Front part of the lower fairing
- 5) Inner fairings
- 6) Front mudguard
- 7) Fuel tank



- 1) Codone
- 2) Portatarga
- 3) Vano portadocumenti/Kit attrezzi
- 4) Parafango posteriore
- 5) Carenatura posteriore
- 6) Sella pilota
- 7) Supporto batteria/parafango
- 8) Sellino passeggero
- 9) Chiusura vano portadocumenti/Kit attrezzi

- 1) Colín
- 2) Porta-matrícula
- 3) Vano portadocumentos/kit herramientas
- 4) Guardabarros trasero
- 5) Carenado central trasero
- 6) Sillín del piloto
- 7) Soporte de la batería/guardabarro
- 8) Sillín del pasajero
- 9) Cierre vano portadocumentos/kit herramientas

- 1) Rear fairing
- 2) Number plate holder
- 3) Glove / tool kit compartment
- 4) Rear mudguard
- 5) Rear central cowling
- 6) Driver's seat
- 7) Battery/mudguard holder
- 8) Passenger's seat
- 9) Glove / tool kit compartment cover

REMOVING THE SIDE FAIRINGS

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

- ◆ Position the vehicle on the stand.
- ◆ Turn the ignition switch to position "OFF".
- ◆ Unscrew and remove the four front inner screws (1).
- ◆ Unscrew and remove the seven screws (2).
- ◆ Withdraw the elastic pin (3).



Handle the painted components with care and avoid scraping or damaging them.

- ◆ Moderately shift the side fairing (4) toward the outside.
- ◆ Disconnect the two electric terminals (5-6).

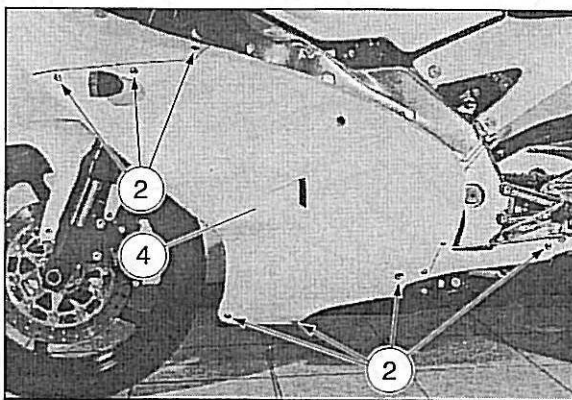
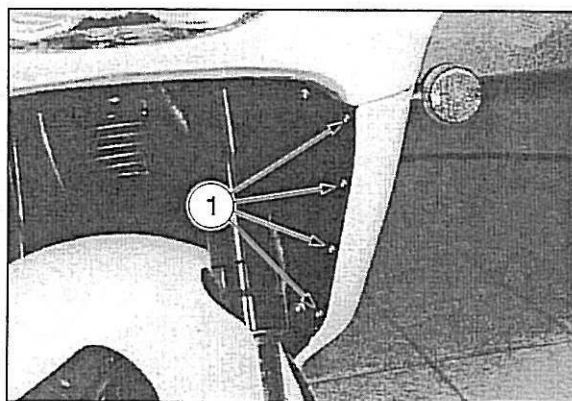


Upon reassembly, make sure that the electric terminals are correctly coupled.

- ◆ Remove the side fairing (4) complete with the direction indicator.



If necessary, repeat the same operations for the removal of the other side fairing.

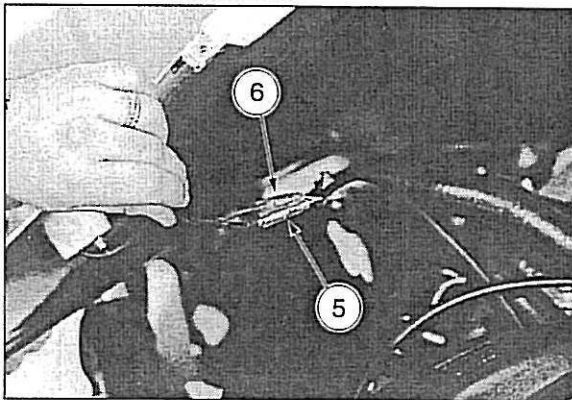
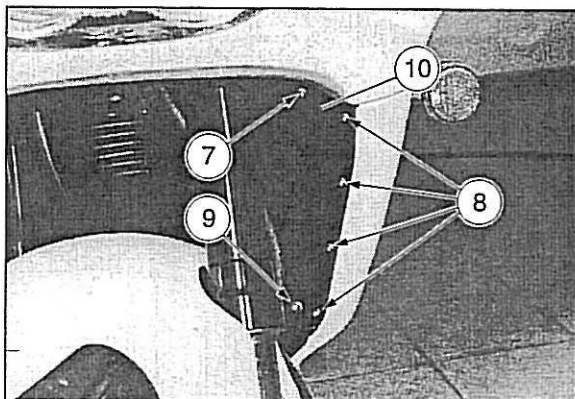
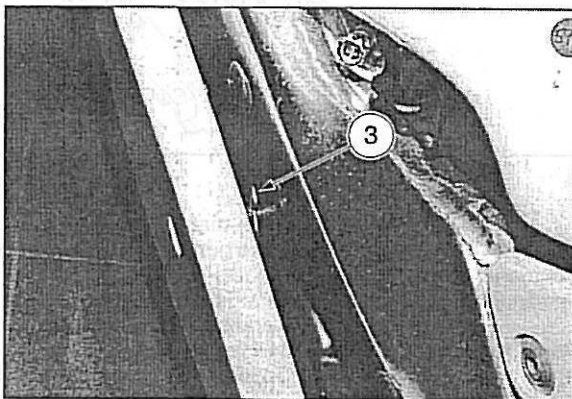
**REMOVING THE INNER FAIRINGS**

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

- ◆ Position the vehicle on the stand.
- ◆ Unscrew and remove the screw (7).
- ◆ Unscrew and remove the four screws (8).
- ◆ Unscrew and remove the screw (9).
- ◆ Remove the inner fairing (10).



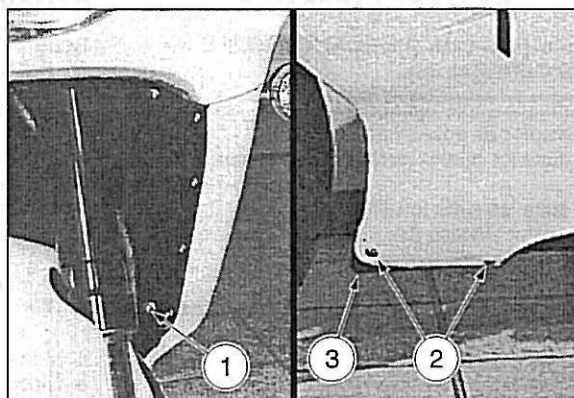
If necessary, repeat the same operations for the removal of the other inner fairing.



REMOVING THE FRONT PART OF THE LOWER FAIRING

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.

- ◆ Position the vehicle on the stand.
- ◆ ★ Unscrew and remove the screw (1).
- ◆ ★ Unscrew and remove the two screws (2).
- ◆ Remove the front part of the lower fairing (3).



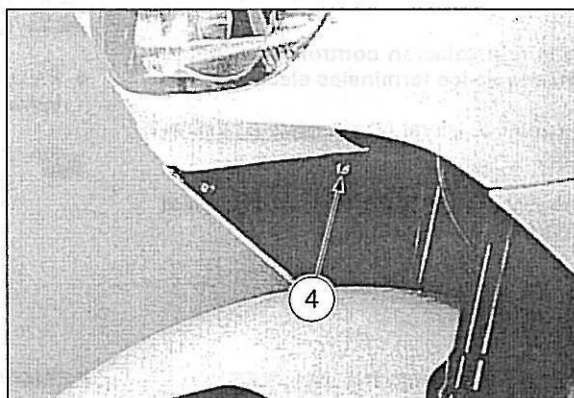
REMOVING THE FRONT PART OF THE FAIRING

Read p. 9-16 carefully (PRECAUTIONS AND GENERAL INFORMATION).

- ◆ Position the vehicle on the stand.
- ◆ Turn the ignition switch to position "OFF".
- ◆ ★ Unscrew and remove the screw (4).
- ◆ ★ Unscrew and remove the three screws (5).
- ◆ ★ Unscrew and remove the two screws (6).

➡ Upon reassembly, rotate the rear-view mirror support so that the fastening holes coincide with those provided on the front part of the fairing. The whole unit must be correctly positioned on the support.

- ◆ Unscrew and remove the screw (7).



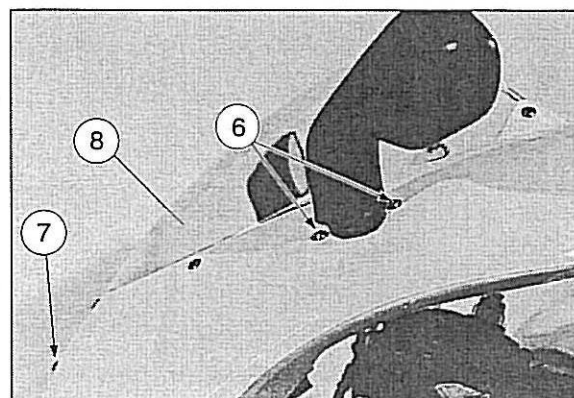
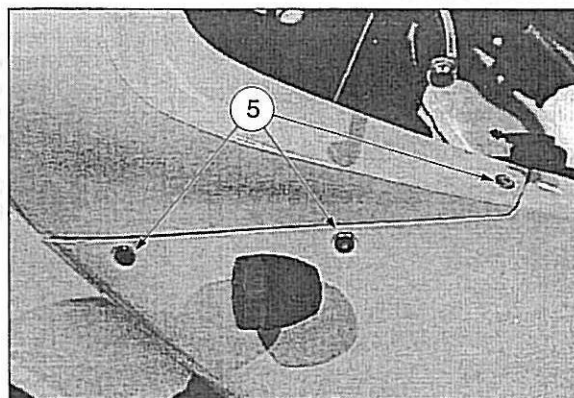
Handle the painted components with care and avoid scraping or damaging them.

- ◆ Move the front part of the fairing (8) slightly forward.
- ◆ Disconnect the electric connector (9).



Upon reassembly, make sure that the electric connector is correctly coupled.

- ◆ Remove the front part of the fairing (8) completely, together with the headlight and the rear-view mirrors.





REMOVING THE RIDER SADDLE

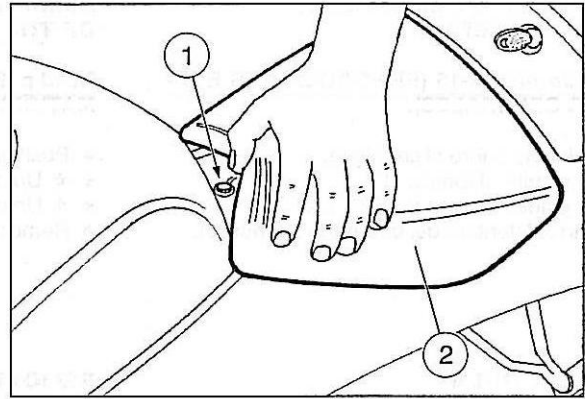
- ◆ Position the vehicle on the stand..
- ◆ Partially lift the front edge of the saddle (see figure).
- ◆ Unscrew and remove the screw (1) and take the bushing.

Screw (1) driving torque: 7 Nm (0.7 kgm).

- ◆ Raise and remove the saddle (2).


 Upon reassembly, insert the rear tangs of the saddle (2) in the relevant seats (see figure).

 Before leaving, make sure that the saddle (2) is properly positioned and locked.

**REMOVING THE PASSENGER SEAT**

- ◆ Remove the glove/tool kit compartment cover.
- ◆ ★ Unscrew and remove the screw (3).

Screw (3) driving torque: 12 Nm (1.2 kgm)

 Do not use any tool (screwdriver, etc.) for the removal and insertion of the grab strap loop (4).

- ◆ ★ Withdraw the passenger grab strap (5), push it from the inside of the compartment removing the grab strap loop (4).
- ◆ Unscrew and remove the screw (6) and take the bushing and the nut.

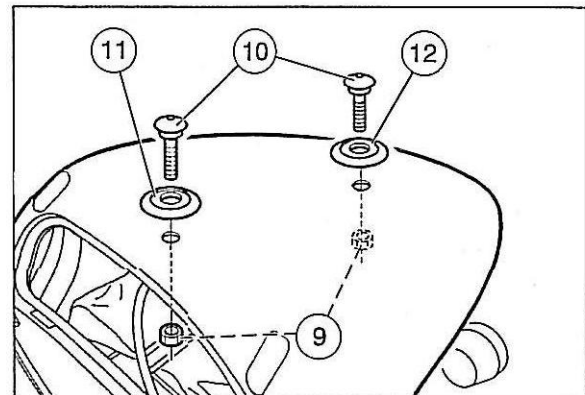
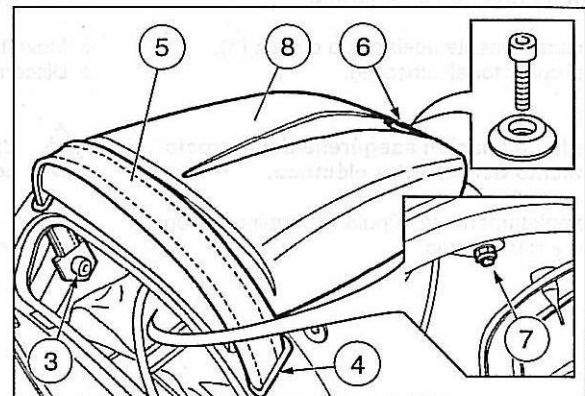
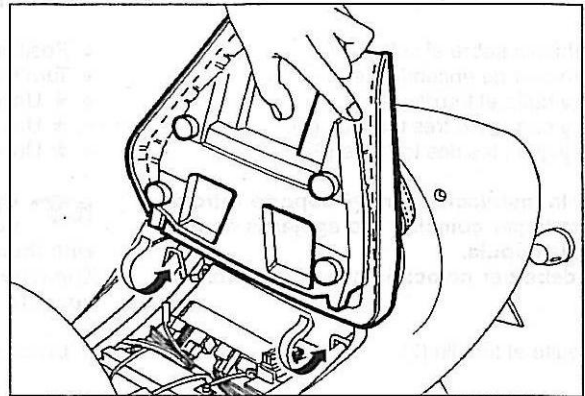
Screw (6) driving torque: 7 Nm (0.7 kgm).

- ◆ Working inside the compartment, unscrew and remove the nut (7), taking care not to lose it.
- ◆ Raise and remove the passenger seat (8).

If the passenger seat is not installed, proceed as follows:

- ◆ Loosen and remove the two nuts (9).
- ◆ Withdraw the two screws (10) and take the two small plugs (11) and (12).

Screw (10) driving torque: 1.5 Nm (0.15 kgm).



REMOVING THE FUEL TANK

Carefully read p. 9-7 (FUEL) and p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.



Risk of fire.

Wait until the engine and the exhaust silencer have completely cooled down.



Fuel vapours are noxious for your health.

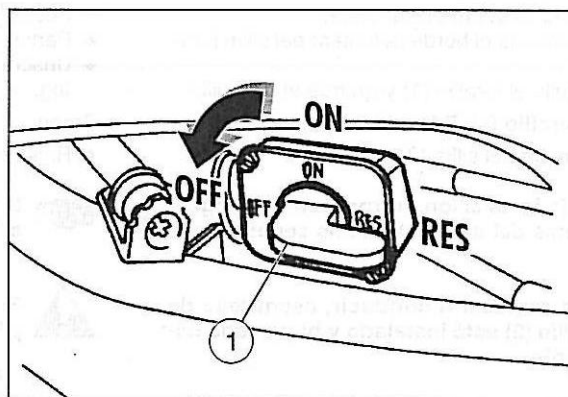
Before proceeding, make sure that the room in which you are working is properly ventilated.

Do not inhale fuel vapours.

Do not smoke and do not use naked flames.

Do not dispose of fuel in the environment.

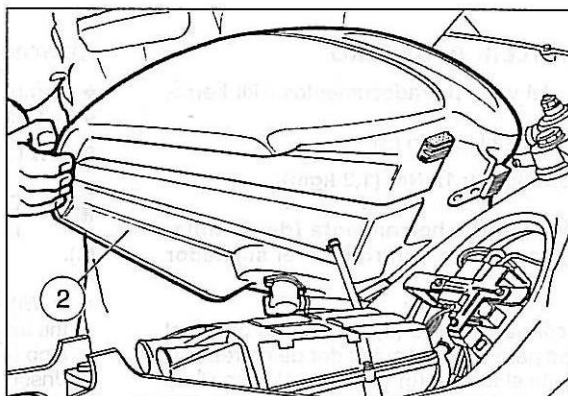
- ◆ Move the fuel tap lever (1) to position "OFF".



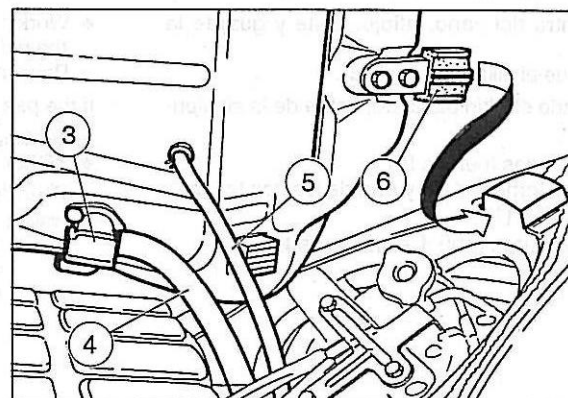
It is possible to remove the tank from the vehicle either with or without fuel inside it.

If the tank is full, before proceeding with the following operations, empty it, see "USE AND MAINTENANCE" manual.

- ◆ Remove the rider saddle, see p. 9-105 (REMOVING THE RIDER SADDLE).
- ◆ From the left side of the vehicle, seize the fuel tank (2) firmly with both hands, withdraw it from behind and lift it.
- ◆ Incline the fuel tank (2) slightly leftwards (see figure).
- ◆ Withdraw the fuel pipe (4) from the cock (3).
- ◆ Withdraw the water drain pipe (5) from the fuel tank plug.
- ◆ Remove the fuel tank (2) completely.



Upon reassembly, make sure that the protruding element (6) is correctly inserted in the frame mounting lug (see figure).



REMOVING THE REAR PART OF THE FAIRING

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.

- ◆ Position the vehicle on the stand.
- ◆ Unscrew and remove the four screws "A".
- ◆ Remove the rider saddle, see p. 9-105 (REMOVING THE RIDER SADDLE).
- ◆ Remove the passenger seat, see p. 9-105 (REMOVING THE PASSENGER SEAT).
- ◆ Disconnect the electric connector (1).



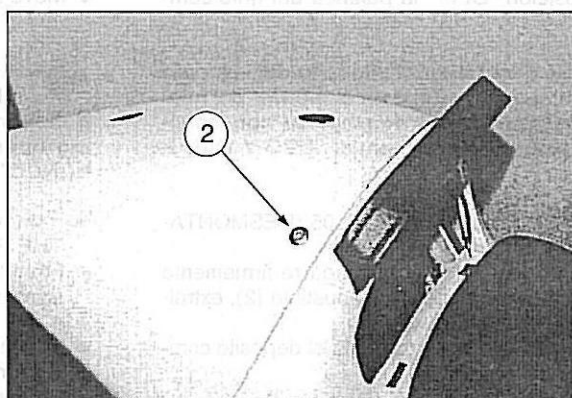
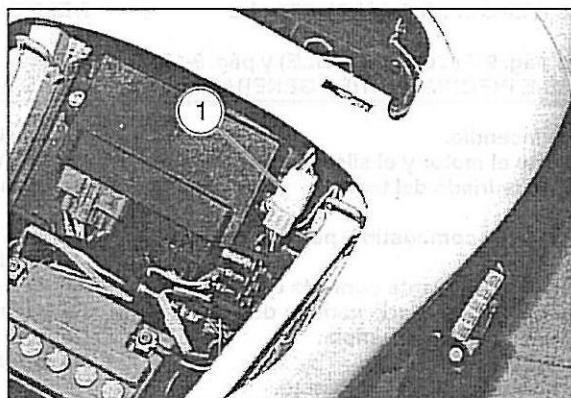
Upon reassembly, make sure that the electric connector (6) is correctly coupled.

- ◆ ★ Unscrew and remove the upper screw (2) and take the nut positioned under it.
- ◆ ★ Unscrew and remove the side screw (3).



Handle the painted components with care and avoid scraping or damaging them.

- ◆ Remove the rear part of the fairing (4) complete with rear light, glove compartment and number-plate holder.

**REMOVING THE REAR FAIRING**

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.

- ◆ Position the vehicle on the stand.
- ◆ Remove the rear part of the fairing, see above (REMOVING THE REAR PART OF THE FAIRING).



The nut (5) is not present on the left side of the vehicle.

- ◆ Keep the inner nut (5) in its position.
- ◆ Unscrew and remove the screw (6).

Screw (6) driving torque: 5 Nm (0.5 Kgm).

- ◆ Take the nut (5) and the bushing (7).
- ◆ Shift the front part of the rear fairing moderately towards the outside and temporarily insert the screw (6) in its seat and tighten the nut (5).
- ◆ Keep the inner nut (8) in its position.
- ◆ Unscrew and remove the screw (9).

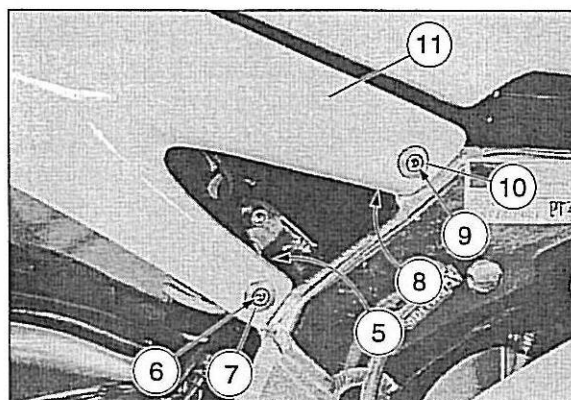
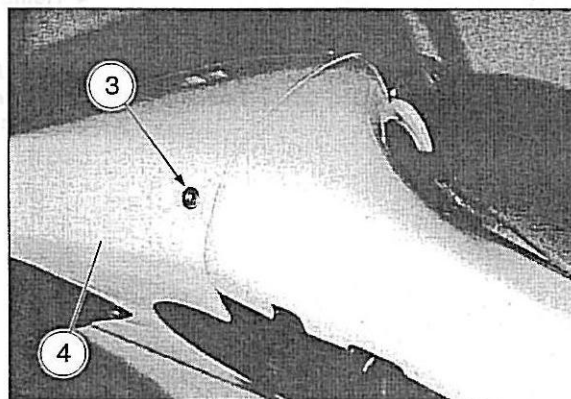
Screw (9) driving torque: 5 Nm (0.5 Kgm).

- ◆ Take the nut (8) and the bushing (10).



Handle the painted components with care and avoid scraping or damaging them.

- ◆ Remove the rear fairing (11).

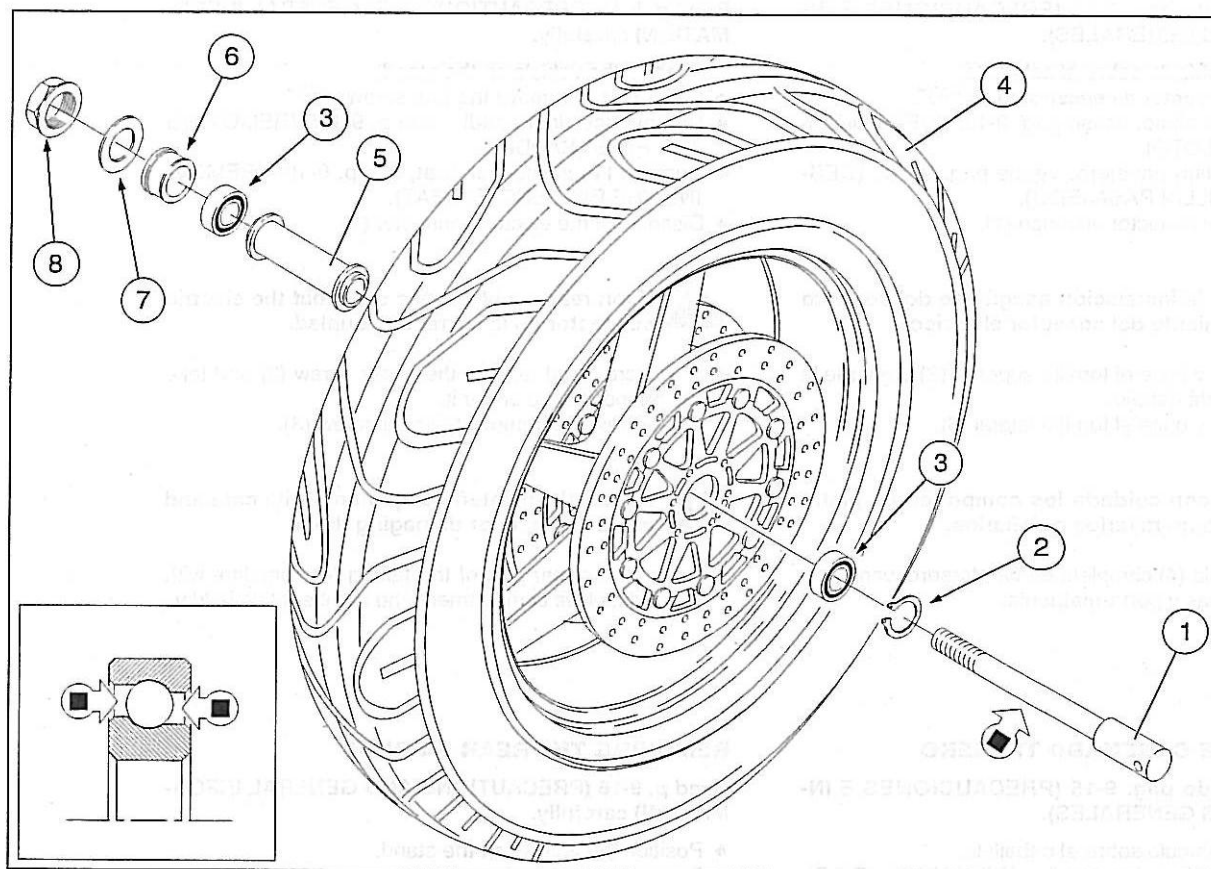


FRONT WHEEL

Key

- 1) Wheel pin
- 2) Seeger ring
- 3) Bearings
- 4) Complete wheel
- 5) Inner spacer
- 6) Right spacer
- 7) Washer
- 8) Nut

■ = GREASE, see p. 9-20 (LUBRICANT CHART).



REMOVING THE WHOLE WHEEL

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.



While disassembling and reassembling the wheel, be careful not to damage the brake pipes, the discs and the pads.



To remove the front wheel it is necessary to use the appropriate front and rear support stands **OPT.**

- ◆ Position the vehicle on the appropriate rear support stand **OPT.**
- ◆ Position the vehicle on the appropriate front support stand **OPT.**



Make sure that the vehicle is stable.

- ◆ Have someone keep the handlebar steady in running position, so that the steering is locked.

Brake caliper screw (1) driving torque:
50 Nm (5 kgm).

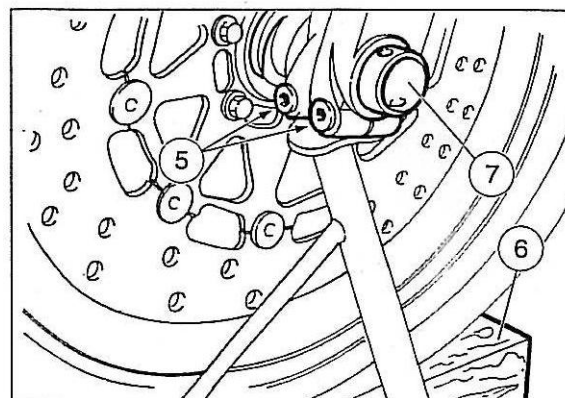
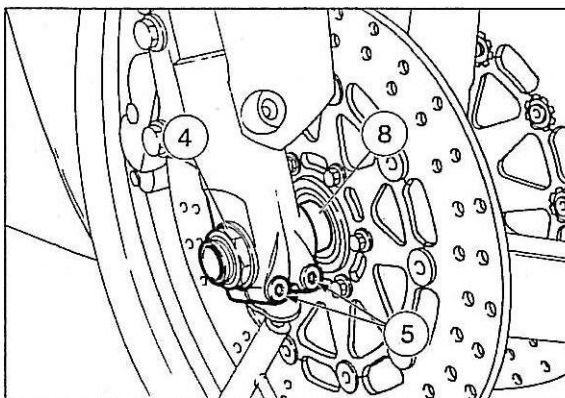
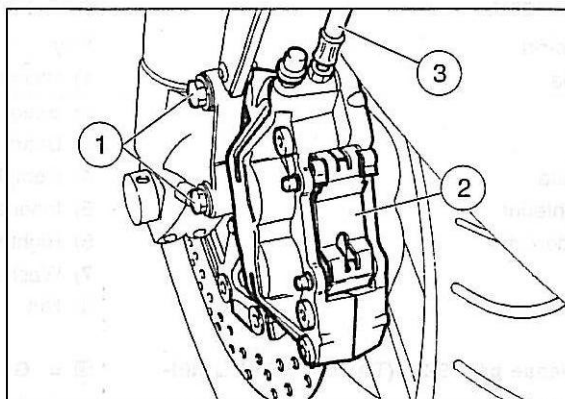
- ◆ ★ Unscrew and remove the two screws (1) that fasten the front brake caliper (2).
- ◆ ★ Withdraw the brake caliper (2) from the disc, leaving it attached to the pipe (3).



Never pull the front brake lever after removing the calipers, otherwise the pistons may go out of their seats, thus causing the outflow of the brake fluid.

Wheel nut (4) driving torque:
80 Nm (8 kgm).

- ◆ Loosen and remove the nut (4), taking the washer.
- ◆ ★ Partially unscrew the two screws (5) from the wheel pin clamp.
- ◆ Put a support (6) under the tyre, in such a way as to keep the wheel in its position after loosening it.
- ◆ Withdraw the wheel pin (7) from the left side.
- ◆ Remove the wheel withdrawing it from the front and take the left spacer ring (8) if it has come out of its seat.

**CHANGING THE BEARINGS**

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.

- ◆ Remove the wheel, see above (REMOVING THE WHOLE WHEEL).
- ◆ Clean both sides of hub with a clean cloth.
- ◆ Remove the snap ring (11).
- ◆ By means of the appropriate extractor **OPT.**, extract the left bearing (12) and the rear bearing (13).



The bearings must be checked and if necessary changed every time they are disassembled.

- ◆ Take the inner spacer (14).
- ◆ Thoroughly clean the inside of the hub.

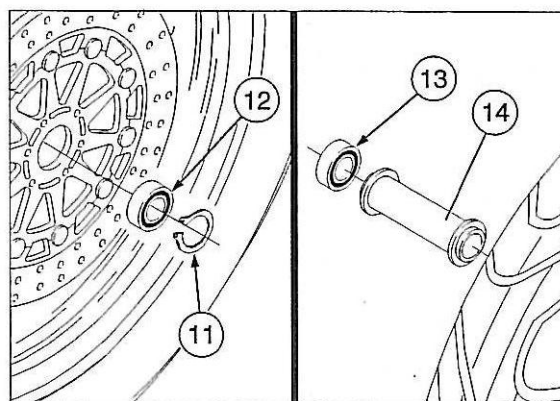


Wash all the components with a clean detergent.



Upon reassembly, to insert the bearings use a punch with diameter equal to the outer ring of the bearings.

Do not strike against the balls and/or the inner ring. The components must be reassembled from the opposite side of the brake disc, making sure that the bearing (13) is perfectly in contact.



CHECKING THE COMPONENTS

Make sure that all the components are sound, particularly the following.

BEARINGS

- ◆ Manually rotate the inner ring (1). It should rotate smoothly, without jamming and/or noise. There should be no axial clearance. The bearings showing the defects mentioned above should be changed.



Apply grease on the balls (or rollers) on both sides of the bearings, see p. 9-20 (LUBRICANT CHART).

SEALS

- ◆ Check the integrity of the gaskets: change them if they are damaged or excessively worn.

EJE DE LA RUEDA

- ◆ Check the eccentricity of the pin (2) by means of a comparator. If the eccentricity exceeds the limit value, change the pin (2).

Maximum eccentricity: 0.2 mm

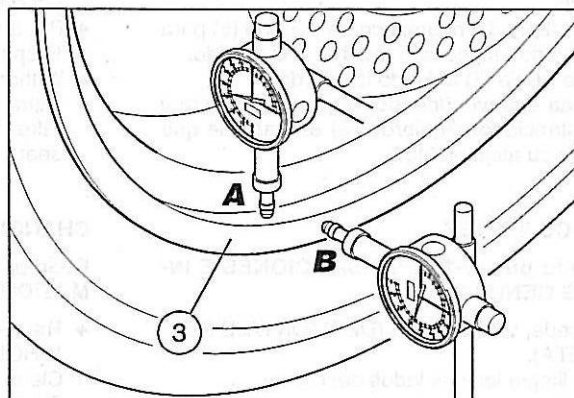
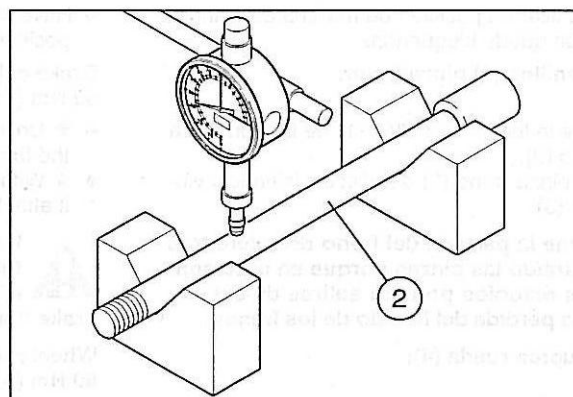
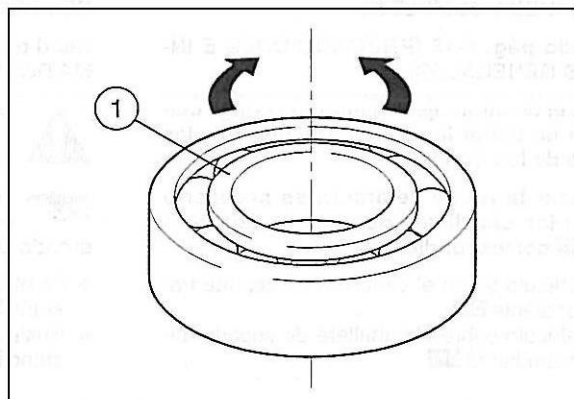
RIM

- ◆ Using a comparator, make sure that the radial (A) and axial (B) eccentricity of the rim (3) do not exceed the limit value. Excessive eccentricity is usually caused by worn or damaged bearings. If, after changing the bearings, the value does not return within the indicated limit, change the rim. (3).

Maximum radial and axial eccentricity: 2 mm

TYRE

Check the conditions of the tyre, see p. 9-33 and p. 7-22 (TYRES).



REASSEMBLING THE WHEEL

Read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) carefully.



While disassembling and reassembling the wheel, be careful not to damage the brake pipes, the discs and the pads.

The arrow on the side of the wheel indicates the rotation direction. Be careful to reassemble the wheel correctly, as indicated by the arrow on the left side of the vehicle (see figure).

- ◆ Spread a film of lubricating grease on the whole length of the wheel pin (7), see p. 9-20 (LUBRICANT CHART).



The spacer ring (8) must be positioned with the side having wider diameter facing the fork right rod.

- ◆ Position the spacer ring (8) in its seat on the wheel.
- ◆ Position the wheel between the fork rods on the support (6).
- ◆ Move the wheel until its central hole and the holes on the fork are aligned.



Danger of injury.

Do not introduce your fingers to align the holes.

- ◆ Introduce the wheel pin (7) completely.
- ◆ Position the washer and tighten the nut (4) manually.
- ◆ Tighten the nut (4) definitively.

When nut (4) driving torque:
80 Nm (8 kgm).



Proceed with care, in order not to damage the brake pads.

- ◆ ★ Insert the brake caliper (2) on the disc and position it so that its fastening holes and the holes on the support are aligned.



Upon reassembly of the brake caliper, replace the caliper fastening screws (1) with two new screws of the same type.

- ◆ ★ Screw and tighten the two screws (1) that fasten the brake caliper.

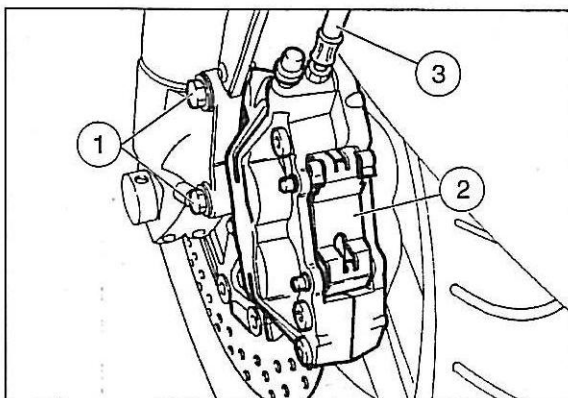
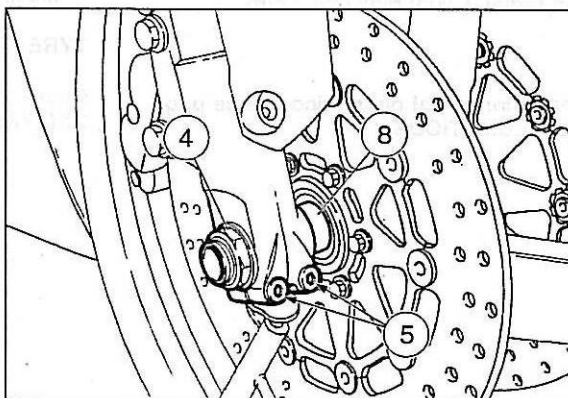
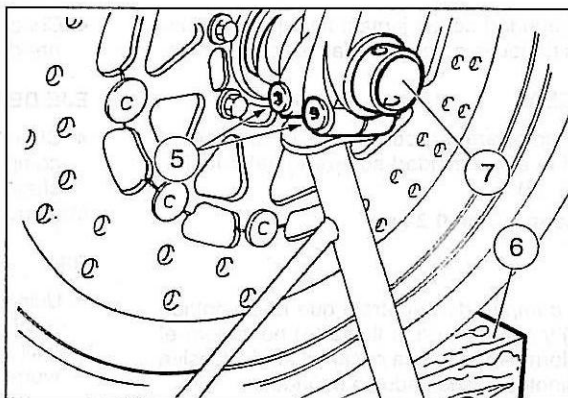
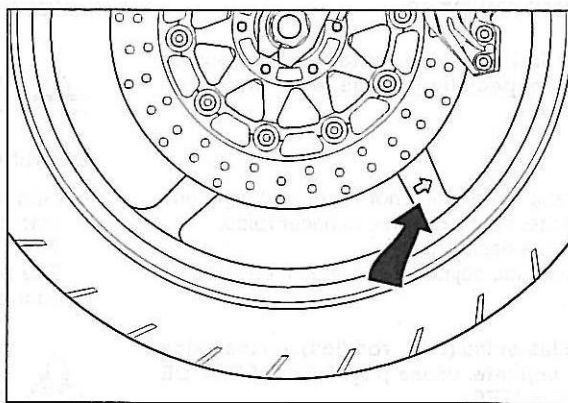
Brake caliper screw (1) driving torque:
50 Nm (5 kgm)

- ◆ With pulled front brake lever, press the handlebar repeatedly, thrusting the fork downwards. In this way the fork rods will settle properly.
- ◆ ★ Tighten the two screws (5) of the wheel pin clamp.

Wheel pin clamp screw (5) driving torque:
25 Nm (2.5 kgm)



After reassembly, pull the front brake lever repeatedly and check the correct functioning of the braking system.

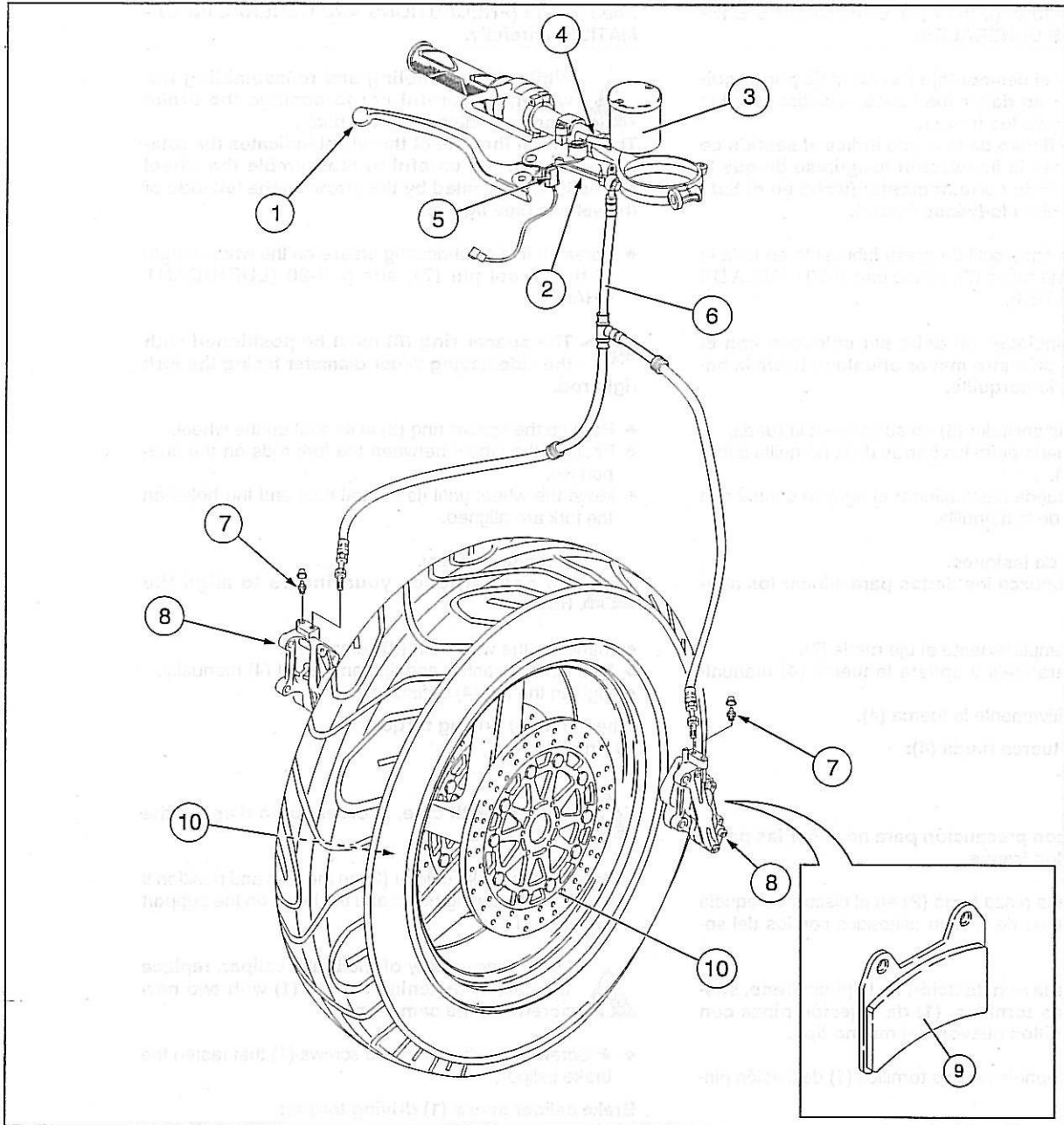


FRONT BRAKE**Key**

- 1) Brake control lever
- 2) Brake fluid pump
- 3) Brake fluid tank
- 4) Brake fluid pipe from tank to pump
- 5) Rear stoplight switch
- 6) Brake fluid pipes from pump to calipers
- 7) Air valves
- 8) Brake calipers
- 9) Brake pads
- 10) Brake discs

For information on, see:


- Brake fluid, see p. 9-13 (BRAKE FLUID).
- Brake fluid checking and topping up, see p. 2-30 (BRAKES).
- Braking system bleeding, see p. 2-34 (BLEEDING THE BRAKE HYDRAULIC CIRCUIT).
- Brake pad wear, see p. 2-32 (BRAKE PADS).
- Braking system components, see p. 8-53 (BRAKES-WHEELS).




CHANGING THE BRAKE PADS

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and page 2-31 (BRAKE PADS).


- ◆ Position the vehicle on the stand.

 The following operations are referred to as a single caliper, but are valid for both.


- ◆ By means of a spanner, take the head of one pin and then the head of the other and rotate them as much as necessary to bring the two locking pins (1) in a position from which they can be withdrawn.
- ◆ Withdraw the two locking pins (1).
- ◆ Withdraw the two pins (2).
- ◆ Take the protection cover (3).

 By means of a spanner, take one pad and then the other and moderately shake them in the transversal direction, in such a way as to eliminate any pressure exerted by the pins and make it easier to extract the pads.

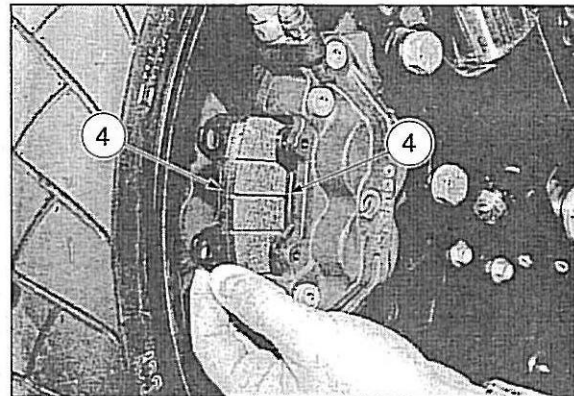
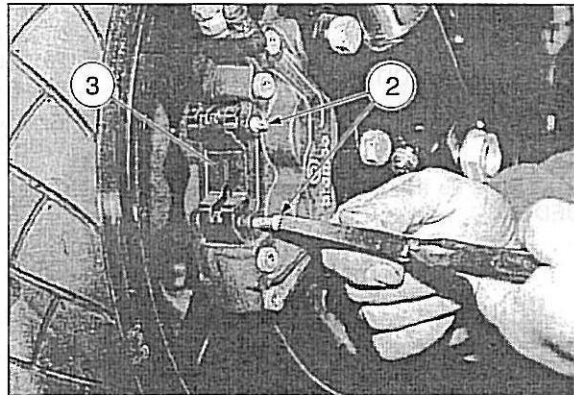
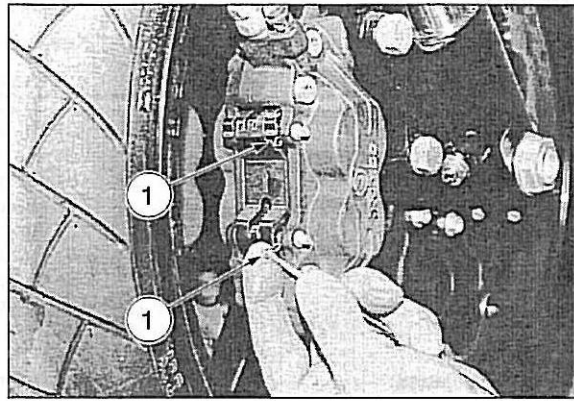
- ◆ Extract the two pads (4).

 After removing the pads, do not operate the brake control lever, otherwise the caliper pins may go out of their seats with a consequent leakage of brake fluid.


- ◆ Insert two new pads, positioning them so that the holes are aligned with the holes present on the caliper.

 Always change both pads and make sure that they are correctly positioned inside the caliper.

- ◆ Position the protection cover (3) with the stamped arrow directed upwards.
 - ◆ Insert the two pins (2).
 - ◆ Insert the two locking elastic pins (1).
- Check the brake fluid level, see p. 2-30 (BRAKES).



CHECKING THE BRAKE DISCS

 The following operations must be performed with the brake discs installed on the wheel; they are referred to a single disc, but are valid for both.

- ◆ Check the wear on the disc by measuring the minimum thickness in several places by means of a micrometer. If, even in one point of the disc only, the minimum thickness is below the minimum value, change the disc.

Brake disc min. thickness: 3.5 mm

- ◆ Using a comparator, make sure that the maximum run out of the disc does not exceed the limit value, otherwise change it, see below (REMOVING THE BRAKE DISCS).


Brake disc max. run out: 0.3 mm

 To bleed the braking systems, see p. 2-34 (BLEEDING THE BRAKE HYDRAULIC CIRCUIT).

REMOVING THE BRAKE DISCS

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION).


- ◆ Remove the front wheel, see p. 9-113 (REMOVING THE WHOLE WHEEL).


 The following operations are referred to a single disc, but are valid for both.

To unscrew the screws (1), it is advisable to use a pneumatic screwdriver to release them from the LOCTITE® 243.

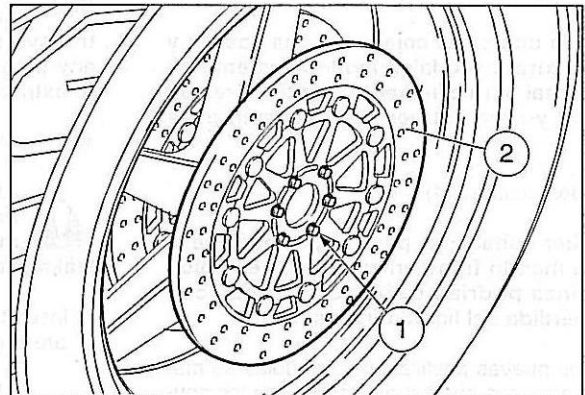
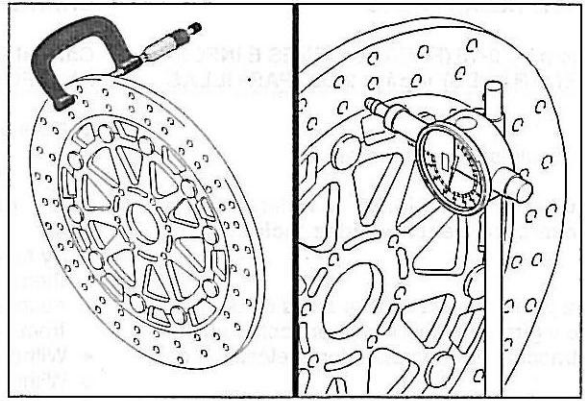
- ◆ Unscrew and remove the six brake disc screws (1).

Brake disc screw (1) driving torque:
30 Nm (3 kgm) + LOCTITE® 243.

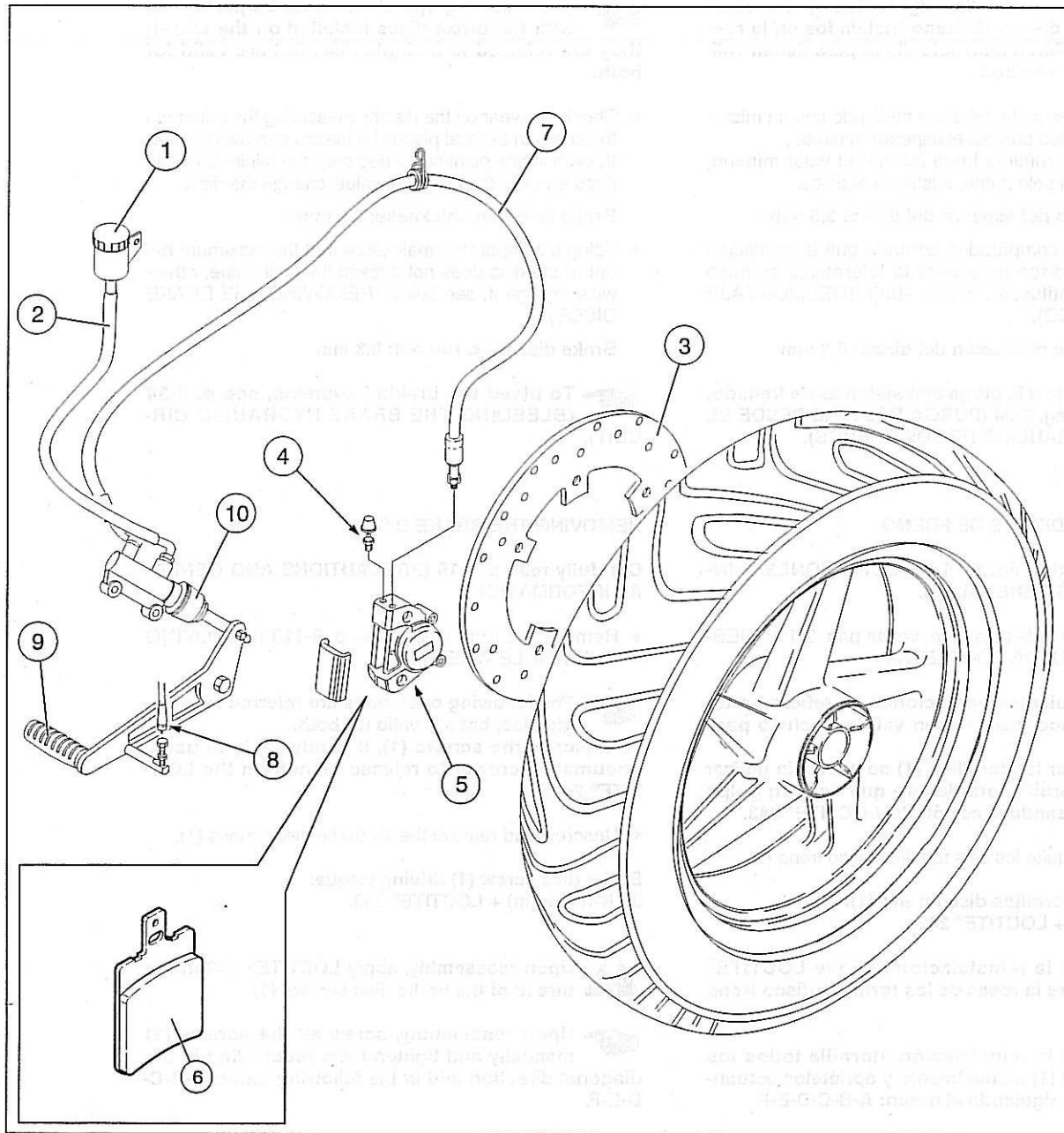
 Upon reassembly, apply LOCTITE® 243 on the thread of the brake disc screws (1).

 Upon reassembly, screw all the screws (1) manually and tighten them proceeding in the diagonal direction and in the following order: A-B-C-D-E-F.

- ◆ Remove the brake disc (2).



REAR BRAKE



Key

- 1) Brake fluid tank
- 2) Brake fluid pipe from tank to pump
- 3) Brake disc
- 4) Bleeder
- 5) Brake caliper
- 6) Brake pads
- 7) Brake fluid pipe from pump to caliper
- 8) Rear stop light switch
- 9) Brake control pedal
- 10) Brake pump


For information on, see:

- Brake fluid, see p. 9-13 (BRAKE FLUID).
- Brake fluid checking and topping up, see p. 2-30 (BRAKES).
- Braking system bleeding, see p. 2-34 (BLEEDING THE BRAKE HYDRAULIC CIRCUIT).
- Brake pedal adjustment, see pág. 9-31 (REAR BRAKE ADJUSTMENT).
- Brake pad wear, see p. 2-32 (BRAKE PAD WEAR).
- Braking system components, see p. 8-53 (BRAKES-WHEELS).


CHANGING THE BRAKE PADS

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and page 2-31 (BRAKE PADS).


- ◆ Position the vehicle on the stand.
- ◆ Remove the plastic cover (1).
- ◆ Withdraw the pin (2) and take the pad pressing spring (3).

 By means of a spanner, take one pad and then the other and moderately shake them in the transversal direction, in such a way as to eliminate any pressure exerted by the pins and make it easier to extract the pads.

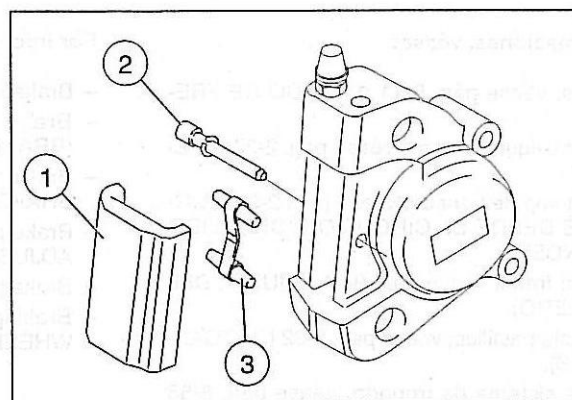
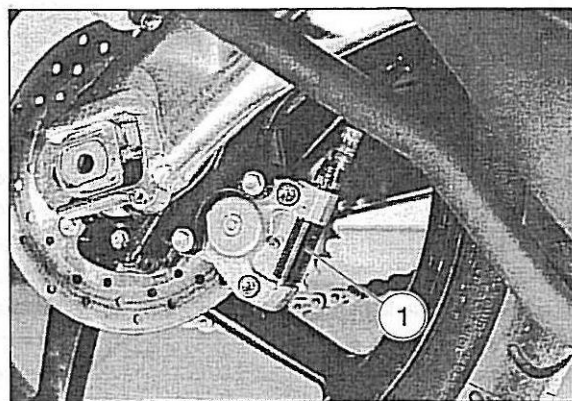
- ◆ Extract the two pads (4).

 After removing the pads, do not operate the brake control lever, otherwise the caliper pins may go out of their seats with a consequent leakage of brake fluid.


- ◆ Insert two new pads, positioning them so that the holes are aligned with the holes present on the caliper.

 Always change both pads and make sure that they are correctly positioned inside the caliper.

- ◆ Position the pad pressing spring (3).
- ◆ Keeping the pad pressing spring (3) compressed in the central part, insert the pin (2) so that it passes over the spring.
- ◆ Position the plastic cover (1).
- ◆ Check the brake fluid level, see p. 2-30 (BRAKES).



CHECKING THE BRAKE DISC

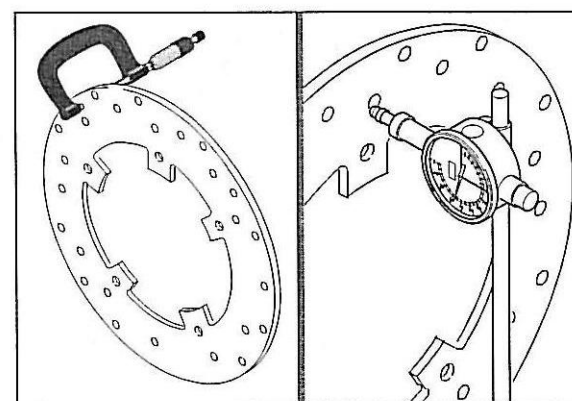
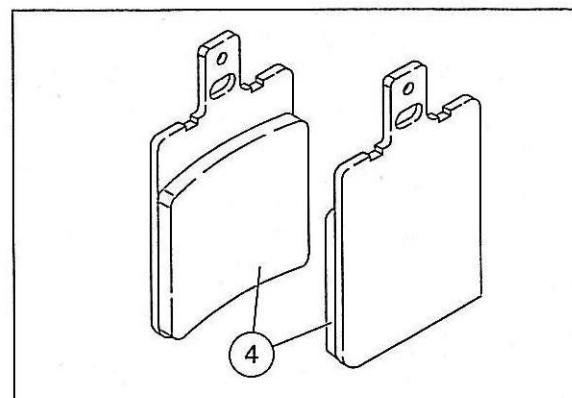
 Operations to be performed with the brake disc installed on the wheel.

- ◆ Check the wear on the disc by measuring the minimum thickness in several places by means of a micrometer. If, even in one point of the disc only, the minimum thickness is below the minimum value, change the disc, p. 9-123 (REMOVING THE BRAKE DISCS).

Brake disc min. thickness: 4 mm

- ◆ Using a comparator, make sure that the maximum run out of the disc does not exceed the limit value, otherwise change it, p. 9-123 (REMOVING THE BRAKE DISCS).


Brake disc max. run out : 0.3 mm



REMOVING THE BRAKE DISC

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION).

- ◆ Remove the rear wheel, see pág. 9-113 (REMOVING THE WHOLE WHEEL).

 To unscrew the screws (1), it is advisable to use a pneumatic screwdriver to release them from the LOCTITE® 243.

- ◆ Unscrew and remove the five brake disc screws (1).

Brake disc screw (1) driving torque:
25 Nm (2.5 kgm) + LOCTITE® 243.

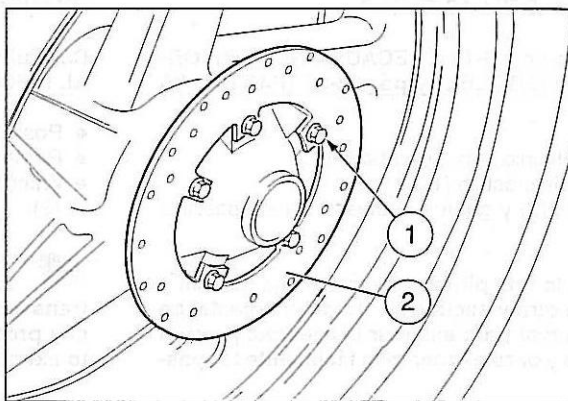


Upon reassembly, apply LOCTITE® 243 on the thread of the brake disc screws.



Upon reassembly, screw all the screws manually and tighten them proceeding in the diagonal direction and in the following order: A-B-C-D-E.

- ◆ Remove the brake disc (2).



REMOVING THE BRAKE PUMP.



Handle the fluid with care: it chemically alters paints, plastic parts, rubber, etc.

DO NOT DISPOSE OF THE FLUID
IN THE ENVIRONMENT

- ◆ Remove the rubber protection cap.
- ◆ Insert a transparent plastic pipe in the caliper air valve (3) and insert the other end of the pipe in a container.
- ◆ Loosen the air valve (3) by giving it approximately one turn.
- ◆ When all the fluid has flown out, unscrew and remove the screw (4) and take the two sealing washers.

Screw (4) driving torque: 20 Nm (2 kgm).

- ◆ Loosen and move the pipe clamp (5).
- ◆ Withdraw the pipe (6) from the coupling on the pump.
- ◆ Unscrew and remove the two screws (7).

Screw (7) driving torque: 12 Nm (1.2 kgm).

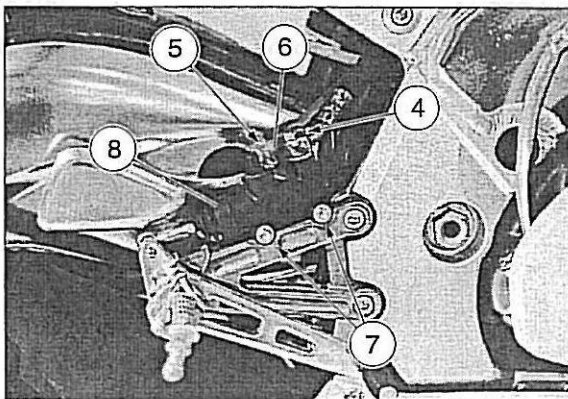
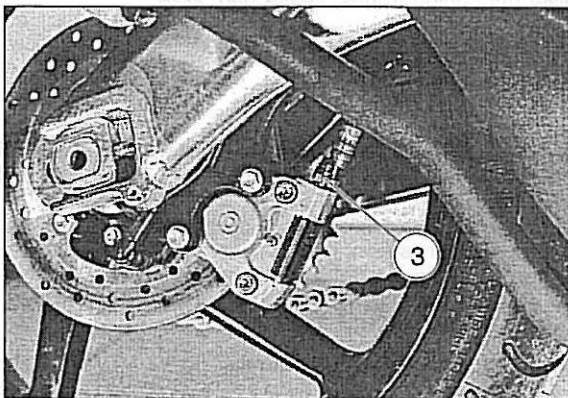
- ◆ Remove the pump (8) by withdrawing it in the forward direction.



Avoid removing the joint from the brake pedal, unless it is absolutely necessary. If the joint has been removed, upon reassembly apply LOCTITE® 270 on the thread and tighten thoroughly.



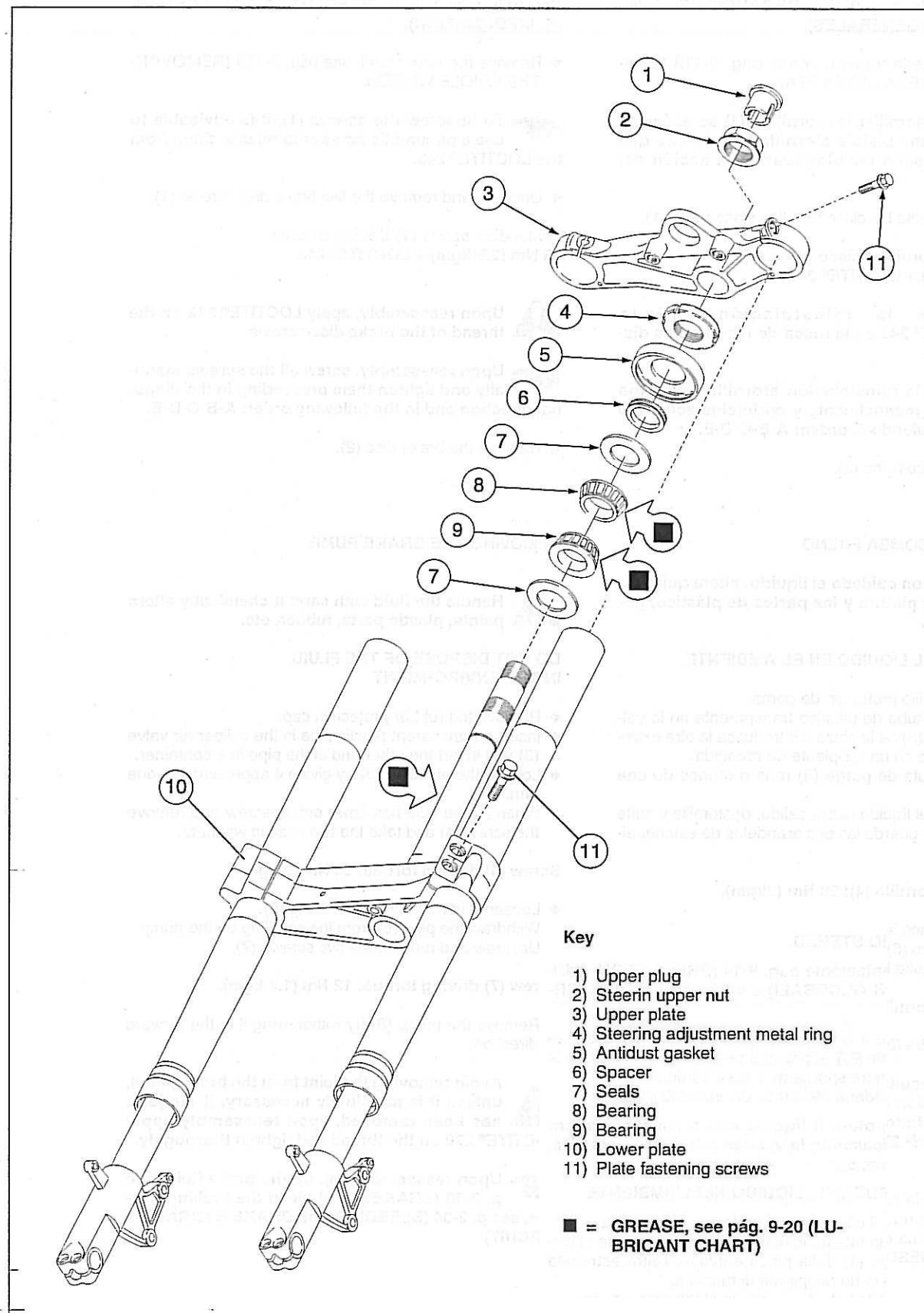
Upon reassembly, top up the brake fluid, see p. 2-30 (BRAKES) and bleed the braking system, see p. 2-34 (BLEEDING THE BRAKE HYDRAULIC CIRCUIT).



STERZO

DIRECCION

STEERING



DISASSEMBLING THE STEERING

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and p. 9-130 (STEERING).

- ◆ Position the vehicle on the appropriate centre support stand **OPT** on a lifting platform, with the front wheel protruding from the platform edge.
- ◆ Raise the lifting platform to a height of approx. 230 mm.



Handle the fluid with care: it chemically alters paints, plastic parts, rubber, etc.

DO NOT DISPOSE OF THE FLUID IN THE ENVIRONMENT

- ◆ ★ Remove the rubber protection cap.
- ◆ ★ Insert a transparent plastic pipe in the caliper air valve (1) and insert the other end of the pipe in a container.
- ◆ ★ Loosen the air valve (1) by giving it approximately one turn.
- ◆ When all the fluid has flown out, unscrew and remove the screw (2) and take the two sealing washers.

Screw (2) driving torque: 20 Nm (2 kgm).



To carry out the following operations it is not necessary to remove the front part of the fairing, but it is advisable to do it in order to have more freedom of movement, see pág. 9-103 (REMOVING THE FRONT PART OF THE FAIRING).

- ◆ ★ Unscrew and remove the screw (3) that fixes the half-handlebar (4) to the upper plate (5).
- ◆ ★ Completely unscrew the screw (6) that fixes the upper plate (5) to the front fork.
- ◆ Remove the upper plug (7).
- ◆ Unscrew and remove the upper nut (8).
- ◆ Withdraw the upper plate (5) complete with ignition switch / steering lock from above.
- ◆ Bend the plate (5) forward, interposing a cloth in order to avoid damaging the dashboard.



Due to the weight of the front part of the vehicle, the following operations must be performed by two persons. Fix the operating procedure before starting work.

The removal must be carried out very carefully.



Support the front part of the vehicle, in order to prevent it from accidentally falling down.

- ◆ While one of the two operators keeps the front part of the vehicle in the correct position, the other must loosen the adjusting metal ring (9).

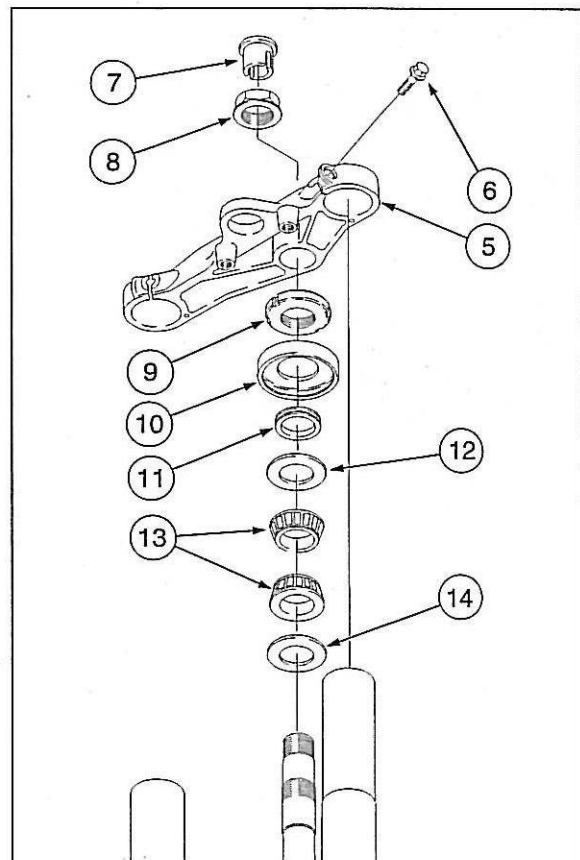
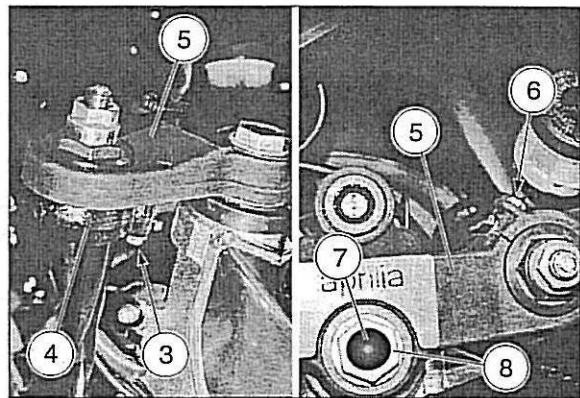
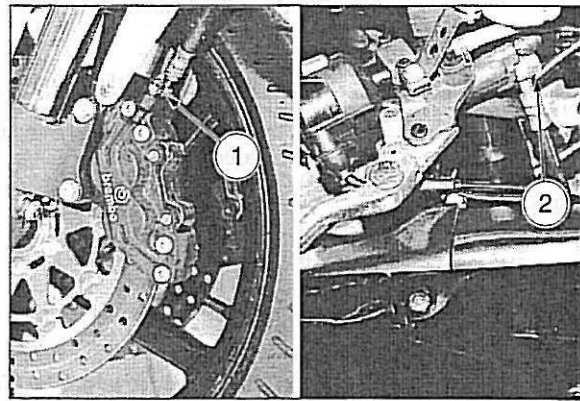


During the removal of the front part of the vehicle, take care to prevent the brake fluid pipes from getting entangled.

- ◆ Withdraw the front part of the vehicle from the steering tube.
- ◆ Take the following components, in the given order:
 - Adjusting metal ring (9)
 - Antidust gasket (10)
 - Spacer ring (11)
 - Seal (12)
 - Bearings (13)
 - Seal (14)



Wash all the components with a clean detergent.



CHECKING THE COMPONENTS

BEARINGS


See p. 9-115 (CHECKING THE COMPONENTS, BEARINGS).

GASKETS

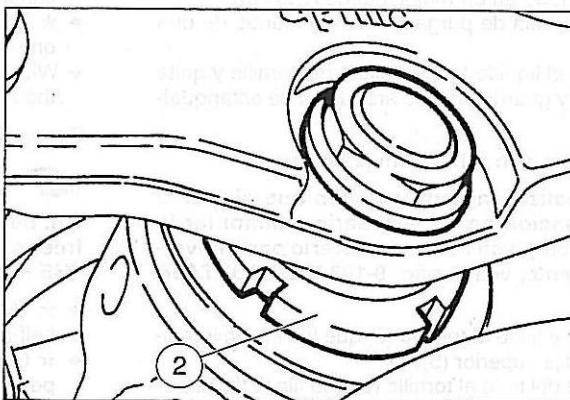
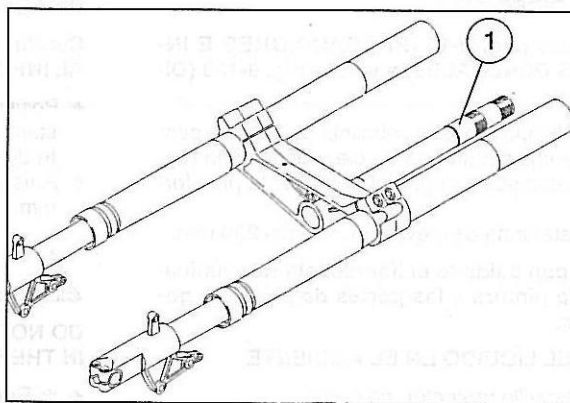
See p. 9-115 (CHECKING THE COMPONENTS, SEALS).

REASSEMBLING THE STEERING

- ◆ Spread a layer of lubricating grease on the whole length of the steering pin (1), see p. 9-20 (LUBRICANT CHART).

 For the reassembly, carry out the operations described for the disassembly in the reverse order.

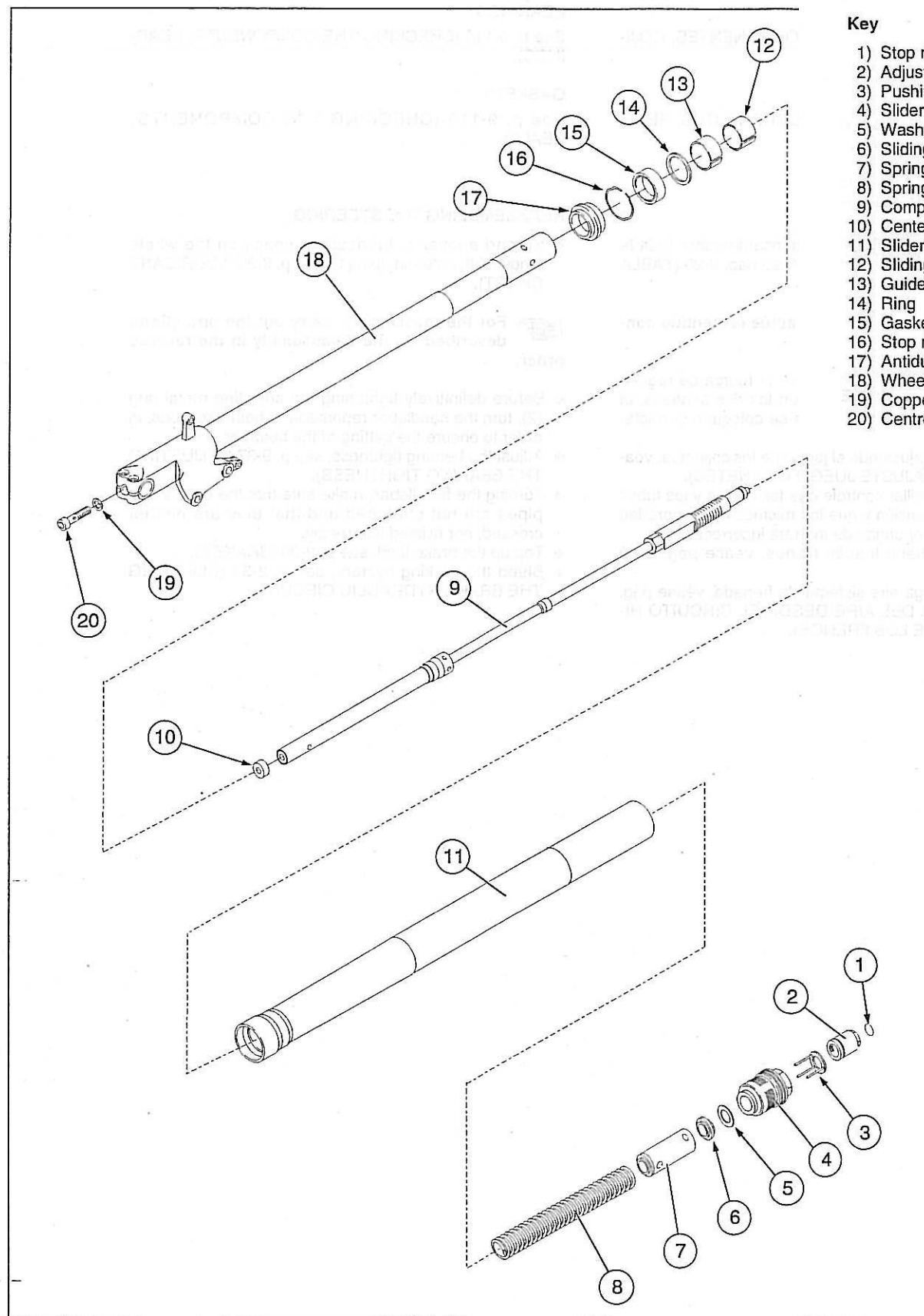
- ◆ Before definitively tightening the adjusting metal ring (2), turn the handlebar repeatedly in both directions, in order to ensure the setting of the bearings.
- ◆ Adjust the bearing tightness, see p. 9-37 (ADJUSTING THE BEARING TIGHTNESS).
- ◆ Turning the handlebar, make sure that the cables and pipes are not stretched and that they are neither crossed, nor twisted incorrectly.
- ◆ Top up the brake fluid, see p. 2-30 (BRAKES).
- ◆ Bleed the braking system, see p. 2-34 (BLEEDING THE BRAKE HYDRAULIC CIRCUIT).



FORCELLA ANTERIORE

HORQUILLA DELANTERA

FRONT FORK




FRONT FORK**CHANGING THE FORK OIL**


Carefully read p. 9-12 (FORK OIL) and p. 9-39 (INSPECTING THE FRONT SUSPENSION).

- ◆ Carry out the operations marked with the symbol "*" described at p. 9-141 (DISASSEMBLING THE WHEEL-HOLDER TUBE - SLIDER UNIT).
- ◆ Carry out the operations marked with the symbol "*" described at p. 9-153 (REASSEMBLING THE WHEEL-HOLDER TUBE - SLIDER UNIT).


REMOVING THE WHEEL-HOLDER TUBE - SLIDER UNITS

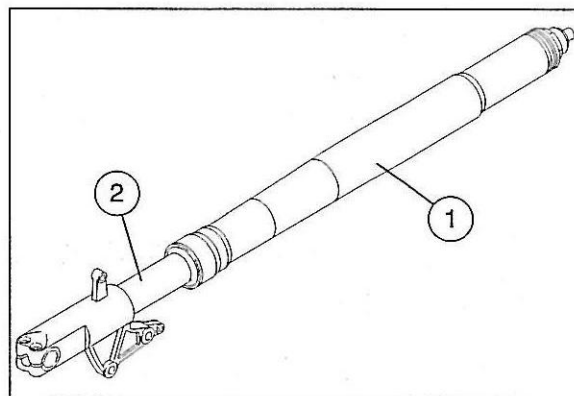
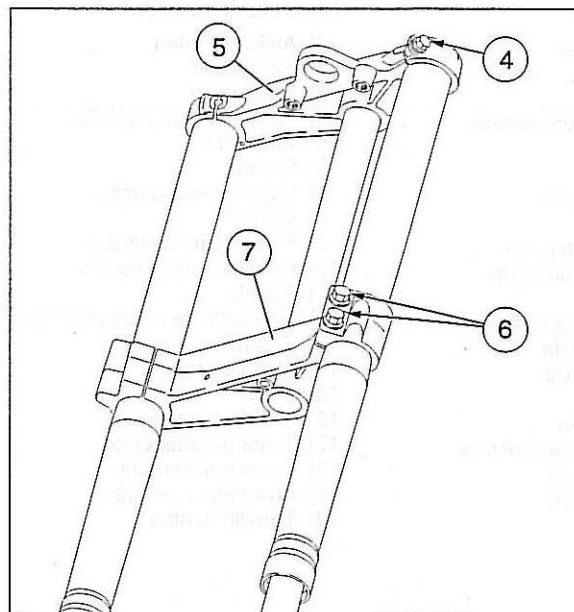
Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and p. 9-39 (INSPECTING THE FRONT SUSPENSION).

 The operations described below are referred to a single wheel-holder tube - slider unit, but are valid for both.

 Do not remove a wheel-holder tube - slider unit before having correctly reinstalled the other wheel-holder tube - slider unit on the vehicle.


- ◆ Remove the front wheel, see p. 9-113 (REMOVING THE WHOLE WHEEL).
- ◆ Remove the front mudguard.
- ◆ Position the vehicle on the appropriate centre support stand **OPT** and remove the front support stand **OPT**.
- ◆ Completely unscrew the screw (4) that fixes the upper plate (5) to the slider (1).
- ◆ Remove the front part of the fairing, see p. 9-103 (REMOVING THE FRONT PART OF THE FAIRING).
- ◆ Completely unscrew the two screws (6) that fix the lower plate (7) to the slider (1).
- ◆ Withdraw the wheel-holder tube (2) complete with the slider (1) from the upper plate (5) and from the lower plate (7).


 If necessary, remove the other wheel-holder tube - slider unit.




DISASSEMBLING THE WHEEL-HOLDER TUBE - SLIDER UNIT


Carefully read p. 9-12 (FORK OIL), p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and p. 9-39 (INSPECTING THE FRONT SUSPENSION).

 The operations marked with the symbol “*” are valid also for the fork oil change.


 The right and left wheel-holder tube - slider units have the same inner components. The operations described below are referred to a single wheel-holder tube - slider unit, but are valid for both.

- ◆ * Remove the wheel-holder tube - slider unit, see p. 9-139 (REMOVING THE WHEEL-HOLDER TUBE - SLIDER UNITS).
- ◆ * Carefully clean the whole wheel-holder tube - slider unit.

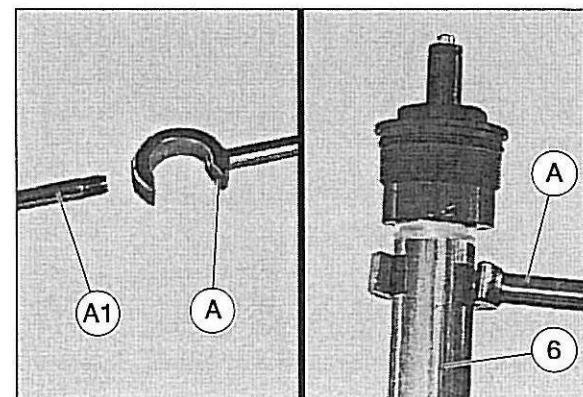
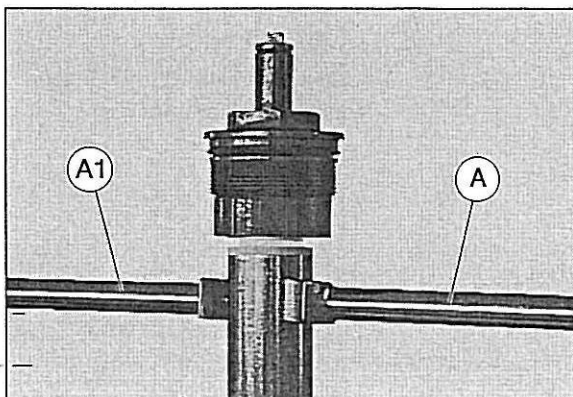
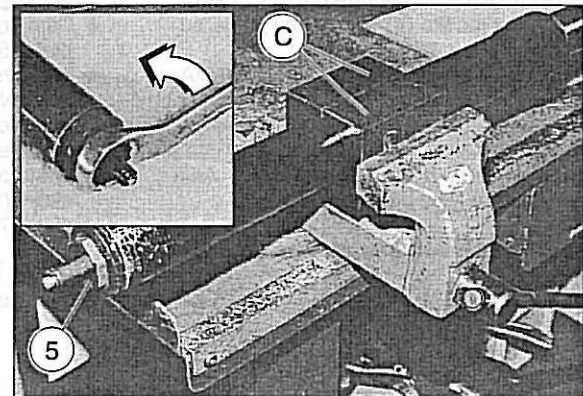
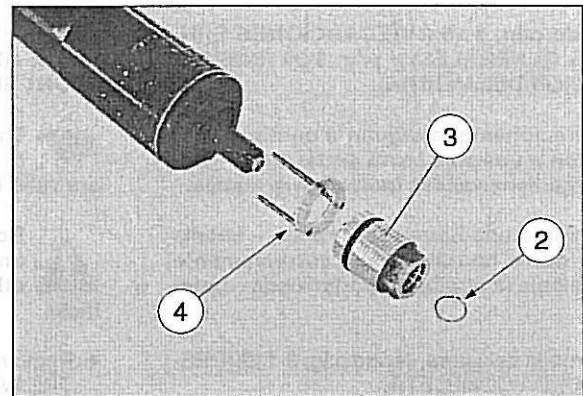
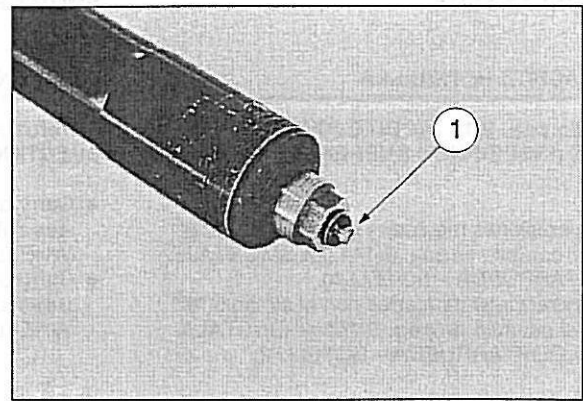
 Before proceeding with the following operations, prepare the appropriate special tools **OPT** (A), (B), (C) and a container with capacity exceeding 450 cu.cm.

 The disassembly must be performed very carefully.

- ◆ * Rotate the upper screw adjuster (1) completely anti-clockwise, in order to reduce the hydraulic braking with extended unit.
- ◆ * Remove the stop ring (2).
- ◆ * Unscrew and remove the adjusting element (3).
- ◆ * Withdraw the spring preload pushing element (4).
- ◆ * Position the wheel-holder tube - slider unit on a vice, interposing the two half-shells of the special tool (C).

 The wheel-holder tube - slider unit is full of oil; do not overturn or incline it excessively during disassembly.

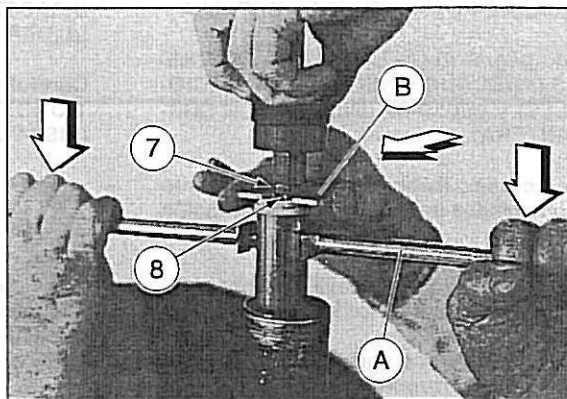
- ◆ * Loosen the slider upper plug (5).
- ◆ * Remove the wheel-holder tube - slider unit from the vice.
- ◆ * Keeping the wheel-holder tube - slider unit in vertical position, unscrew the slider upper plug (5) completely.
- ◆ * Unscrew and remove the threaded pin (A1) from the tool (A).
- ◆ * Position the fixed part of the tool (A) on the spring pressing tube (6), so that the tooth fits in the hole.
- ◆ * Position the threaded pin (A1) in the hole on the fixed part of the tool (A), making sure that when screwed completely it fits in the hole.



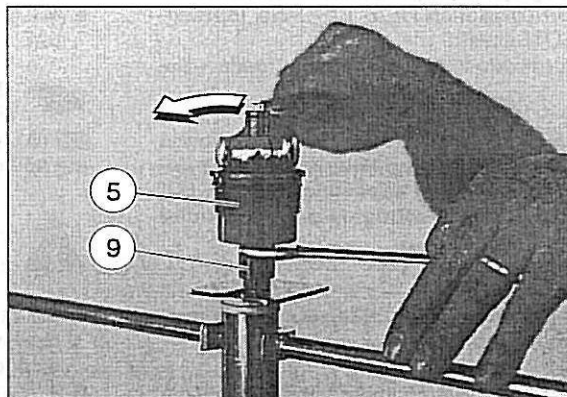


The following operations must be performed by two persons. Fix the operating procedure before starting work.

- ◆ * Rest both hands on the tool (A).
- ◆ * Push downwards and at the same time insert the tool (B) between the locking nut (7) and the washer (8).



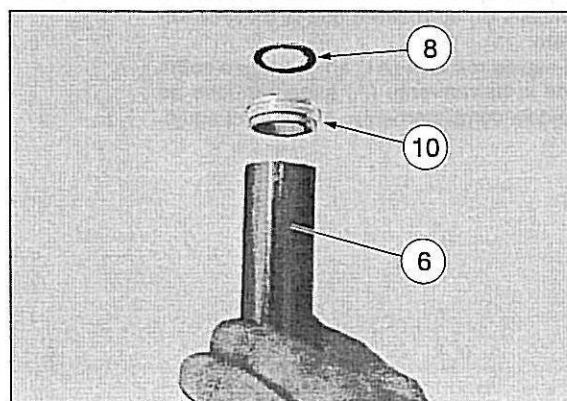
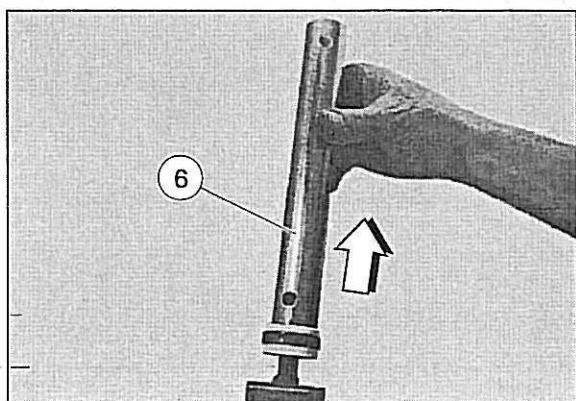
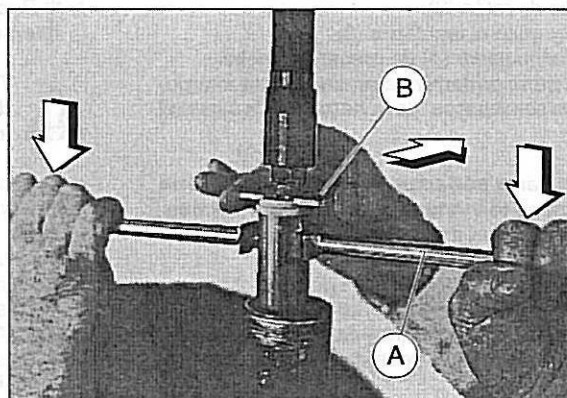
- ◆ * Keeping the pumping element (9) still, unscrew the slider upper plug (5) by means of a fork spanner inserted in the appropriate seat.



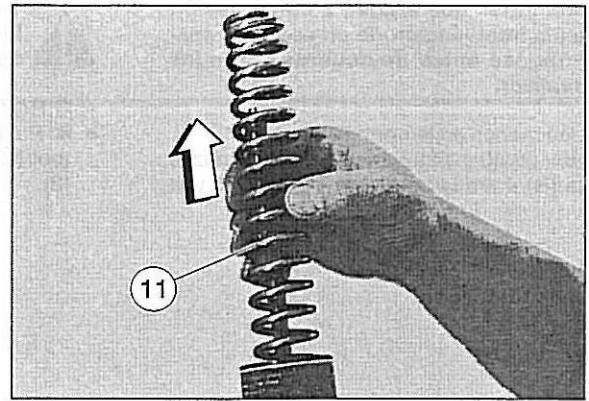
- ◆ * Rest both hands on the tool (A).
- ◆ * Push downwards and at the same time withdraw the tool (B).
- ◆ * Remove the tool (A).
- ◆ * Remove the washer (8).
- ◆ * Remove the sliding ring (10).

Before removing them completely, keep the spring pressing tube (6) and the spring (11) out of the fork tube for a few seconds, so that part of the oil drops inside the fork tube itself.

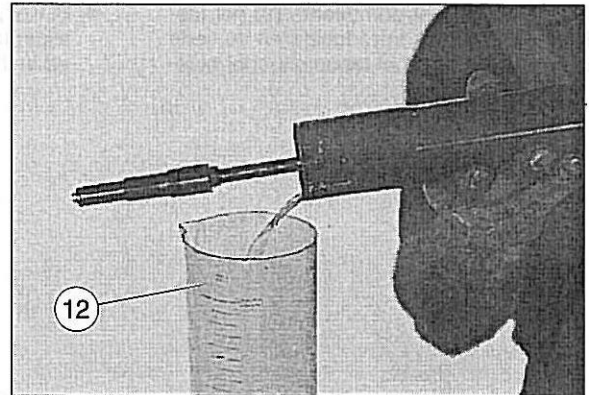
- ◆ Remove the spring pressing tube (6) together with the spring pressing element.



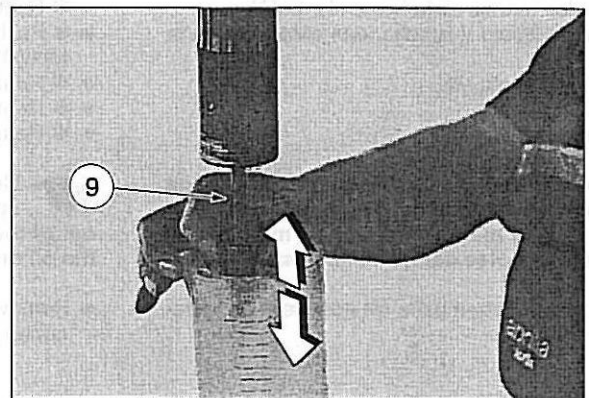
- ◆ * Withdraw and remove the spring (11).



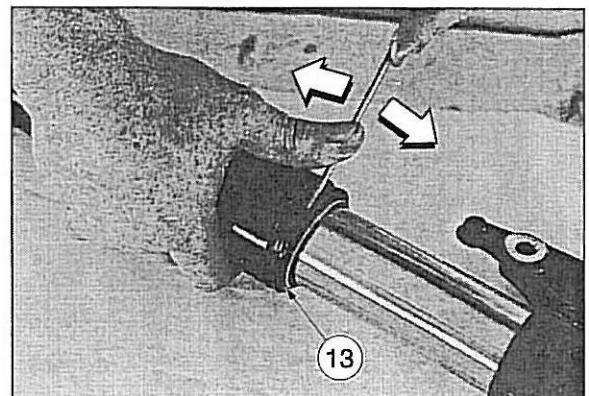
- ◆ * Overturn the wheel-holder tube together with the slider, pouring the oil inside the container (12).



- ◆ * In order to have all the oil flow out, slowly and alternately push the pumping element (9) in the slider (eight-ten times). At the end of this operation, the tube will slide inside the slider freely.



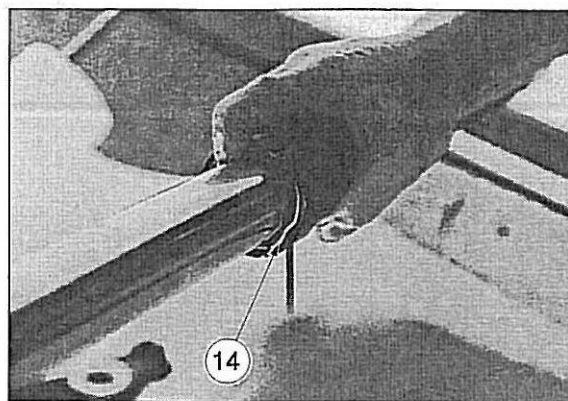
- ◆ Remove the antidust gasket (13) from the slider by alternately levering on more points with a cut-tipped screwdriver.



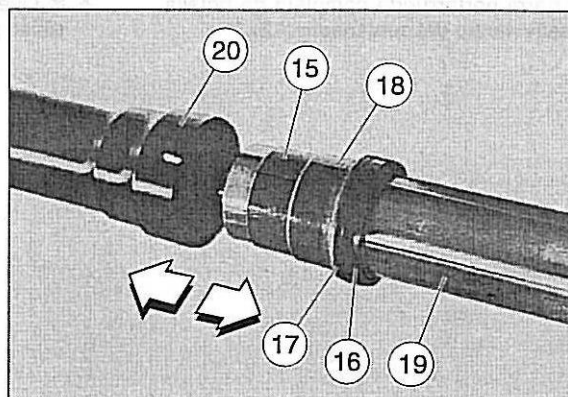
- ◆ Remove the stop ring (14) by means of a cut-tipped screwdriver.



The following operation must be performed with force, since the slide bushing (15) must push the gasket (16), the ring (17) and the guide bushing (18), which will all resist the withdrawing action.

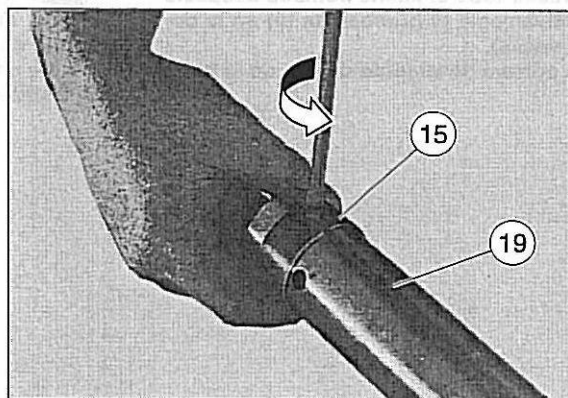


- ◆ Withdraw the whole wheel-holder tube (19) from the slider (20).

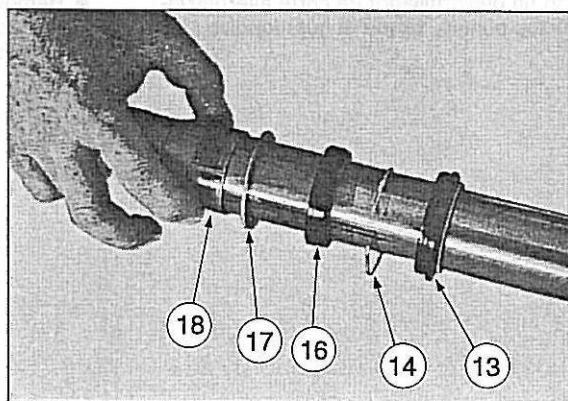


When withdrawing the slide bushing (17), be careful not to damage it (especially its sliding surface).

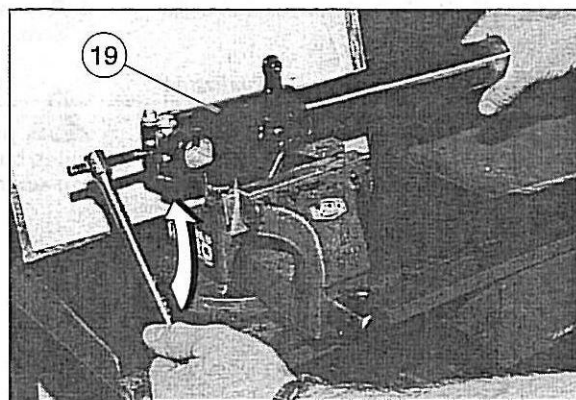
- ◆ Withdraw the slide bushing (15) from the tube (19), by moderately levering with a cut-tipped screwdriver.



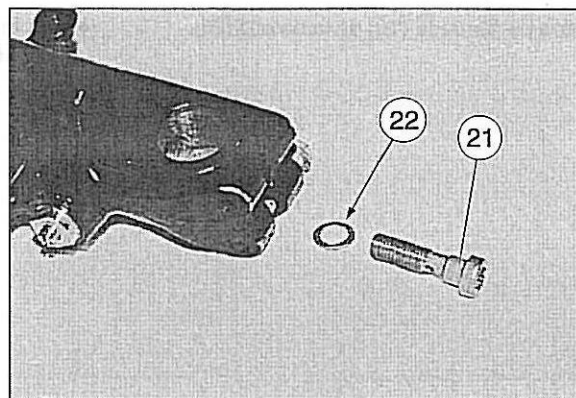
- ◆ Withdraw and remove the following components from the tube (19), in the given order:
 - Guide bushing (18)
 - Ring (17)
 - Gasket (16)
 - Stop ring (14)
 - Antidust gasket (13)



- ◆ Position the wheel-holder tube (19) on a vice, interposing clamps made of soft material (aluminium).



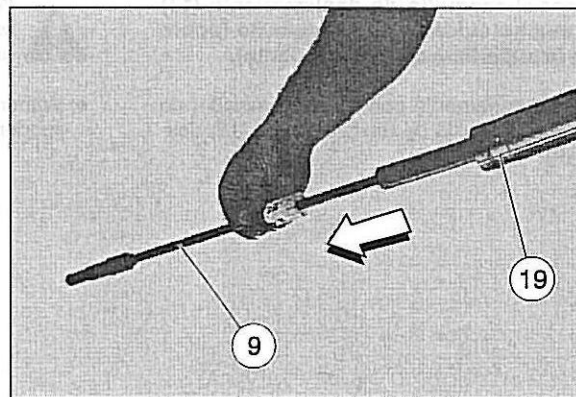
- ◆ Unscrew and remove the centre screw (21) and take the copper washer (22).



- ◆ Withdraw the complete pumping element (9) from the tube (19).



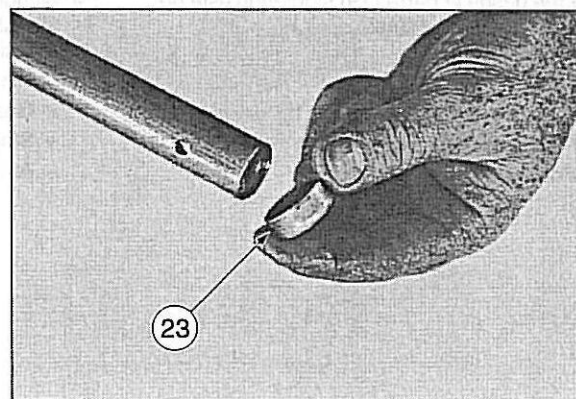
The pumping element (9) must not be removed.



- ◆ Take the centering bushing (23).



Wash all the components with a clean detergent.



CHECKING THE COMPONENTS

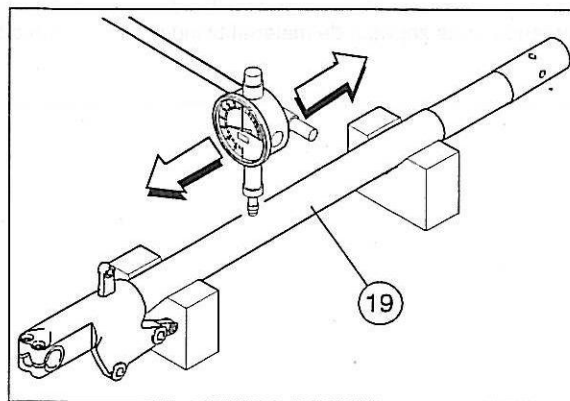
WHEEL-HOLDER TUBE

- ◆ Check the sliding surface, which must be neither lined, nor scratched.
Slight lines can be eliminated by sanding the surface with wet sandpaper (grain 1).
If the lines are deep, change the tube (19).
- ◆ By means of a comparator, make sure that any curving of the tube (19) be lower than the limit value.
If it exceeds the limit value, change the tube.

Curving limit: 0.2 mm



NEVER straighten a curved tube, since its structure would be weakened, thus making the use of the vehicle quite dangerous



SLIDER

- ◆ Make sure that there are neither damages, nor cracks. Otherwise, change it.

SPRING



Before carrying out the measurement, strike the spring a few times on a clean surface, so that it returns to its normal dimensions.

- ◆ Check the integrity of the spring (11), making sure that its length does not exceed the limit value.
- ◆ If the length does not correspond to the limit value, change the spring (11).

Minimum length of the spring when not compressed: 237 mm

- ◆ Check the condition of the following components:

- Slide bushing (15)
- Guide bushing (18)
- Pumping element (9)

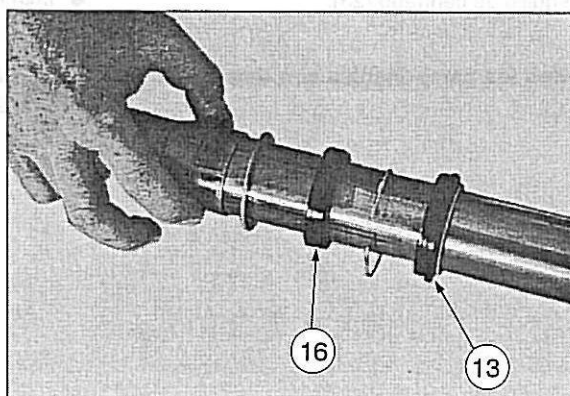
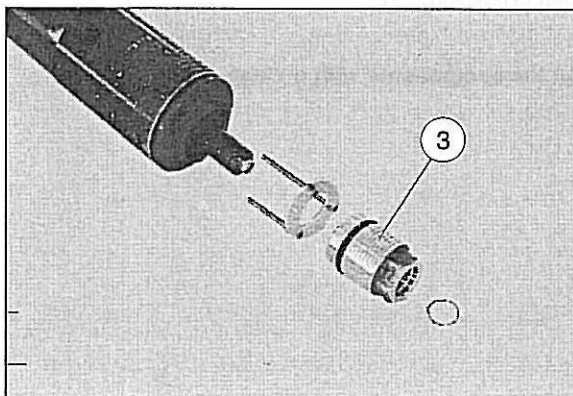
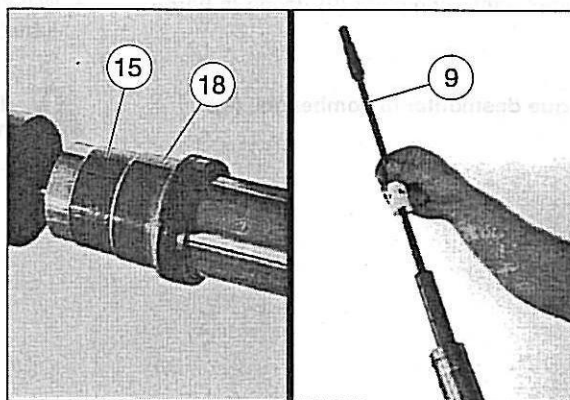
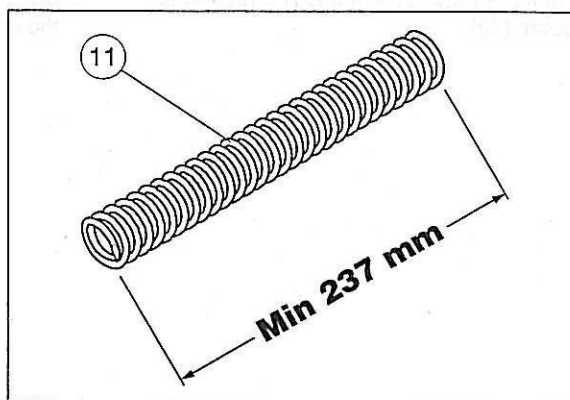
If excessive wear or any damage are observed, change the component in question.



Remove any accumulation of impurities from the bushings, taking care not to scratch their surfaces.

- ◆ Replace the following components with new ones:


- Gasket (16)
- Antidust gasket (13)
- The two O rings on the adjusting element (3)



REASSEMBLING THE WHEEL-HOLDER TUBE - SLIDER UNIT

Carefully read p. 9-12 (FORK OIL), p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and p. 9-39 (INSPECTING THE FRONT SUSPENSION).

 The operations marked with the symbol "*" are valid also for the fork oil change.


 Upon reassembly, proceed with the greatest care and make sure that the sliding surfaces are in perfect conditions (there must no be signs of wear, lines, etc.), otherwise change the component.

Be careful to prevent any foreign matter from getting inside.


Do not reuse any oil that has already been drained.

Always replace the gaskets.

The reassembly must be carried out with the greatest care.

 Before proceeding with the following operations, prepare the appropriate special tools **OPT** (A), (B), (C), (D) and before reinstalling the gaskets and bushings cover them with a layer of fork oil, see p. 9-20 (LUBRICANT CHART).

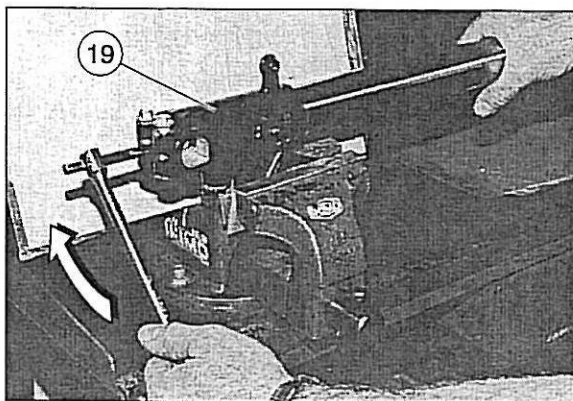
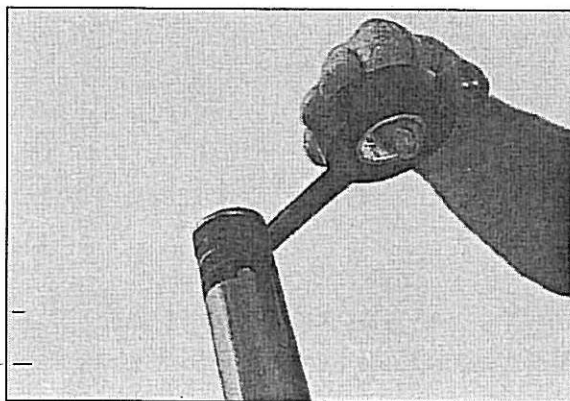
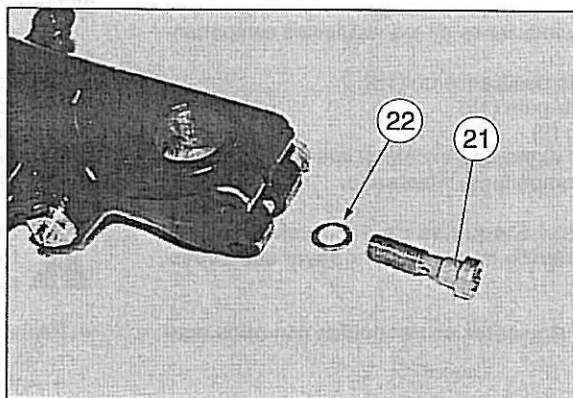
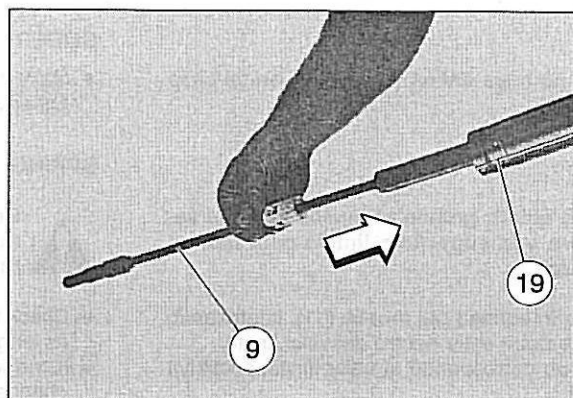
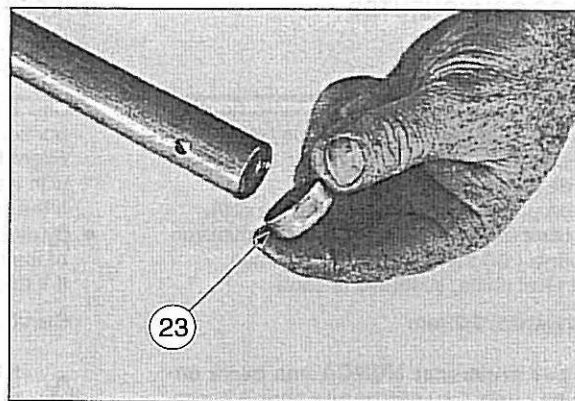
◆ Position the wheel-holder tube (21) on a vice with the open part facing upwards, interposing clamps made of soft material (aluminium).

 Apply some grease inside the centering bushing (23), see p. 9-20 (LUBRICANT CHART).

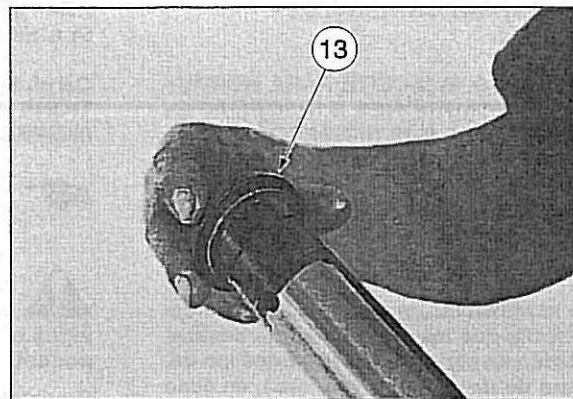
- ◆ Insert the centering bushing (23) on the bottom of the pumping element (9).
- ◆ Insert the pumping element (9) in the wheel-holder tube, making sure that it rests on the base.
- ◆ Position the copper washer (22) on the centre screw (21).
- ◆ Insert and tighten the centre screw (21).

Centre screw (21) driving torque:
30÷40 Nm (3÷4 kgm).

- ◆ Remove the wheel-holder tube (19) from the vice.
- ◆ Taking care not to form tape layers, apply some adhesive tape on the end of the wheel-holder tube (19), in such a way as to protect the gaskets during the reassembly.

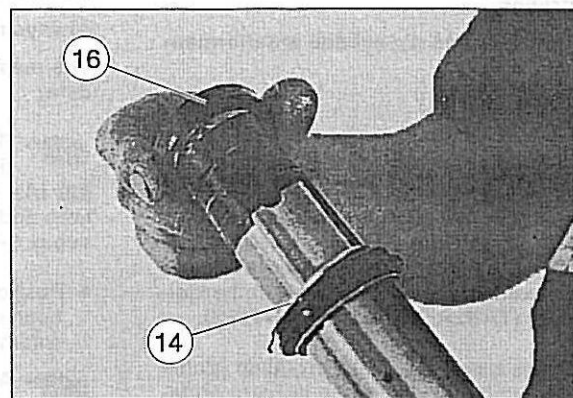


- ◆ Insert the following components on the wheel-holder tube (19), in the given order:
 - Antidust gasket (13)
 - Stop ring (14)

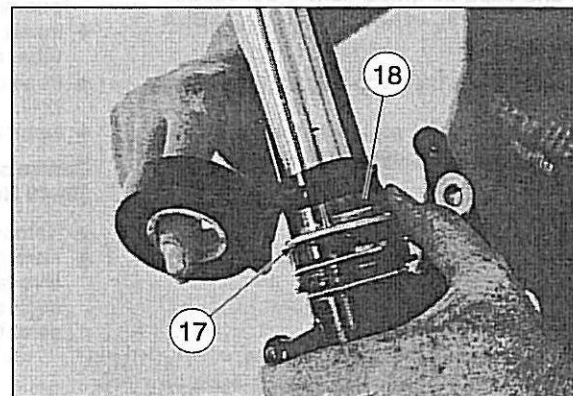


➡ Introduce the gasket (16), positioning the side with the writings towards the stop ring (14).

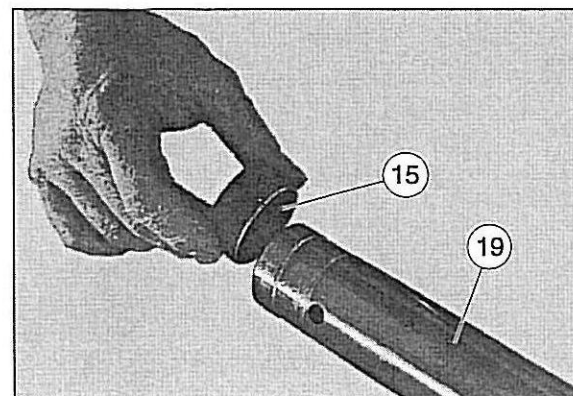
- ◆ – Gasket (16)
- ◆ – Ring (17)
- ◆ – Guide bushing (18)
- ◆ Move the five components mentioned above completely towards the wheel-holder.
- ◆ Remove the adhesive tape from the end of the wheel-holder tube (19).



- ◆ Lock the guide bushing (18) in its position by means of some adhesive tape.



- ◆ Put back the slide bushing (15) on the wheel-holder tube (19).
- ◆ Insert the tube (19) in the slider (20).
- ◆ Remove the adhesive tape.



- ◆ Position the two half-shells of the tool (D) on the wheel-holder tube (19), before the guide bushing (18).
- ◆ Grasping the tool (D), push the guide bushing (18) in the correct position in its seat on the slider (20).
- ◆ Remove the tool (D).
- ◆ Insert the ring (17), making sure that it is in the correct position.
- ◆ Position the two half-shells of the tool (D) on the wheel-holder tube (19), before the gasket (16).
- ◆ Grasping the tool (D), push the gasket (16) in its seat on the slider (20) with force, making sure that it is in the correct position.
- ◆ Remove the tool (D).
- ◆ Insert the stop ring (14) in the appropriate seat on the slider (20).
- ◆ Position the two half-shells of the tool (D) on the wheel-holder tube (19), before the antidust gasket (13).
- ◆ Grasping the tool (D), push the antidust gasket (13) in the appropriate seat on the slider (20) and make sure that it is correctly positioned.
- ◆ ★ Grasp the tube (19) and move it slowly and alternately more than once.



The tube (19) must slide inside the slider (20) smoothly, without finding any obstacle; if this does not happen, it means that the guide bushing (18), the slide bushing (15) or the gasket (16) are damaged.

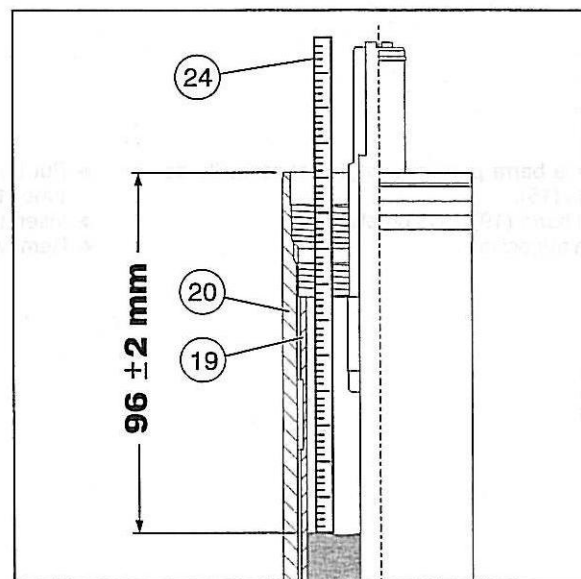
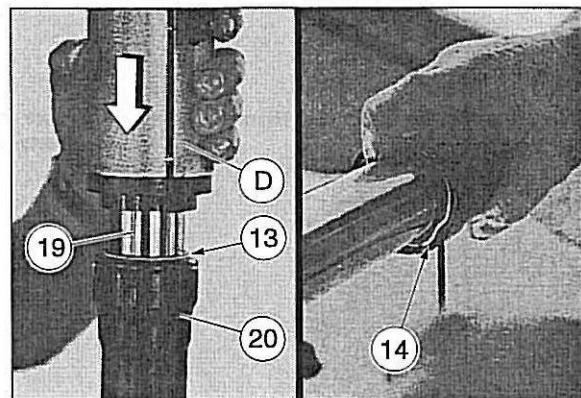
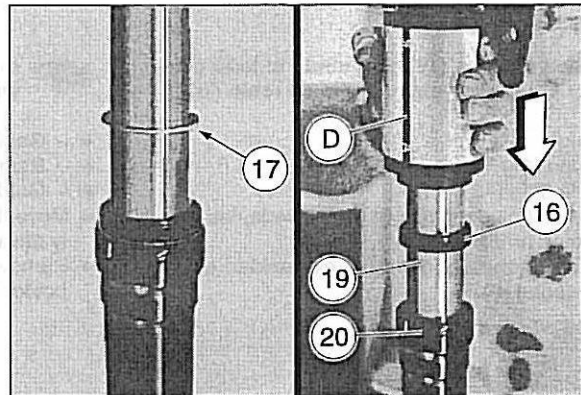
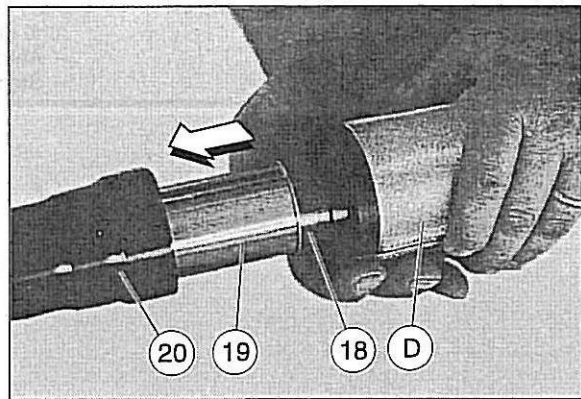
- ◆ * Keep the slider (20) in vertical position.
- ◆ * Pour fork oil inside the tube, see p. 9-20 (LUBRICANT CHART) until reaching the correct level, which can be measured by introducing a graduated stick (26) in the tube.

Oil quantity: $431 \pm 2.5 \text{ cm}^3$

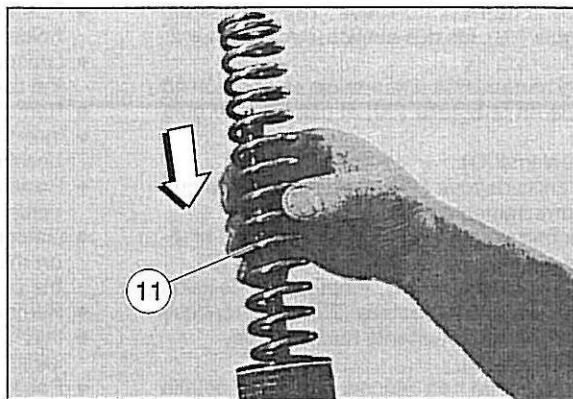
Oil level: $96 \pm 2 \text{ mm}$ (from the slider edge)



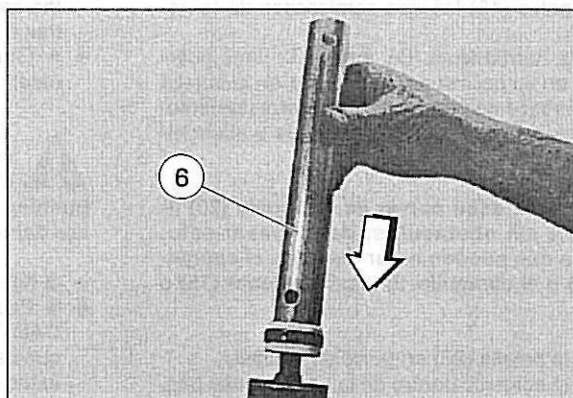
In order to obtain a correct measurement of the oil level, the slider (20) must be perfectly vertical; the oil level must be the same for both tubes.



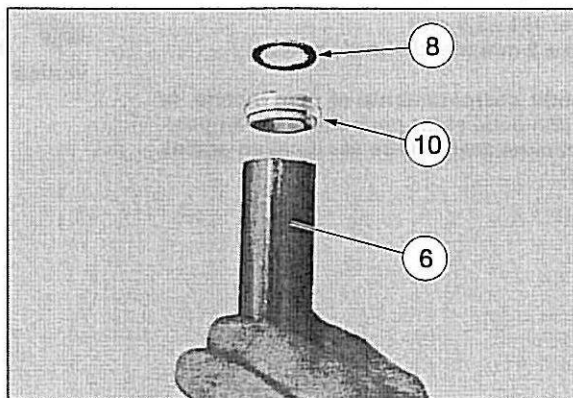
- ◆ * Grasp the slider (20) and make it slide slowly and alternately, with a stroke of approx. 150 mm, about 10 times, thus letting out all the air that is inside the slider.
- ◆ * Push the slider (20) to the end of its stroke.
- ◆ * Wait for a few minutes and check the oil level again; top up if necessary.
- ◆ * Insert the following components in the tube (19) in the given order:
- ◆ – Spring (11)



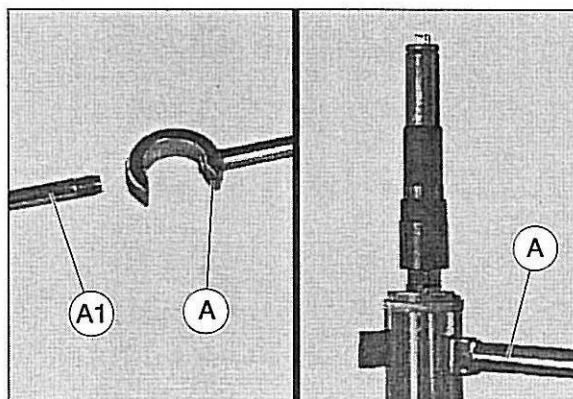
- ◆ – Spring pressing tube (6) complete with spring pressing element.



- ◆ – Sliding ring (10)
- ◆ – Washer (8)



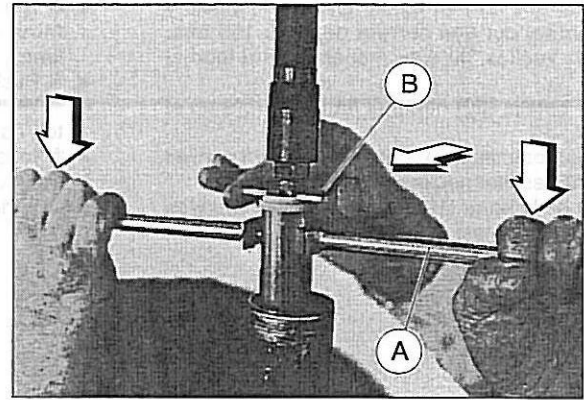
- ◆ * Unscrew and remove the threaded pin (A1) from the tool (A).
- ◆ * Position the fixed part of the tool (A) on the spring pressing tube (6), so that the tooth fits in the hole.
- ◆ * Position the threaded pin (A1) in the hole on the fixed part of the tool (A), making sure that when screwed completely it fits in the hole.





The following operations must be performed by two persons. Fix the operating procedure before starting work.

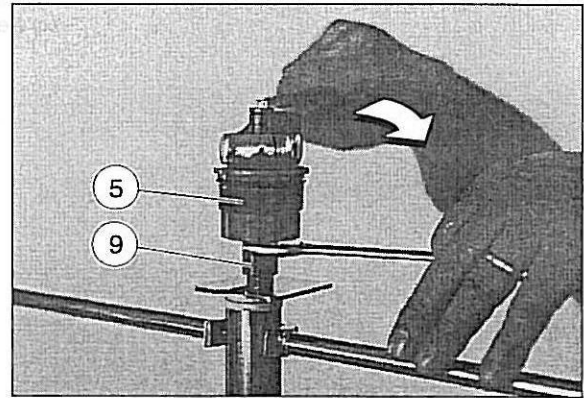
- ◆ * Rest both hands on the tool (A).
- ◆ * Push downwards and at the same time insert the tool (B) between the locking nut (7) and the washer (8).



- ◆ * Keeping the pumping element (9) still, tighten the slider upper plug (5) on the pumping element (9) by means of a fork spanner inserted in the appropriate seat.

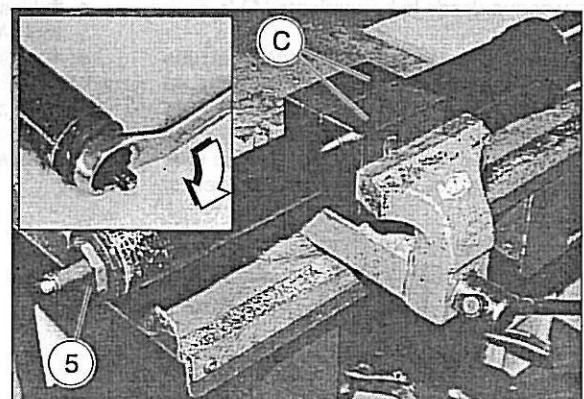
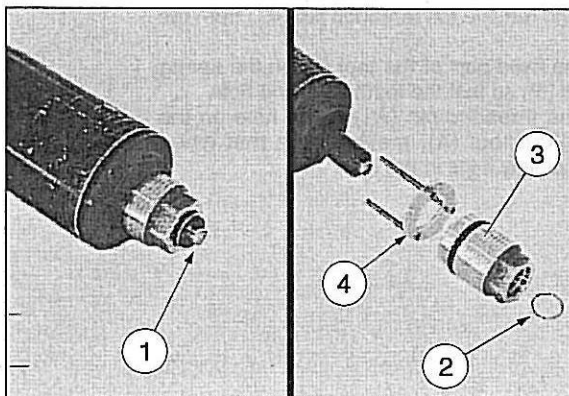
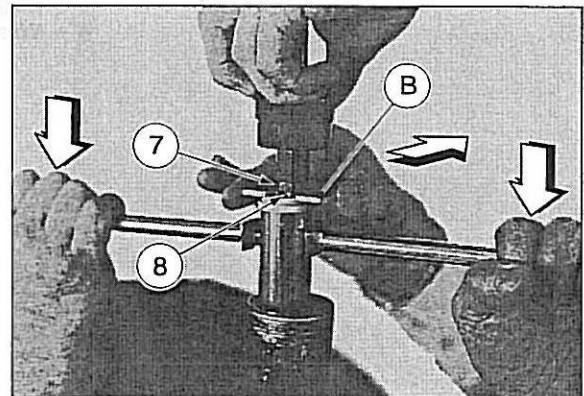
Slider upper plug driving torque (5):
30÷40 Nm (3÷4 kgm).

- ◆ * Rest both hands on the tool (A).
- ◆ * Push downwards and at the same time withdraw the tool (B).
- ◆ * Remove the tool (A).
- ◆ * Position the wheel-holder tube - slider unit on a vice, interposing the two half-shells of the special tool (C).
- ◆ * Screw and tighten the slider upper plug (5).



Slider upper plug (5) driving torque:
30÷40 Nm (3÷4 kgm).

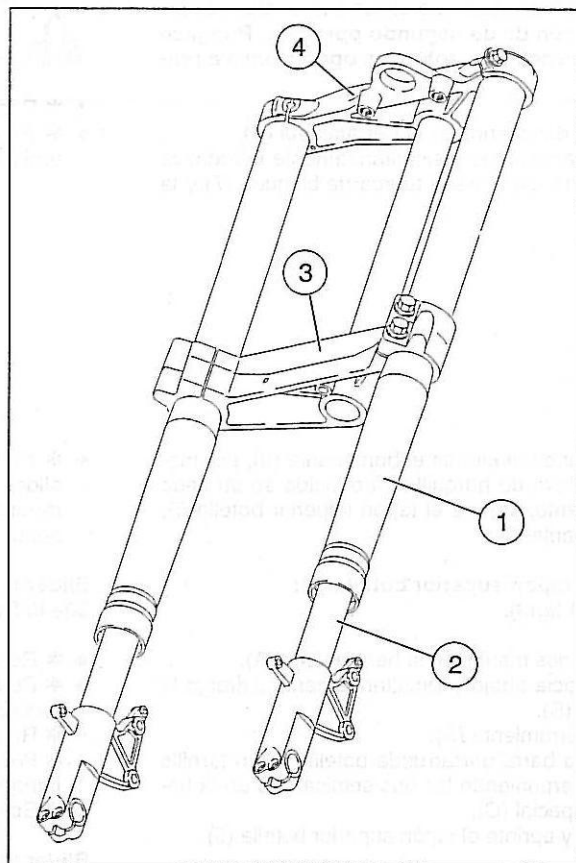
- ◆ * Insert the spring preload pushing element (4).
- ◆ * Screw the adjusting element (3).
- ◆ * Position the stop ring (2) in its seat.
- ◆ * Act on the adjusting element (3) and on the adjuster (1) to restore the correct attitude, which must be the same as that of the other wheel-holder tube - slider unit, see p. 9-41 (ADJUSTING THE FRONT FORK).



INSTALLING THE WHEEL-HOLDER TUBE - SLIDER UNITS

Carefully read p. 9-16 (PRECAUTIONS AND GENERAL INFORMATION) and p. 9-39 (INSPECTING THE FRONT SUSPENSION).

- ◆ Insert the slider (1) complete with the wheel-holder tube (2) on the lower plate (3) and on the upper plate (4).



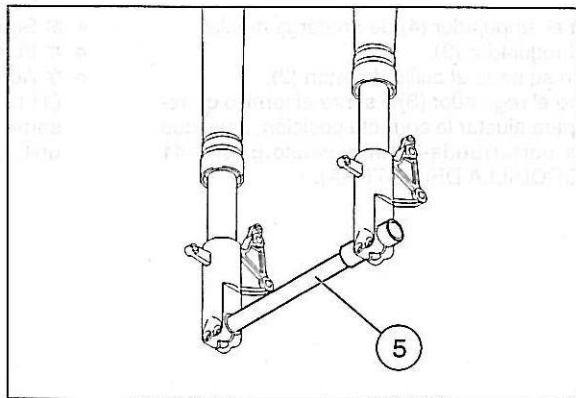
- ◆ Insert the wheel pin (5) on both tubes in order to align the hole of the wheel-holder tube (2) with the hole of the other wheel-holder tube.
- ◆ Make sure that the slider (1) is correctly inserted on the lower plate (3) and on the upper plate (4), see p. 9-43 (ADJUSTING THE HEIGHT OF THE FRONT PART OF THE VEHICLE).
- ◆ Tighten the two screws (6) that fix the lower plate (3) to the slider (1).

Screw (6) driving torque: 25 Nm (2.5 kgm).

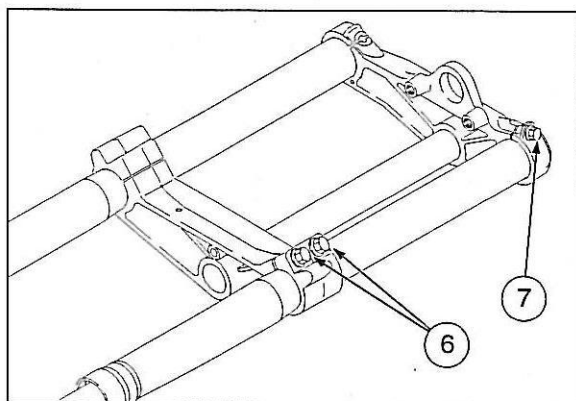
- ◆ Tighten the screw (7) that fixes the upper plate (4) to the slider (1).

Screw (7) driving torque: 25 Nm (2.5 kgm).

- ◆ Withdraw the wheel pin (5).
- ◆ Reassemble the wheel, see p. 9-113 (REMOVING THE WHOLE WHEEL).
- ◆ Reassemble the front part of the fairing, see p. 9-103 (REMOVING THE FRONT PART OF THE FAIRING).
- ◆ Remove the vehicle from the centre support stand **DPV**.



⚠ After the reassembly, operate the front brake and thrust the fork repeatedly downwards. The operation must be smooth and progressive and there must be no trace of oil on the tubes.



**INFORMAZIONI
PER LE RIPARAZIONI**

9-8

**INFORMACIONES
PARA LAS REPARACIONES**

SERVICING INFORMATION

UPDATES
Model 1998

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ELECTRICAL SYSTEM INSPECTION

BATTERY RECHARGING INSPECTION

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none"> – Engine running at 4.000 rpm – Lights on – Press "D" button on multi-purpose computer 	13 - 15 Volts on display

GENERATOR

(with engine off and generator disconnected)

Test conditions	Indication of proper functioning conditions
<ul style="list-style-type: none"> – Rotation check of yellow generator connector cables left, beside battery) – Tester on Ω 	Tester indication = 0,1 - 1 Ω

With engine running at 5.000 rpm

<ul style="list-style-type: none"> – Connector check (left, beside battery) – Tester on Volt (AC) – Check that ground cable is connected 	Tester indication = 53 Volts upwards
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SPARK PLUGS (no spark)

Test conditions	Indication of proper functioning conditions
First inspection <ul style="list-style-type: none"> – Check fuses – Check spark plugs – Check neutral switch – Check lateral stand switch 	

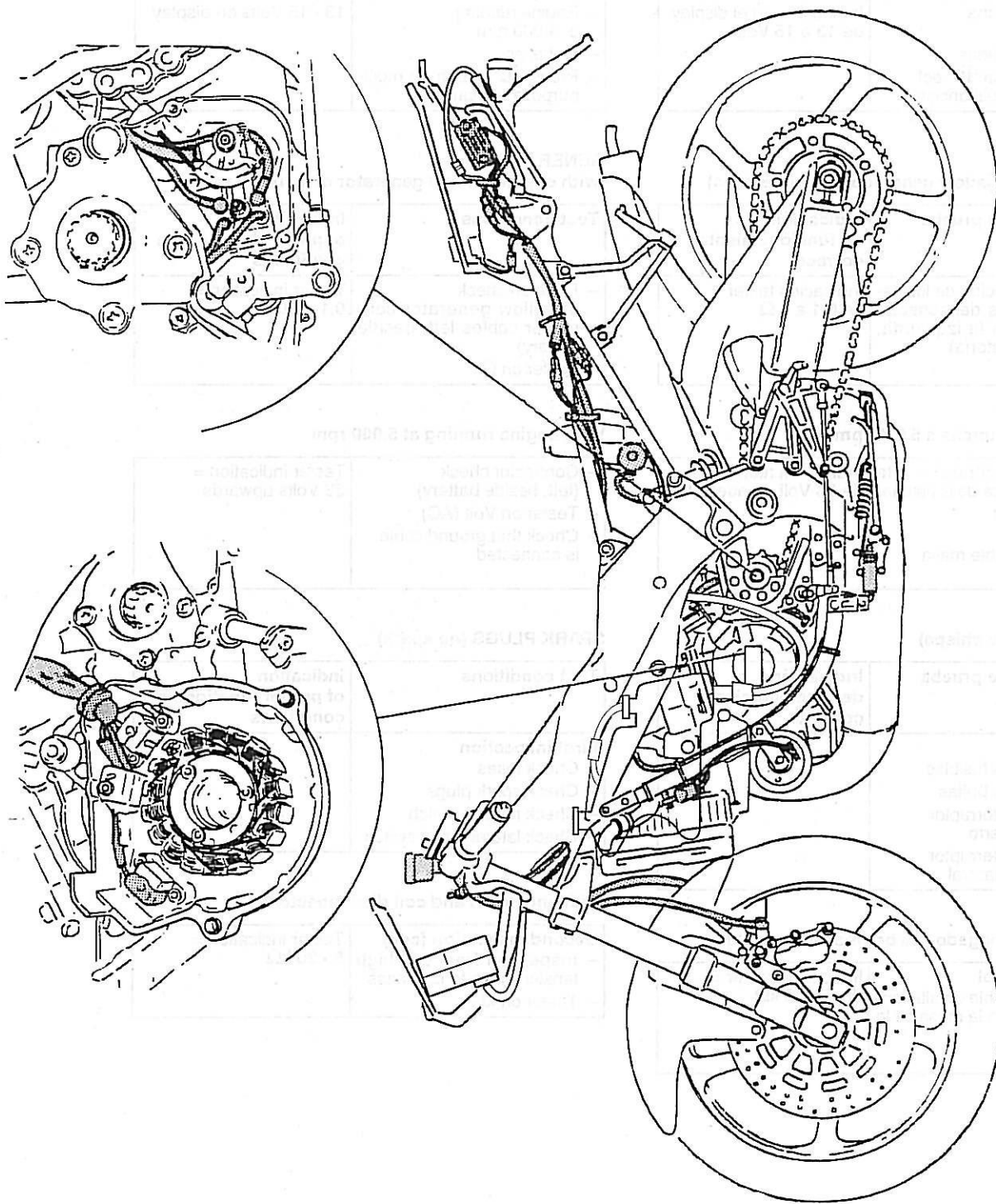
With engine off and coil disconnected

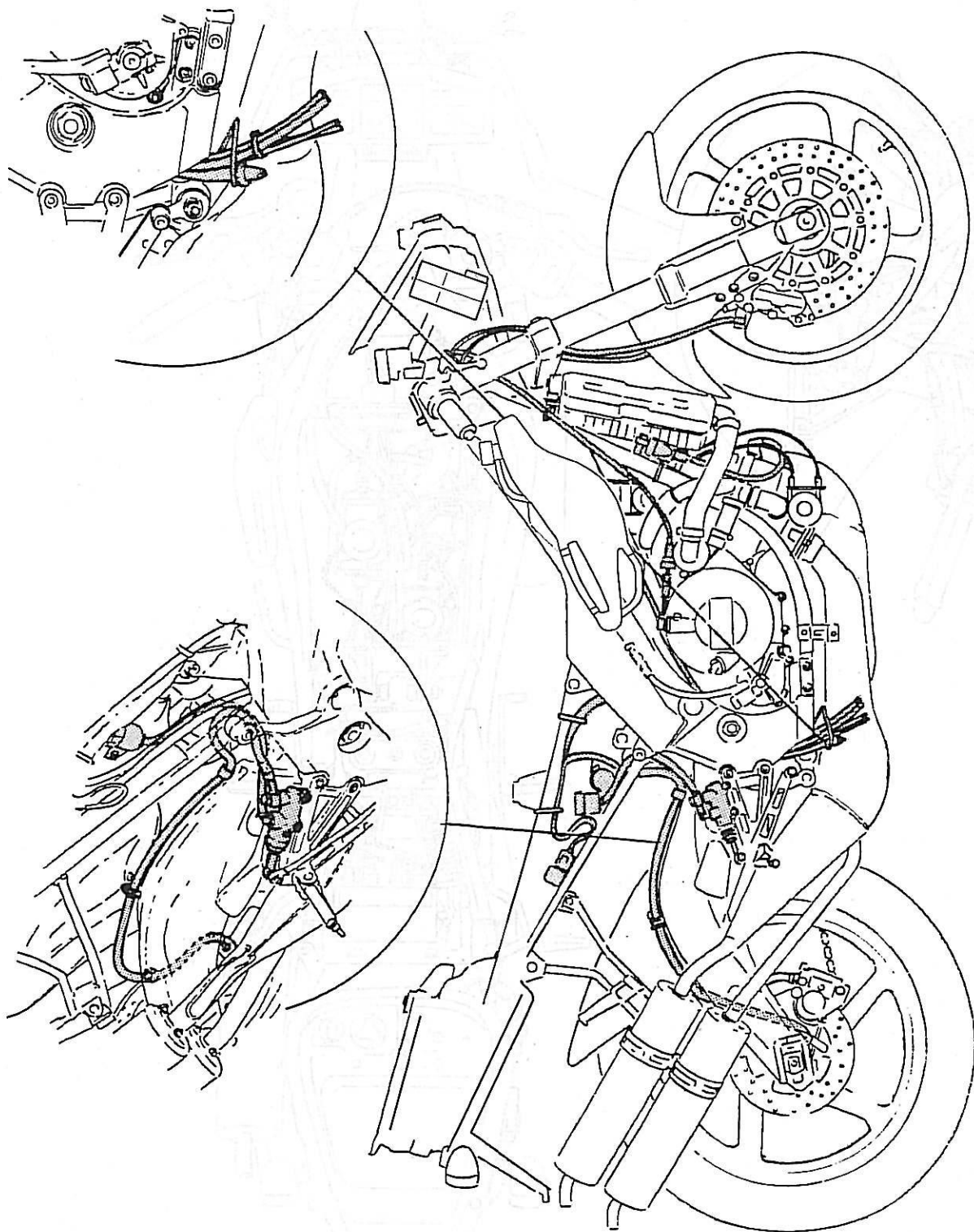
Second inspection (coil) <ul style="list-style-type: none"> – Inspection from coil high tension cable to coil mass – Tester on kΩ 	Tester indication = 5 - 30 k Ω
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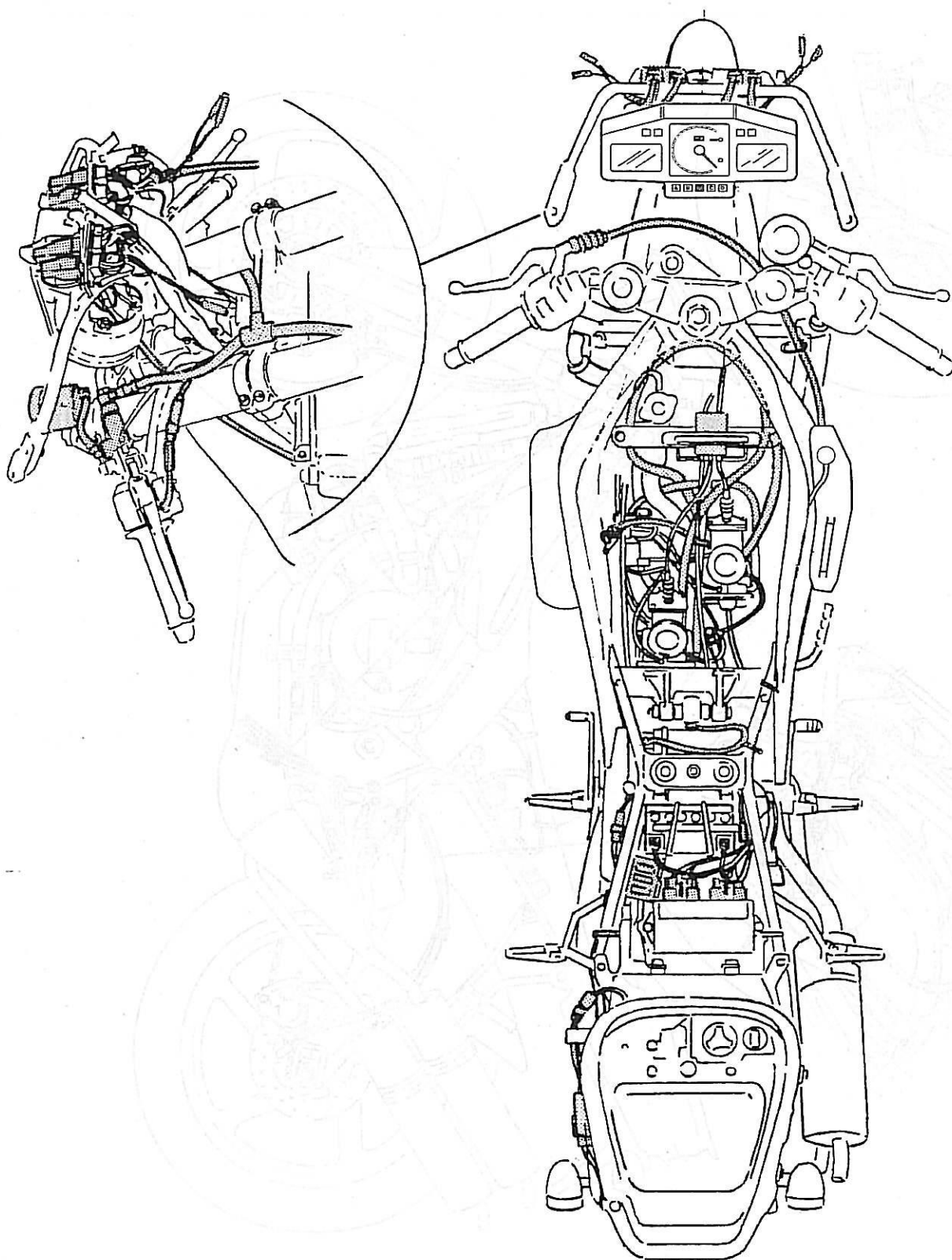
**PERCORSO, PASSAGGIO E
FISSAGGI CABLAGGIO - CAVI -
TUBI**

**RECORRIDO, PASO Y
FIJACIONES DEL CABLEADO -
CABLES - TUBOS**

**CABLE, WIRW, HOSE ROUTING
PASSAGE AND FASTENING**





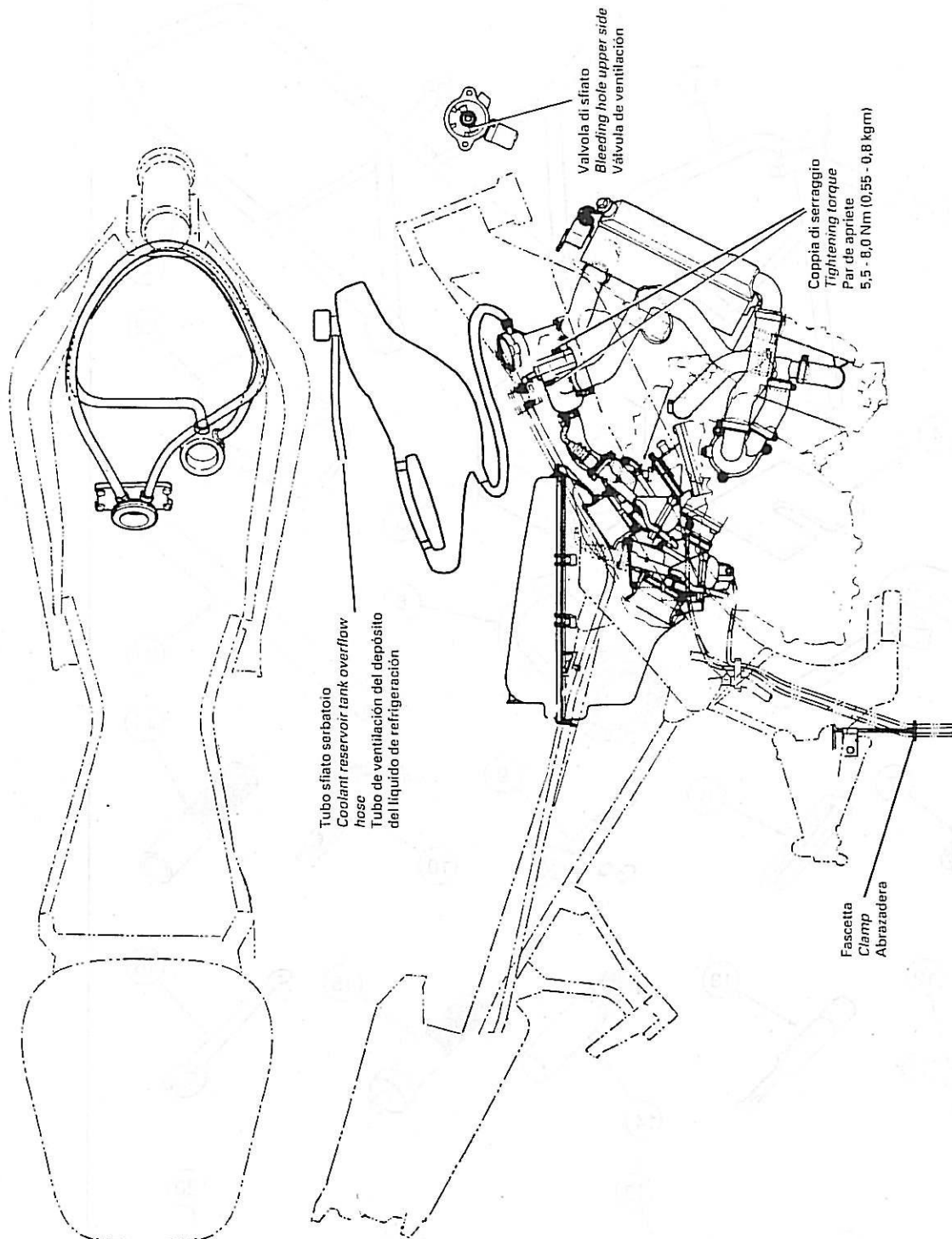


RS 250

**CIRCUITO DI
RAFFREDDAMENTO**

**CIRCUITO
DE REFRIGERACION**

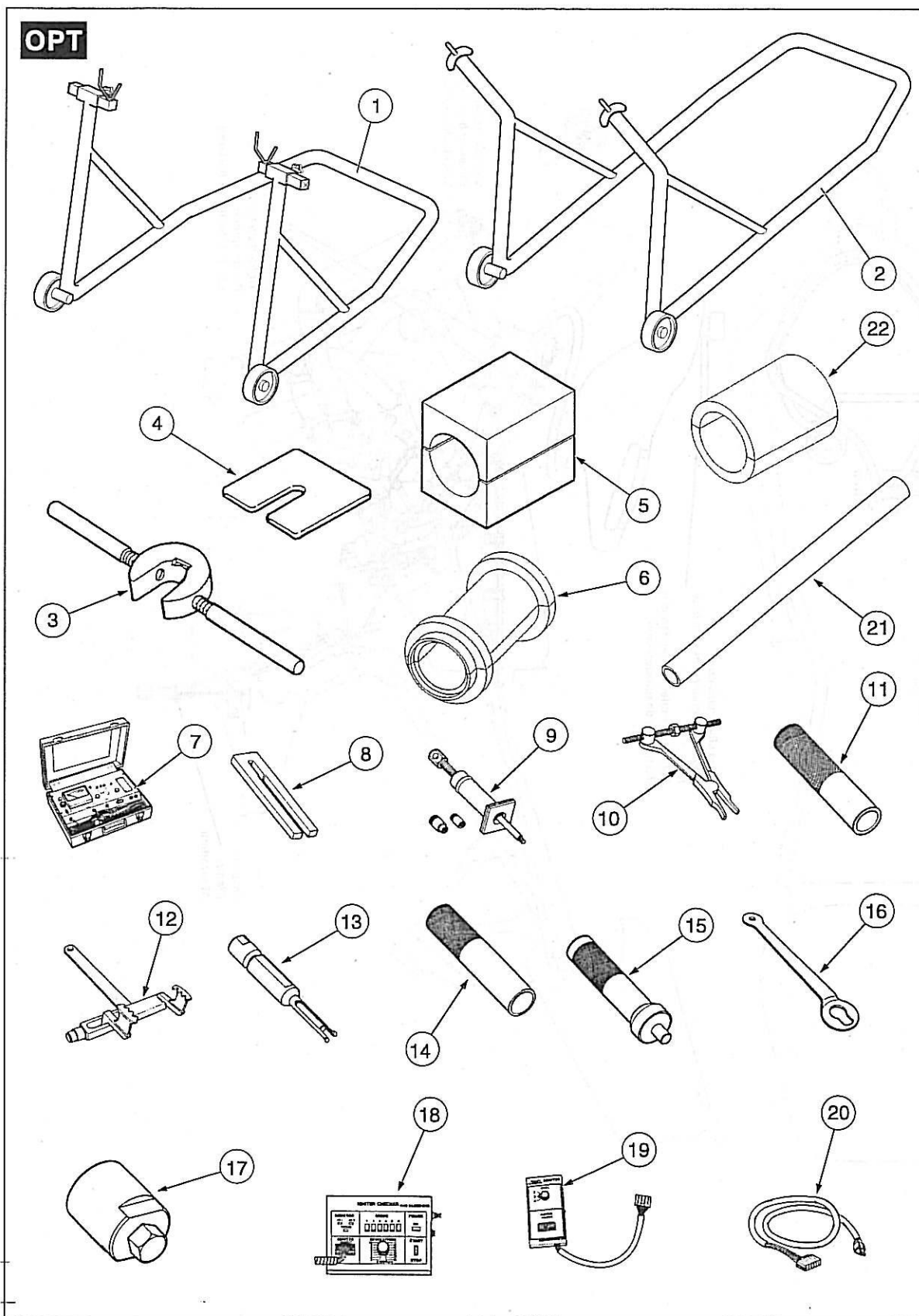
COOLING CIRCUIT



ATTREZZI SPECIALI

HERRAMIENTAS ESPECIALES

SPECIAL TOOLS



POS. N° POS. N° POS. N°	ATTREZZO / HERRAMIENTA / TOOL	N° CODICE N° CODE CODE
1	Cavalletto di sostegno posteriore / <i>Caballete de soporte trasero</i> / Rear support stand	81 40 194
2	Cavalletto di sostegno anteriore / <i>Caballete de soporte delantero</i> / Front support stand	81 40 195
3 (A)	Attrezzo per ritegno tubo precarica molla forcella / <i>Herramienta para retén tubo pre-carga muelle horquilla</i> / Check tool for the fork spring preload tube	81 40 147
4 (B)	Attrezzo per ritegno asta pompante forcella / <i>Herramienta para retén varilla bombeante horquilla</i> / Check tool for the fork pumping element rod	81 40 148
5 (C)	Semigusci fissaggio fodero forcella in morsa / <i>Semicascos sujeción botella horquilla en morsa</i> / Half-shells for the fastening of the fork slider in the vice	81 40 149
6 (D)	Attrezzo per inserimento guarnizioni forcella / <i>Herramienta para introducción juntas horquilla</i> / Fork gasket insertion tool	81 40 145
7	Electro tester / <i>Electro tester</i> / Electro tester	86 00 386
8	Bloccaggio biella / <i>Connecting rod stopper</i> / Bloqueo de la biela	86 00 387
9	Estrattore spinotto / <i>Piston pin puller</i> / Extractor del pasador 86 00 388 3	86 00 388
10	Separatore carter / <i>Crankcase disassembly tool</i> / Separador del carter	86 00 389
11	Tampone montaggio cuscinetti (D. 32) / <i>Bearing installer (D. 32)</i> / Tampón de montaje de los cojinetes (D. 32)	86 00 390
12	Bloccaggio frizione / <i>Clutch sleeve hub holder</i> / Bloqueo del embrague	86 00 391
13	Estrattore (D. 10) / <i>Bearing remover (D. 10)</i> / Extractor (D. 10)	86 00 392
14	Tampone montaggio cuscinetti (D. 26) / <i>Bearing installer (D. 26)</i> / Tampón de montaje de los cojinetes (D. 26)	86 00 393
15	Tampone montaggio cuscinetti (D. 21,9) / <i>Bearing installer (D. 21,9)</i> / Tampón de montaje de los cojinetes (D. 21,9)	86 00 394
16	Fermo volano / <i>Rotor holder</i> / Retén del volante	86 00 395
17	Estrattore volano (M33 x 1,5) / <i>Rotor remover (M33 x 1,5)</i> / Extractor del volante (M33 x 1,5)	86 00 396
18	Ignition checker / <i>Ignition checker</i> / Ignition checker	86 00 397
19	Adattatore elettronico / <i>Adapter</i> / Adaptador electrónico	86 00 398
20	Cablaggio per test centralina / <i>P.E.I. tester lead</i> / Cableo para test de la centralita	86 00 399
21	Barra di trazione / <i>Barra de tracción</i> / Drawrod	81 40 150
22	Battitoio / <i>Herramienta para batir</i> / Beating tool	81 40 146

COPPIE DI SERRAGGIO

PARES DE APRIETE

DRIVING TORQUES

MOTORE / MOTOR / ENGINE					
Fissaggio motore al telaio / Sujeción motor al bastidor / Fastening of the engine to the frame					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Attacco anteriore / Enganche delantero / Front coupling	1	TE M10x250	40	4,0	
Attacco posteriore / Enganche trasero / Rear coupling	1	TCEI M10x130	50	5,0	
Fissaggio bielletta posteriore attacco motore / Sujeción elemento de conexión trasero enganche motor / Fastening of the engine coupling rear connection element	2	TE flang. M8x70	12	1,2	

Particolari fissati al motore / Piezas sujetadas al motor / Components fixed to the engine					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio leva e cavo frizione / Sujeción palanca y cable embrague / Clutch cable and lever fastening	1	TE flang. M6x16	12	1,2	
Fissaggio staffa sdoppiatore / Sujeción estribo desdoblador / Splitter bracket fastening	2	TE flang. M5x12	5	0,5	
Fissaggio centraline valvole / Sujeción centralitas válvulas / Valve central unit fastening	2	TE flang. M6x16	5	0,5	
Fissaggio supporto attuatori / Sujeción soporte accionadores / Actuator support fastening	4	TE flang. M6x30	5	0,5	
Fissaggio leva avviamento / Sujeción palanca de arranque / Starting lever fastening	1	TE flang. M8x25			
Fissaggio carter copripignone / Sujeción cárter cubrepinión / Pinion covering case fastening	1	TE flang. M6x25	5	0,5	
Fissaggio solenoide max su supporto / Sujeción solenoide máx. en soporte / Fastening of the max. solenoid to the support	1	TE flang. M6	5	0,5	

FORCELLONE POSTERIORE / BASCULANTE / REAR FORK					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio ghiera perno forcellone / Sujeción tuerca eje basculante / Fork pin metal ring fastening	1	M20x1	50	5,0	
Fissaggio perno forcellone / Sujeción eje basculante / Fork pin fastening	1	M20x1.5	100	10,0	
Fissaggio passatubo liquido freno posteriore su parafango / Sujeción pasatubo líquido freno trasero en guardabarros / Fastening of the rear brake fluid pipe ring to the mudguard	1	TBEI M5x16 flang.	5	0,5	
Fissaggio parafango a forcellone / Sujeción guardabarros a basculante / Fastening of the mudguard to the rear fork	2	TBEI M5x16 flang.	5	0,5	
Fissaggio pattino catena (con scodellini) / Sujeción patín cadena (con tejuelos) / Chain pad fastening (with cups)	2	TBEI M5x16 flang.	4	0,4	
Fissaggio carter copricatena / Sujeción cárter cubrecadena / Chain cover case fastening	1	TBEI M5x16 flang.	2	0,2	
Montaggio viti tendicatena su forcellone / Montaje tornillos tensor de cadena en basculante / Installation of the chain tightener screws to the rear fork	1 + 1	M8	5	0,5	

CAVALLETTO LATERALE / CABALLETE LATERAL / SIDE STAND					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio piastra supporto cavalletto al telaio / Sujeción tija soporte caballete al bastidor / Fastening of the stand support plate to the frame	2	TE flang. M8x25	40	4,0	
Fissaggio cavalletto alla staffa di supporto / Sujeción caballete al estribo de soporte / Fastening of the stand to the support bracket	1	TE M10x18	10	1,0	
Dado basso e controdado / Tuerca baja y contratuerca / Short nut and lock nut	2	M10x1.25	10	1,0	
Fissaggio interruttore / Sujeción interruptor / Switch fastening	2	TE flang. M5x20	25	2,5	

SOSPENSIONE ANTERIORE / SUSPENSIÓN DELANTERA / FRONT SUSPENSION					
Forcella anteriore / Horquilla delantera / Front fork					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio steli forcella su piastra superiore / Sujeción barras horquilla en tija superior / Fastening of the fork tubes to the upper plate	1 + 1	TE flang. M8x35	25	2,5	
Fissaggio steli forcella su piastra inferiore / Sujeción barras horquilla en tija inferior / Fastening of the fork tubes to the lower plate	2 + 2	TE flang. M8x35	25	2,5	
Ghiera canotto sterzo / Tuerca manguito dirección / Steering tube metal ring	1	M25x1	Man.		
Fissaggio sdoppiatore impianto freni anteriori su piastra inferiore / Sujeción desdoblador sistema de frenado delantero a tija inferior / Fastening of the front braking system splitter to the lower plate	1	TE flang. M5x12	3	0,3	
Fissaggio convogliatore aria / Sujeción conductor aire / Air conveyor fastening	3	TE flang. M6x12	7	0,7	
Fissaggio bussola finecorsa piastra inferiore / Sujeción casquillo fin de carrera tija inferior / Lower plate end-of-stroke bush fastening	1 + 1	TCEI M8x16	22	2,2	L243
Chiusura mozzetti forcella / Cierre cubos pequeños horquilla / Fork hub plug	2 + 2	TCEI M8x35	25	2,5	
Fissaggio tappo canotto sterzo / Sujeción tapón manguito dirección / Steering tube plug fastening	1	M22x1		2,5	

SOSPENSIONE POSTERIORE / SUSPENSIÓN TRASERA / REAR SUSPENSION					
Ammortizzatore / Amortiguador / Shock absorber					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio vite supporto ammortizzatore all'attacco telaio / Sujeción tornillo soporte amortiguador enganche bastidor / Fastening of the shock absorber support screw to the frame coupling	1	TCEI M10x105	50	5,0	
Biellismi / Mecanismos de palancas / Connection elements					
Fissaggio bielle singole al forcellone / Sujeción elementos de conexión individuales al basculante / Fastening of the single connection elements to the rear fork	1	TCEI M12x115	100	10,0	
Fissaggio biella singola/biella doppia / Sujeción elemento de conexión individual/elemento de conexión doble / Single/Double connection element fastening	1	TCEI M12x115	100	10,0	
Fissaggio biella doppia al telaio / Sujeción elemento de conexión doble al bastidor / Fastening of the double connection element to the frame	1	TCEI M12x75	100	10,0	
Fissaggio vite inferiore ammortizzatore (biella doppia) / Sujeción tornillo inferior amortiguador (elemento de conexión doble) / Shock absorber lower screw fastening (double connection element)	1	TCEI M10x45	35	3,5	

CRUSCOTTO E FANALE ANTERIORE / SALPICADERO Y FARO DELANTERO / DASHBOARD AND HEADLIGHT					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio piastra supporto connettori a supporto cupolino/cruscotto / <i>Sujeción placa soporte conectores a soporte cúpula/salpicadero</i> / Fastening of the connector support plate to the front part of the fairing/dashboard support	2	TE flang. M5x12	3	3,0	
Fissaggio cruscotto a supporto cupolino/cruscotto (+ dado autobloccante M6) / <i>Sujeción salpicadero a soporte cúpula/salpicadero (+ tuerca de seguridad M6)</i> / Fastening of the dashboard to the front part of the fairing/dashboard support (+ M6 self-locking nut)	3	Rosetta / Arandela / Washer 6.6x18x1.6	12	1,2	
Fissaggio indicatori di direzione anteriori/posteriori (+ dado autobloccante M5) / <i>Sujeción indicadores de dirección delanteros/traseros (+ tuerca de seguridad M5)</i> / Front/rear direction indicator fastening (+ M5 self-locking nut)	4	TCEI M5x20	5	0,5	
Fissaggio fanale anteriore al cupolino / <i>Sujeción faro delantero a la cúpula</i> / Fastening of the headlight to the front part of the fairing	3	TCB 4.2x20	1	0,1	
Fissaggio vetro fanale anteriore al portafanale / <i>Sujeción cristal faro delantero al portafaro</i> / Fastening of the headlight glass to the light holder	2	TCB 4.2x25	1	0,1	

IMPIANTO ELETTRICO / INSTALACIÓN ELÉCTRICA / ELECTRICAL SYSTEM					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio sensore velocità / <i>Sujeción sensor velocidad</i> / Speed sensor fastening	2	TE flang. M6x16	12	1,2	
Fissaggio bobina destra e cavi massa / <i>Sujeción bobina derecha y cables masa</i> / Right coil and earth cable fastening	2	TE flang. M6x45	5	0,5	
Fissaggio bobina sinistra / <i>Sujeción bobina izquierda</i> / Left coil fastening	2	TE flang. m6x45	5	0,5	
Fissaggio interruttore d'accensione / <i>Sujeción interruptor de encendido</i> / Ignition switch fastening	2	Vite a strappo / Tornillo de tirón / Special screw m8x16	5	0,5	
Fissaggio indicatori di direzione posteriori al portatarga / <i>Sujeción indicadores de dirección traseros al portamatrícula</i> / Fastening of the rear direction indicators to the number plate holder	2	TBEI M5x20 spec	5	0,5	
Fissaggio indicatori di direzione anteriori / <i>Sujeción indicadores de dirección delanteros</i> / Front direction indicator fastening	2	TCEI M6x16	5	0,5	
Fissaggio regolatore a reggisella / <i>Sujeción regulador al vástago del sillín</i> / Fastening of the governor to the pillar	2	TE flang. M6x25	12	1,2	
Fissaggio piastra supporto connettori / <i>Sujeción placa soporte conectores</i> / Connector support plate fastening	2	TE flang. M5x12	5	0,5	

CASSA FILTRO / CAJA FILTRO / FILTER CASE					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio cassa filtro / <i>Sujeción caja filtro</i> / Filter case fastening	2	TE flang. M6x16	4	0,4	
Fissaggio viti accoppiamento cassafiltro (con dadi M5) / <i>Sujeción tornillos acoplamiento caja filtro (con tuercas M5)</i> / Filter case coupling screw fastening (with M5 nuts)	8	TE flang. M5x20	2	0,2	

RUOTA ANTERIORE / RUEDA DELANTERA / FRONT WHEEL					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Dado perno ruota / Tuerca eje rueda / Wheel pin nut	1	M25x1,5	80	8,0	

RUOTA POSTERIORE / RUEDA TRASERA / REAR WHEEL					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio corona / Sujeción corona / Crown fastening	5	TE flang. M8x30	25	2,5	
Dado perno ruota posteriore / Tuerca eje rueda trasera / Rear wheel pin nut	1	M20x1,5	100	10,0	

IMPIANTO DI RAFFREDDAMENTO / SISTEMA DE REFRIGERACIÓN / COOLING SYSTEM					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio supporto superiore radiatore a telaio / Sujeción soporte superior radiador al bastidor / Fastening of the radiator upper support to the frame	2	TE flang. M6x12	10	1,0	
Fissaggio superiore sinistro radiatore a supporto / Sujeción superior izquierda radiador al soporte / Fastening of the radiator left upper part to the support	1	TE flang. M6x16	10	1,0	
Fissaggio superiore destro radiatore a supporto (+ dado autobloccante M6) / Sujeción superior derecha radiador al soporte (+ tuerca de seguridad M6) / Fastening of the radiator right upper part to the support (+M6 self-locking nut)	1	TE flang. M6x25	10	1,0	
Fissaggio anteriore vaso espansione (+ dado autobloccante M6) / Sujeción delantera depósito de expansión (+ tuerca de seguridad M6) / Expansion tank front fastening (+ M6 self-locking nut)	1	TBEI M6x16 flang.	4	0,4	

IMPIANTI FRENANTI / SISTEMAS DE FRENADO / BRAKING SYSTEMS					
Impianto anteriore / Sistema delantero / Front braking system					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio pinze freni / Sujeción pinzas frenos / Brake caliper fastening	2+2	TE flang M10x1,25x35	50	5,0	
Fissaggio staffa supporto serbatoio liquido freni su pompa freni / Sujeción estribo soporte depósito líquido frenos en bomba frenos / Fastening of the brake fluid tank support bracket to the brake pump	1	TE flang. M6x12	10	1,0	
Fissaggio serbatoio liquido freni a staffa supporto / Sujeción depósito líquido frenos a estribo soporte / Fastening of the brake fluid tank to the support bracket	1	TE flang. M6x20	10	1,0	
Fissaggio dischi freni / Sujeción discos frenos / Brake disc fastening	6+6	TE flang. M8x16	30	3,0	
Fissaggio tubo freni anteriori / Sujeción tubo frenos delanteros / Front brake pipe fastening	1	M10x1	20	2,0	
Impianto posteriore / Sistema trasero / Rear braking system					
Fissaggio pinza freno posteriore / Sujeción pinza freno trasero / Rear brake caliper fastening	2	TE flang. M8x25	25	2,5	
Fissaggio serbatoio liquido freno a chiusura inferiore / Sujeción depósito líquido freno de cierre inferior / Fastening of the brake fluid tank to the lower cover	1	TE flang. M5x12	3	0,3	

IMPIANTI FRENANTI / SISTEMAS DE FRENADO / BRAKING SYSTEMS					
Impianto anteriore / Sistema delantero / Front braking system					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio vite azionamento interruttore stop / Sujeción tornillo accionamiento interruptor stop / Stop switch screw fastening	1	TE M6x25	man.		
Controdado asta freno posteriore / Contratuerca varilla freno trasero / Rear brake rod lock nut	1	M6	man.		
Fissaggio disco freno / Sujeción disco freno / Brake disc fastening	6	TE flang. M8x16	25	2,5	
Fissaggio pompa freno a supporto poggiapiedi destro / Sujeción bomba freno a soporte estribo derecho / Fastening of the brake pump to the right footrest support	2	TE flang. M6x30	12	1,2	
Fissaggio vite raccordo tubo liquido freno a pompa freno / Sujeción tornillo empalme tubo líquido freno a bomba freno / Fastening of the brake fluid pipe coupling screw to the brake pump	1	M10x12 Z.V.	20	2,0	

SISTEMA DI SCARICO / SISTEMA DE ESCAPE / EXHAUST SYSTEM					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio tubi di scarico al motore / Sujeción tubos de escape al motor / Fastening of the exhaust pipes to the engine	1	Dado / Tuerca / Nut / M8	4	0,4	
Fissaggio centrale tubi di scarico al telaio / Sujeción central tubos de escape al bastidor / Central fastening of the exhaust pipes to the frame	1	TCEI M8x100	4	0,4	
Fissaggio tubi di scarico a silenziatori / Sujeción tubos de escape a silenciadores / Fastening of the exhaust pipes to the exhaust silencers	1	Dado / Tuerca / Nut / M6	5	0,5	
Fissaggio piastrina attacco silenziatori a supporto poggiapiedi / Sujeción placa enganche silenciadores a soporte estribo / Fastening of the exhaust silencer coupling plate to the footrest support	1	TE flang. M8x16	5	0,5	
Fissaggio fascetta silenziatori / Sujeción abrazadera silenciadores / Exhaust silencer clamp fastening	1	TE flang. M8x40	5	0,5	

SELLA PILOTA E SELLINO PASSEGGERO / SILLÍN PILOTO Y SILLÍN PASAJERO / RIDER SADDLE AND PASSENGER SEAT					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio sella pilota e serbatoio a reggisella con rosetta 6.6x18x1.6 / Sujeción sillín piloto y depósito a vástago del sillín con arandela 6.6x18x1.6 / Fastening of the rider saddle and tank to the pillar with washer 6.6 x 18 x 1.6	1	TCEI flang. M6x45	7	0,7	
Fissaggio anteriore sellino passeggero / Sujeción delantera sillín pasajero / Passenger seat front fastening	1	Dado cieco M6 Tuerca ciega M6 Nut	7	0,7	
Fissaggio posteriore sellino passeggero con dado M6 flangiato autobloccante / Sujeción trasera sillín pasajero con tuerca M6 roscada de seguridad / Passenger seat rear fastening with M6 flanged self-locking nut	1	TCEI M6x60	7	0,7	
Fissaggio cinghia passeggero a reggisella / Sujeción correa pasajero a vástago del sillín / Fastening of the passenger belt to the pillar	2	TE flang. M6x20	12	1,2	
Fissaggio sellino passeggero / Sujeción sillín pasajero / Passenger seat fastening	2	Dado aut. M5 Tuerca M5 Nut M5	2	0,2	

SERBATOIO CARBURANTE / DEPÓSITO COMBUSTIBLE / FUEL TANK					
Tappo serbatoio / Tapón depósito / Filler cap					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio tappo a serbatoio / Sujeción tapón a depósito / Fastening of the filler cap to the tank	3	M5x30	5	0,5	
Fissaggio estetico tappo a serbatoio / Sujeción estética tapón a depósito / Finish fastening of the filler cap to the tank	3	M5x16	5	0,5	
Fissaggio sicurezza tappo a serbatoio / Sujeción seguridad tapón a depósito / Safety fastening of the filler cap to the tank	1	M5x16	5	0,5	
Aggancio anteriore / Enganche delantero / Front coupling					
Fissaggio supporto anteriore serbatoio / Sujeción soporte delantero depósito / Tank front support fastening	2	M6x12	5	0,5	
Rubinetto benzina / Grifo gasolina / Fuel cock					
Fissaggio rubinetto / Sujeción grifo / Cock fastening	2	M6x12	7	0,7	
Sfiato troppo pieno / Purgador demasiado lleno / Overflow					
Fissaggio raccordo portagomma sfiato / Sujeción empalme portagoma purgador / Overflow rubber-holder coupling fastening	1				

SERBATOIO OLIO MISCELATORE / DEPÓSITO ACEITE MEZCLADOR / MIXER OIL TANK					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio a supporto superiore radiatore / Sujeción a soporte superior radiador / Fastening to the radiator upper support	1	TBEI M6x16 flang.	4	0,4	
Fissaggio a culla supporto motore / Sujeción a cuna soporte motor / Fastening to the engine support cradle	1	TBEI M6x16 flang.	4	0,4	
Fissaggio a telaio / Sujeción a bastidor / Fastening to the frame	1	TCEI M6x25	5	0,5	
Fissaggio fermaglio sicurezza serbatoio / Sujeción gancho seguridad depósito / Tank safety clip fastening	1	TBEIM6x16 flang.	5	0,5	

CARENATURE / CARENADOS / FAIRINGS					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio frontale cupolino al supporto cupolino/cruscotto / Sujeción frontal cúpula al soporte cúpula/salpicadero / Front fastening of the front part of the fairing to the front part of the fairing/- dashboard support	4	TBEI M6x16 spec.	3	0,3	3
Fissaggio frontale cupolino su puntale al supporto cupolino/cruscotto / Sujeción frontal cúpula en parte delantera del carenado inferior al soporte cúpula/salpicadero / Front fastening of the front part of the fairing to the front part of the lower fairing	1	TBEI M5x16 flang.	3	0,3	3
Fissaggi carenature laterali al cupolino / Sujeciones carenados laterales a la cúpula / Fastenings of the side fairings to the front part of the fairing	3+3	TBEI M5x12 coll.	4	0,4	4
Fissaggi interni carenature laterali / Sujeciones interiores carenados laterales / Side fairing inner fastenings	4+4	aut. inox 3.9x14	1	0,1	1
Fissaggi carenature laterali al puntale / Sujeciones carenados laterales a la parte delantera del carenado inferior / Fastenings of the side fairings to the front part of the lower fairing	1+2	TBEI M5x12 coll.	4	0,4	4

CARENATURE / CARENADOS / FAIRINGS					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio laterale sinistro al puntale / Sujeción lateral izquierdo a la parte delantera del carenado inferior- trasera / Left fastening to the front part of the lower fairing	1	TBEI M5x9 coll.	3	0,3	3
Fissaggi interni carenature laterali al cupolino / Sujeciones interiores carenados laterales a la cúpula / Inner fastenings of the side fairings to the front part of the fairing	1+1	TBEI M5x12 coll.	4	0,4	4
Fissaggio interni carenature interne al puntale inferiore / Sujeciones interiores carenados interiores a la parte delantera del carenado inferior / Inner fastening of the inner fairings to the lower part of the fairing	2	TBEI M5x16 flang.	3	0,3	3
Fissaggio laterale sinistro a spoiler carenatura inferiore / Sujeción lateral izquierda a spoiler carenado inferior / Left fastening to the lower fairing spoiler	2	TBEI M5x16 flang.	3	0,3	3
Fissaggio spoiler carenatura inferiore a piastrina inferiore sinistra / Sujeción spoiler carenado inferior a tija inferior izquierda / Fastening of the lower fairing spoiler to the left lower plate	1	TBEI M5x12 coll.	4	0,4	4
Fissaggi laterali carenatura inferiore a piastrine attacco telaio / Sujeciones laterales carenado inferior a tijas enganche bastidor / Side fastenings of the lower fairing to the frame coupling plates	1+2	TBEI M5x12 coll.	4	0,4	4
Fissaggio convogliatore aria a vaso espansione / Sujeción conductor aire a depósito de expansión / Fastening of the air conveyor to the expansion tank	1	TBEI M5x16 flang.	3	0,3	3
Fissaggio palpebra cruscotto su supporto cupolino/cruscotto / Sujeción cierre superior salpicadero en soporte cúpula/salpicadero / Fastening of the dashboard upper cover to the front part of the fairing/dashboard support	2	TBEI M5x12 coll.	4	0,4	4
Fissaggio parafango anteriore / Sujeción guardabarros delantero / Front mudguard fastening	4	TBEI M5x16 flang.	3	0,3	3
Fissaggio prolunga parafango anteriore / Sujeción elemento de prolongación guardabarros delantero / Front mudguard extension fastening	3	Rivetto / Remache / Rivet 0207.AAOO			
Fissaggio chiusura inferiore a reggisella: vite + gommino + bussola a T + dado autobloccante M6 / Sujeción cierre inferior a vástago del sillín: tornillo + goma + casquillo de T + tuerca de seguridad M6 / Fastening of the lower cover to the pillar: screw + rubber + T-bushing + M6 self-locking nut	4	TE flang. M6x25	7	0,7	7
Fissaggio coprire reggisella ad archetto anteriore reggisella con rosetta 5.3x10.1 e clip M5 / Sujeción cubrevástago del sillín de arco delantero vástago del sillín con arandela 5.3x10.1 y clip M5 / Fastening of the pillar cover to the pillar front arch with washer 5.3 x 10.1 and M5 clip	2	TBEI M5x12 coll.	4	0,4	4
Fissaggio codone a coprire reggisella con clip M5 / Sujeción cola a cubrevástago del sillín con clip M5 / Fastening of the rear part of the fairing to the pillar cover with M5 clip	4	TBEI M5x12 coll.	4	0,4	4
Fissaggio portatarga e portaoggetti su codone / Sujeción portamatrícula y portaobjetos en cola / Fastening of the number plate-holder and glove compartment to the rear part of the fairing	3	TBEI M5x20 spec.	3	0,3	3
Fissaggio catadiootro posteriore: con rosetta 4.3x9x0.8 / Sujeción catafaro trasero: con arandela 4.3x9x0.8 / Rear reflector fastening: with washer 4.3 x 9 x 0.8	2	Dado aut. basso / Tuerca seg. Baja / Nut M4	2	0,2	2
Fissaggio cavo portacasco / Sujeción cable portacasco / Crash helmet holder cable fastening – M4 short self-locking nut	1	TE flang. M6x30	10	1,0	10
Fissaggio specchietti retrovisori ai supporti (dado aut. M6) / Sujeción retrovisores a los soportes (tuerca seg. M6) / Fastening of the rear-view mirrors to the supports (M6 self-locking nut)	2	Inserto filettato / Encastre roscado / Threaded insert M6	8	0,8	8

SEMIMANUBRI E COMANDI / SEMIMANILLARES Y MANDOS / HALF-HANDLEBARS AND CONTROLS					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio pesi antivibranti / Sujeción pesos antivibración / Antivibration weight fastening	2	M6x30	12	1,2	
Fissaggio semimanubri a steli forcella / Sujeción semimanillares a barra horquilla / Fastening of the half-handlebars to the fork tubes	2	M8x30	25	2,5	
Vite sicurezza semimanubri / Tornillo de seguridad semimanillares / Half-handlebar safety screw	2	M6x30	12	1,2	
Devoluti sinistro / Mando cruce izquierdo / Left dimmer switch	2	M5x1	2	0,2	
Devoluti destro / Mando cruce derecho / Right dimmer switch	2	M5x1	2	0,2	
Fissaggio leva comando freno anteriore / Sujeción palanca mando freno delantero / Front brake control lever fastening	2	TCEI M6x30	12	1,2	
Fissaggio leva comando frizione / Sujeción palanca mando embrague / Clutch control lever fastening	2	TE M6x30 flang.	12	1,2	
Fissaggio serbatoio liquido freni su supporto / Sujeción depósito líquido frenos en soporte / Fastening of the brake fluid tank to the support	1	M6x20	5	0,5	
Fissaggio supporto serbatoio liquido freni / Sujeción soporte depósito líquido frenos / Brake fluid tank support fastening	1	M6x12	12	1,2	
Montaggio cavo comando avviamento a freddo su deviatore / Montaje cable mando arranque en frío en desviador / Assembly of the cold start control cable on the dimmer switch	1		2	0,2	
Fissaggio comando acceleratore / Sujeción mando acelerador / Accelerator control fastening	1		2	0,2	

SEMIMANUBRI E COMANDI / SEMIMANILLARES Y MANDOS / HALF-HANDLEBARS AND CONTROLS					
Fissaggio particolari al telaio / Sujeción piezas al bastidor / Fastening of the components to the frame					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio viti attacco posteriori / Sujeción tornillos enganche traseros / Rear coupling screw fastening	2+2	TCEI M8x40	40	4,0	
Fissaggio viti attacco anteriori / Sujeción tornillos enganche delanteros / Front coupling screw fastening	2+2	TCEI M8x35	40	4,0	
Fissaggio supporto cupolino/cruscotto / Sujeción soporte cúpula/salpicadero / Front part of the fairing/dashboard support fastening	2	TE flang. M6x45	12	1,2	
Attacco superiore sinistro reggisella / Enganche superior izquierdo vástago del sillín / Pillar left upper coupling	1	TCEI M8x35	50	5,0	
Attacchi inferiori reggisella / Enganches inferiores vástago del sillín / Pillar lower couplings	2	TCEI M8x50	50	5,0	
Attacchi superiori destri reggisella / Enganches superiores derechos vástago del sillín / Pillar right upper couplings	1	TCEI M8x45	50	5,0	
Fissaggio traversino supporto termostato motorino / Sujeción travesaño pequeño soporte termostato motor eléctrico / Electric motor thermostat support beam fastening	2	M5x12 con coll.	5	0,5	
Fissaggio supporto poggiapiedi pilota / Sujeción soporte estribo piloto / Rider footrest support fastening	3	TCEI M8x25	25	2,5	

SEMIMANUBRI E COMANDI / SEMIMANILLARES Y MANDOS / HALF-HANDLEBARS AND CONTROLS					
Fissaggio particolari al telaio / Sujeción piezas al bastidor / Fastening of the components to the frame					
Descrizione / Descripción / Description	Q.tà Cant. Q.ty	Vite / dado Tornillo/tuerca Screw/nut	Nm	kgm	Rif. Ref.
Fissaggio inferiore supporto poggiapiedi destro pilota / Sujeción inferior soporte estribo derecho piloto / Rider right footrest support lower fastening	1	TCEI M8x30	25	2,5	
Fissaggio anteriore supporto poggiapiedi passeggero / Sujeción delantera soporte estribo pasajero / Passenger footrest support front fastening	2	TE flang. M8x45	25	2,5	
Fissaggio posteriore supporto poggiapiedi passeggero / Sujeción trasera soporte estribo pasajero / Passenger footrest support rear fastening	1	TE flang. M8x30	25	2,5	
Dado autobloccante (Fissaggio poggiapiedi sinistro passeggero) / Tuerca de seguridad (Sujeción estribo izquierdo pasajero) / Self-locking nut (passenger left footrest fastening)	1	M10	25	2,5	
Viti fissaggio protezione poggiapiedi sinistro pilota / Tornillos de sujeción protección estribo izquierdo piloto / Rider left footrest protection element fastening screws	2	TE flang. M5x12	5	0,5	
Fissaggio pompa freno e protezione pedana destra su supporto poggiapiedi destro pilota / Sujeción bomba freno y protección plataforma derecha en soporte estribo derecho piloto / Fastening of the brake pump and of the right footboard protection element to the rider right footrest support	2	TE flang. M6x30	5	0,5	
Perno poggiapiedi pilota / Eje estribo piloto / Rider footrest pin	1	M8	25	2,5	
Fissaggio leva comando cambio a supporto poggiapiedi sinistro pilota / Sujeción palanca mando cambio a soporte estribo izquierdo piloto / Fastening of the gear lever to the rider left footrest support	1	TE M8x30	12	1,2	
Fissaggio leva comando freno a supporto poggiapiedi destro pilota / Sujeción palanca mando freno a soporte estribo derecho piloto / Fastening of the gear lever to the rider right footrest support	1	TE M8x30	12	1,2	
Fissaggio leva rinvio comando cambio a motore / Sujeción palanca transmisión mando cambio a motor / Fastening of the gearshift linkage lever to the engine	1	TE flang. M6x20	12	1,2	
Fissaggio asta di collegamento su leva comando cambio / Sujeción eje de conexión en palanca mando cambio / Fastening of the connecting rod to the gear lever	1	Dado aut. basso / Tuerca seg. baja / Nut M6	12	1,2	
Collegamento/Registro asta leva comando cambio / Conexión/Regulador eje palanca mando cambio / Gear lever rod adjuster/connection	1	Dado aut. basso / Tuerca seg. baja / Nut M6	12	1,2	
Fissaggio bussole attacco carenature laterali / Sujeción casquillos enganche carenados laterales / Side fairing coupling bush fastening	2	TCEI M6x20	5	0,5	
Fissaggio cassa filtro al telaio / Sujeción caja filtro al bastidor / Fastening of the filter case to the frame	2	TE flang. M6x16	4	0,4	

Note:

aut. = autobloccante
flang. = con flangiatura
man. = fissaggio manuale
L243 = fissare con LOCTITE® 243
coll. = con collarino
spec. = speciale

Notas:

aut. = autoblocante
flang. = con rebordeado
man. = apriete manual
L243 = fijar con LOCTITE® 243
coll. = con collar
spec. = especial

Notes:

aut. = self-locking
flang. = flanged
man. = manual fastening
L243 = fasten with LOCTITE® 243
coll. = with collar
spec. = special

RS 250

TERMOSTATO - RADIATORE

TERMOSTATO - RADIADOR

THERMOSTAT - RADIATOR

Componente / Componente / Item	Valore standard Valor standard Standard	Valore limite Valor límite Limit
Temperatura apertura valvola termostato Temperatura de apertura de la válvula de termostato Thermostat valve opening temperature	50 ± 2°C	—
Apertura valvola termostato Apertura de la válvula del termostato Thermostat valve lift	Oltre / Más de / Over 7 mm a 65°C	—
Pressione di apertura valvola tappo radiatore Presión de apertura de la válvula del tapón del radiador Radiator cap valve opening pressure	110 k Pa (1,1 kg/cm ²)	—

CAMBIO

CAMBIO

TRANSMISSION

Componente / Componente / Item	Valore standard Valor standard Standard		Valore limite Valor límite Limit
Rapporto riduzione primaria Relación de reducción primaria Primary reduction ratio	2,565 (59/23)		—
Rapporto riduzione finale Relación de reducción final Final reduction ratio	3,071 (43/14)		—
Rapporti cambio Relaciones del cambio Gear ratios	1 ^a	2,454 (27/11)	—
	2 ^a	1,625 (26/16)	—
	3 ^a	1,235 (21/17)	—
	4 ^a	1,045 (23/22)	—
	5 ^a	0,916 (22/24)	—
	6 ^a	0,840 (21/25)	—
Gioco forchetta cambio marce/sede Juego horquilla cambio marchas/alojamiento Shift fork to groove clearance	0,1 - 0,3		0,5
Larghezza sede forchetta cambio marce Anchura del alojamiento de la horquilla del cambio de marchas Shift fork groove width	N. 1 e 2	4,0 - 4,1	—
	N. 3	5,5 - 5,6	—
Spessore forchetta cambio marce Espesor de la horquilla del cambio de marchas Shift fork thickness	N. 1 e 2	3,8 - 3,9	—
	N. 3	5,3 - 5,4	—

CATENA DI TRASMISSIONE

CADENA DE TRANSMISSION

DRIVE CHAIN

Componente / Componente / Item	Valore standard Valor standard Standard		Valore limite Valor límite Limit
Catena di trasmissione Cadena de transmission Drive chain	Tipo Tipo Type		—
	N. maglie N. eslabones Lonks. No.	110	—
	Lunghezza 20 passi Longitud 20 pasos 20-pitch lenght		304
Gioco catena Juego de la cadena Drive chain slock	25 - 35		—

Componente / Componente / Item	Caratteristiche / Características / Specifications	
Batteria <i>Batería</i> Battery	Tipo / Tipo / Type	12 V - 4 Ah
	Densità standard elettrolito <i>Densidad standard electrolito</i> Standard electrolyte S.G.	1,30 a 20°C (68°F)
	Principale / Principal / Main	20 A
Fusibili <i>Fusibles</i> Fuse size	Sistema di accensione <i>Sistema de encendido</i> Ignition system	7,5 A
	Servizi / Servicios / Others	15 A

ASSORBIMENTI
Unità di misura: Watt

SISTEMA ELÉCTRICO
Unidad de medida: Watt

WATTAGE
Unit: Watt

Componente / Componente / Item	Caratteristiche / Características / Specifications
Luce anabbagliante <i>Luz de cruce</i> Low beam	55 (H3)
Luce abbagliante <i>Luz de carretera</i> High beam light	55 (H1)
Fanalino luce stop - luce targa <i>Luz de posición trasera - luz matrícula</i> Rear stop light - number plate light	5/21
Indicatore di direzione <i>Indicador de dirección</i> Turn indicator	10
Luce di posizione <i>Luz de posición</i> Parking light	5
Luce illuminazione contagiri <i>Luz alumbrado cuentarrevoluciones</i> Revolution counter beam	2
Luce display multifunzione sinistro <i>Luz display multifunción izquierdo</i> Left beam multifunction display	2
Luce display multifunzione destro <i>Luz display multifunción derecho</i> Right beam multifunction display	2
Spia indicatori di direzione <i>Testigo de los indicadores de dirección</i> Turn indicators warning light	3
Spia abbagliante <i>Testigo de la luz de carretera</i> High beam warning light	3
Spia folle <i>Testigo del punto muerto</i> Neutral warning light	3
Spia cavalletto abbassato <i>Testigo indicadora caballete bajado</i> Stand down warning light	3
Spia LED livello olio miscelatore <i>Testigo LED aceite del mezclador</i> Oil mixer level warning light LED	LED rosso <i>Diodo LED rojo</i> Red LED
Spia LED fuorigiri <i>Testigo LED sobre-régimen</i> Red line warning light LED	LED rosso <i>Diodo LED rojo</i> Red LED

RS 250

FRENI - RUOTE
Unità di misura: mm

FRENOS - RUEDAS
Unidad de medida: mm

BRAKES - WHEELS
Unit: mm

Componente / Componente / Item	Valore standard Valor standard Standard	Valore limite Valor límite Limit
Spessore disco freno <i>Espesor del disco del freno</i> Brake disc thickness	Anteriore / Delantero / Front	3,9 - 4,1
	Posteriore / Trasero / Rear	4,3 - 4,7
Eccentricità cerchio ruota <i>Excentricidad de la llanta de la rueda</i> Wheel rim runout	Assiale / Axial / Axial	—
	Radiale / Radial / Radial	—
Eccentricità perno ruota <i>Excentricidad del perno de la rueda</i> Wheel axle runout	Anteriore / Delantero / Front	—
	Posteriore / Trasero / Rear	—
Misura cerchi <i>Medida de las llantas</i> Wheel rim size	Anteriore / Delantero / Front	3.50" x 17"
	Posteriore / Trasero / Rear	4.50" x 17"
Misura pneumatici <i>Medida de los neumáticos</i> Tyre size	Anteriore / Delantero / Front	120/60 ZR17"
	Posteriore / Trasero / Rear	150/60 ZR17"
Pressione pneumatici <i>Presión del los neumáticos</i> Tyre inflation pressure	Anteriore / Delantero / Front	190 kPa ± 10 (1,9 $\pm 0,1$ bar) con passeggero / con pasajero / with passenger 190 kPa (1,9 bar)
	Posteriore / Trasero / Rear	220 kPa ± 10 (2,2 $\pm 0,1$ bar) con passeggero / con pasajero / with passenger 240 kPa (2,4 bar)
Limite altezza battistrada pneumatici <i>Límite de la altura de la banda de rodamiento de los neumáticos</i> Tyre tread depth	Anteriore / Delantero / Front	—
	Posteriore / Trasero / Rear	—

SOSPENSIONI
Unità di misura: mm

SUSPENSIONES
Unidad de medida : mm

SUSPENSIONS
Unit: mm

Componente / Componente / Item	Valore standard Valor standard Standard	Valore limite Valor límite Limit
Corsa forcella <i>Carrera de la horquilla</i> Front fork stroke	120	—
Lunghezza libera molla forcella <i>Longitud libre del muelle de la horquilla</i> Front fork spring free length	244,3	237
Corsa ammortizzatore posteriore <i>Carrera amortiguador trasero</i> Rear shock-absorber stroke	64	237
Corsa ruota posteriore <i>Carrera de la rueda trasera</i> Rear wheel travel	133	—

CARBURANTE - OLIO -
LIQUIDO REFRIGERANTE

COMBUSTIBLE - ACEITE -
LIQUIDO DE REFRIGERACION

FUEL - OIL - COOLANT

Componente / Componente / Item	Caratteristiche / Características / Specifications
Tipo carburante <i>Tipo de combustible</i> Fuel type	Benzina super senza piombo secondo DIN 51 607, numero di ottano minimo 95 (N.O.R.M.) e 85 (N.O.M.M.) <i>Gasolina super sin plomo secondo DIN 51 607, mínimo de octano 95 (N.O.R.M.) y 85 (N.O.M.M.)</i> Premium grade unleaded petrol secondo DIN 51 607, min. O.N. 95 (N.O.R.M.) and 85 (N.O.M.M.)
Serbatoio carburante compresa riserva <i>Depósito del comb. incluida la reserva</i> Fuel tank including reserve	19,5 l
riserva / reserva / reserve	3,6 l
Tipo olio miscelatore (sintetico) <i>Tipo de aceite del mezclador (sintético)</i> Mixer oil type (synthetic)	 MAX 2T COMPETITION ISO - L - ETC ++ A.P.I. TC ++
Capacità serbatoio olio miscelatore compresa riserva <i>Capacidad del depósito del aceite del mezclador incluida la reserva</i> Mixer oil tank capacity including reserve	1,6 l
riserva / reserva / reserve	0,3 l
Tipo olio cambio <i>Tipo aceite del cambio</i> Transmission oil type	 F.C., SAE 75W-90 A.P.I. GL-4
Capacità olio cambio <i>Capacidad del aceite del cambio</i> Transmission oil capacity	700 cm ³
Tipo olio per forcella <i>Tipo de aceite para la horquilla</i> Front fork oil type	 F.A. SW oppure / o bien / or F.A. 20W
Tipo liquido freni <i>Tipo de líquido de los frenos</i> Brake fluid type	 F.F., DOT 5 (compatibile DOT 4)
Tipo refrigerante <i>Tipo de refrigerante</i> Coolant type	 ECOBLU -40 °C Utilizzare un anticongelante/liquido di raffreddamento adatto per radiatori in alluminio, miscelato esclusivamente con acqua distillata in proporzione del 50% <i>Emplear un anticongelante/liquido de refrigeración adecuado para radiadores de aluminio, mezclado exclusivamente con agua destilada en proporción del 50%.</i> Use an anti-freeze & summer coolant compatible with aluminium radiator, mixed with distilled water only, at the ratio of 50%.
Capacità circuito di raffreddamento <i>Capacidad del circuito de refrigeración</i> Cooling system capacity	1,9 l