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QUASAR 125 - 180

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workshop manual



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UPDATES MY 2004

8

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8.1. GENERAL INFORMATION

8.1.1. REFERENCE MANUALS

SPARE PARTS CATALOGUE

Aprilia part# (description)		
L60400	I	UK

OWNER'S MANUALS

Aprilia part# (description)		
8911245	I	UK





WORKSHOP MANUAL

Aprilia part# (description)		
MY 2003		
8910593	I	UK

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









Aprilia part# (description)		
MY 2003		
8CM0042	I	UK

8.1.2. SPECIFICATIONS

	Grip	Hp
DIMENSIONS		
Maximum length	1775 mm (69.88 in.)	1685 mm (66.34 in.)
Maximum width	990 mm (38.97 in.)	
Max. height (handlebar height)	1070 mm (42.13 in.)	
Wheelbase	1065 mm (41.93 in.)	
Minimum ground clearance	160 mm (6.30 in.)	
Weight in running order	180 kg (396.83 lb)	170 kg (374.78 lb)
ENGINE		
Type	horizontal one-cylinder, 4-stroke engine - 2 valves controlled by one overhead camshaft	
Total displacement 	125 cu cm (7.63 cu in)	
Total displacement 	169 cu cm (10.37 cu in)	
Bore/stroke 	52.4/57.8 mm (2.06/2.28 in.)	
Bore/stroke 	61/57.8 mm (2.40/2.28 in.)	
Compression ratio	9.1 ± 1 : 1	
Valve clearance	0.08 mm (0.0031in) (INT - EXH)	
Starting	electric + kick starter	
Engine idling speed	1800 ± 100 rpm	
Clutch	Automatic dry centrifugal clutch	
Gearbox	automatic converter, stepless + reverse gear	
Lubrication	wet sump, forced lubrication with mechanical pump and oil cooler	
Cooling system	forced air-cooling	
CAPACITIES		
Fuel (including reserve)	8 litres (2.11 gallons)	
Fuel reserve	1.5 litres (0.39 gallons)	
Gearbox oil	150 cu cm (9.15 cu in)	
Engine oil		
- engine oil and engine oil filter change only	0.9 litres (0.24 gallons)	
- change for engine overhaul	1.2 litres (0.32 gallons)	
Mixer oil (reserve included)	-	
Mixer oil reserve	-	
Seat	2	
Allowed load (Rider + passenger + luggage)	180 kg (396.832 lb)	190 kg (418.88 lb)
TRANSMISSION SYSTEM		
Converter	Stepless automatic converter	
Primary	V belt	
Primary drive ratios		
- minimum for stepless gearbox	3	
- maximum for stepless gearbox	0.789	
Secondary	Gears	
Final ratio	11.584	
CARBURETTOR		
Model		
- type	Mikuni	
Choke	Ø 22 mm (0.87 in.)	
FUEL SYSTEM		
Fuel	Premium grade unleaded petrol - DIN 51607- with 95 RON and MON octane rating minimum.	

FRAME	
Type	tube
SUSPENSIONS	
Front	with independent linkages
Rear	hydraulic monoshock
BRAKES	
Front	Drum brake Ø 109 mm (4.29 in) with mechanical transmission
Rear	Disc brake Ø 200 mm (7.87 in) with hydraulic transmission
WHEEL RIMS	
Type	in steel
Front	10 x 5.5"
Rear	8 x 8.0"
TYRES	
Type	tubeless
Front	21 x 7-10
Rear	21 x 10-8
AS AN ALTERNATIVE:	
Front	AT 21 x 7-10
Rear	AT 22 x 10-8
Front inflation pressure	35 kPa (0.35 bar)
Rear inflation pressure	21 kPa (0.21 bar)
IGNITION	
Type	C.D.I. control unit
Spark advance	15° ± 2° (125) - 13° ± 2° (180)
SPARK PLUG	
Standard	NGK CR7HSA
Spark plug electrode gap	0.6 – 0.7 mm (0.023 – 0.027 in.)
ELECTRIC SYSTEM	
Battery	12 V - 9 Ah
Fuse	15 A
Generator (with permanent magnet)	12 V - 110 W
BULBS	
Parking light	12 V – 5 W
Low/high beam	12 V – 35/35 W
Direction indicators	12 V – 10 W
Rear parking light/stoplight	12 V – 5 / 21 W
Number plate light	12 V – 5 W

8.1.3. LUBRICANT TABLE

LUBRICANT	PRODUCT
Engine oil	<p>RECOMMENDED:  SUPERMOTOROIL SAE 15W-40, or  F1 SUPERMOTOROIL 15W-40. As an alternative to recommended fluids, top brand oils meeting or exceeding A.P.I. SJ/CF specifications can be used.</p>
Gearbox oil	<p>RECOMMENDED:  PONTIAX HD SAE 85W-140, or  ROTRA MP 85W-140. As an alternative to recommended fluids, top brand oils meeting or exceeding A.P.I. GL-5 specifications can be used.</p>
Bearings and other lubrication points	<p>RECOMMENDED:  AUTOGREASE MP, or  GREASE 30. As an alternative to recommended grease, use top brand rolling bearing grease that will resist a temperature range of -30°C (-22 °F) +140°C (284°F), with dropping point 150°C (302°F) - 230°C (446°F), high corrosion protection, good resistance to water and oxidation.</p>
Battery terminals	Use neutral grease or Vaseline.
Brake fluid	<p> DANGER: Use new brake fluid only. Do not mix different makes or types of oil without having checked bases compatibility. The system is filled with DOT 4 fluid (the braking system is also compatible with DOT 5). As an alternative to the recommended product, top brand brake fluid meeting or exceeding SAE J1703, NHTSA 116 DOT 4, ISO 4925 specifications for synthetic brake fluid can be used.</p>
Chain spray grease	RECOMMENDED:  CHAIN SPRAY, or  CHAIN LUBE.
Engine coolant	<p> DANGER Use nitrite-free coolant only, with a protection until at least -35°C (-31°F). RECOMMENDED:  ECOBLU -40 °C (-40 °F). As an alternative to the recommended product, top brand brake fluid meeting or exceeding CUNA NC 956-16 specifications for ethylene glycol coolant can be used.</p>

8.1.4. SCHEDULED MAINTENANCE CHART

CAUTION OPERATIONS TO BE CARRIED OUT BY THE Authorised dealer (CAN BE CARRIED OUT BY THE USER AS WELL).

Component	End of running-in [after 2 weeks]	Monthly	Every six months	Every year
Throttle and brake cables	1	1		
Battery	1	1		
Spark plug			1	
Carburettor / idling	1		2	
Drive chain	1		Every 10 hours of use: 1	
Air cleaner		2		3
Engine oil filter			2	
Fuel indicator	1	1		
Light switch	1	1		
Stop light switch	1		1	
Brake fluid level	Check before each ride			
Engine oil *	3		3	
Tyres – Inflation pressure	Check before each ride			
Mixer oil reserve light	Check before each ride			
Front brake drums/blocks	Check before each ride			
Rear brake pad wear	1	1		

Key:

1 = check, clean and possibly lubricate, adjust, top up or replace, if needed;

2 = clean;

3 = change

4 = adjust

* = perform maintenance operations monthly if you are riding in muddy or dusty conditions, on wet or rough road surfaces (off-road).

CAUTION Perform maintenance operations more frequently than the indicated intervals if you are riding in rainy or dusty conditions, on rough road surfaces or when the vehicle is used for racing.

8.1.5. FASTENING ELEMENTS



DANGER

The fasteners reported in the chart must be tightened to the specified torque using a torque wrench.

ENGINE			
Parts	Nm	kgm	Notes
Spark plug	20	2,0	
Throttle control covers	13	1,3	
Oil filter cover	15	1.5	
Flywheel retaining nut	38	3,8	
Camshaft flange nut	27	2,7	
Mobile belt roller nut	38	3,8	
Valve adjusting nut	5	0,5	
Cylinder head nut	27	2,7	
Primary drive gear nut	38	3,8	
Engine front support pin	25	2.5	
Head stud bolt	13	1,3	
Oil bleeder	25	2.5	
Engine support plate screw	49	5	
Right casing screw	10	1.0	
Left casing screw	10	1.0	
Valve cover screw	14	1,4	
Converter cover screw	10	1.0	
Oil cooler retaining screw	9	0.9	
Starter motor screw	14	1,4	
Oil pump screw	14	1,4	
Stator screw	14	1,4	
Engine rear mount screw	28	28	

FRAME			
Parts	Nm	kgm	Notes
Upper handlebars braces	4	0,4	
Steering stem nut	10	1.0	
Rear shock absorber retaining nut	40	4,0	
Front hub retaining nut	60	6,0	
Rear hub retaining nut	95	9,5	
Front wheel retaining nut	38	3,8	
Rear wheel retaining nut	38	3,8	
Steering stem flange nut	25	2.5	
Swinging arm spindle nut	90	9,0	
Chain adjusting nut	22	2,2	
Handlebar lower fastener	10	1.0	
Front brake lever	10	1.0	
Rear brake lever	10	1.0	
Brake pads pin	25	2.5	
Chain sprocket retaining screw	29	3	
Oil line retaining screw	25	2.5	
Rear axle (inner) retaining screw	9	0.9	
Rear axle (outer) retaining screw	15	1.5	
Steering arm retaining screw	30	3,0	
Brake disc retaining screw	27	2,8	
Headlight retaining screw	16	1,6	
Muffler retaining screw	25	2.5	
Footpeg retaining screw	4	0,4	

Brake caliper retaining screw	33	3,4	
Brake master cylinder retaining screw	25	2.5	
Front shield retaining screw	4	0,4	
Front suspension screw	40	4,0	

8.2. SCHEDULED MAINTENANCE

8.2.1. CHECKING AND ADJUSTING THE BRAKES



DANGER

The brakes are key safety components and must be kept in perfect working order; check them before each ride.

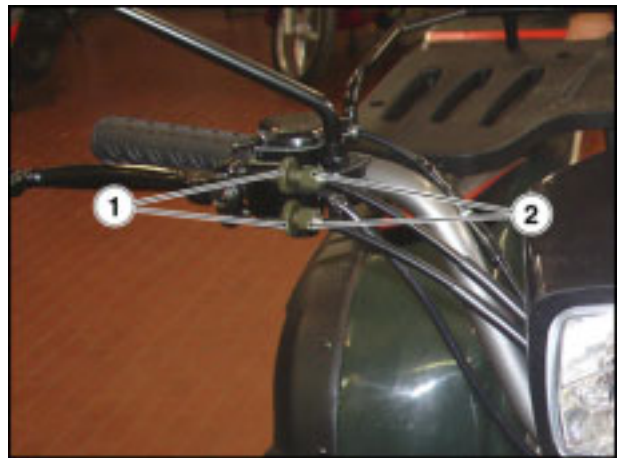
The motorcycle is equipped with two front drum brakes and one rear disc brake. Check brake efficiency before every use.

ADJUSTING THE FRONT BRAKES

If the thickness of the friction material is worn down to nearly 1 mm (0.0039 in.), replace the blocks.

Operate the right hand brake lever:

- Loosen the locking washers (1).
- Adjust the brake adjusters (2).
- Loosen the locking washers (1).



ADJUSTING THE REAR BRAKE CABLE

CAUTION Periodically check brake fluid level in the reservoir, see 2.1.2 (SCHEDULED MAINTENANCE CHART).

Brake fluid level decreases gradually as the brake pads wear down.

Pull the left brake lever:

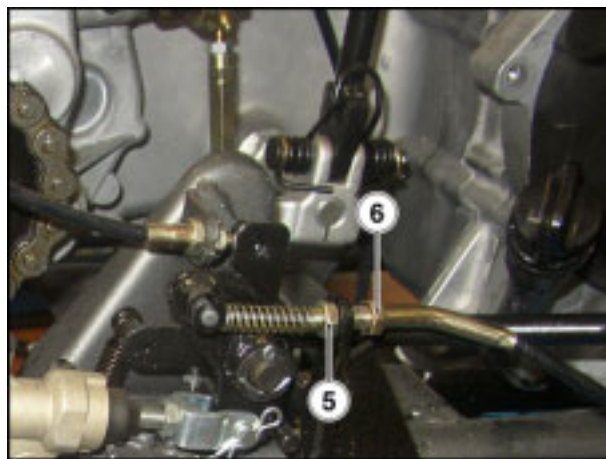
- Loosen the locking washer (3).
- Adjust with the brake adjuster (4).
- Tighten the locking washer (3).



ADJUSTING THE BRAKE PEDAL

The brake pedal allows for integral braking.

- Slacken the lock nut (6).
- Set with adjuster (5).
- Tighten the lock nut (6).



8.2.2. BLEEDING THE REAR BRAKE CIRCUIT

Any air trapped in the hydraulic circuit will act as a cushion and take up most of the pressure applied by the master cylinder. This will hamper the operation of the brake calliper and reduce braking efficiency.

A spongy feel of the brake lever and loss of braking mean that there is air in the circuit.



DANGER

This is a dangerous condition that makes the vehicle unsafe to ride. Each time the brakes are removed, it is indispensable to bleed the hydraulic circuit once the brakes have been refitted and the braking system is back to normal operating conditions.



The rear braking system features only one bleed valve positioned on rear brake calliper.

HOW TO BLEED THE BRAKING SYSTEM

Before proceeding, ensure the following requirements are met:

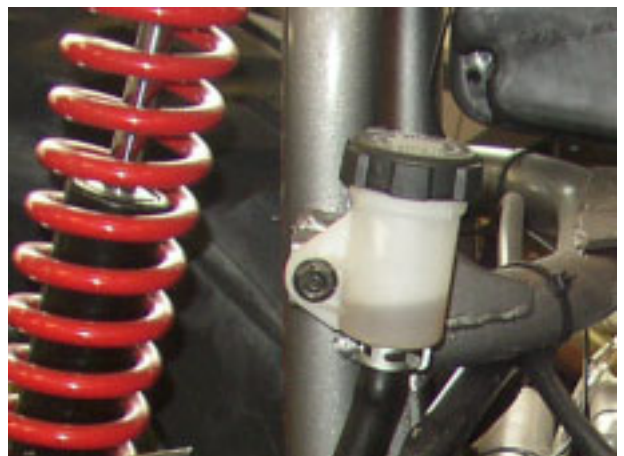
CAUTION Place the motorcycle on firm and level ground.

- the master cylinder is above the oil tube (meaning the total length of the hose) and the brake calliper;
- the brake fluid reservoir is above the master cylinder;
- the calliper bleed nipple is on top of the calliper;
- the oil tube is routed smoothly with no upside-down U-turns.
- Top up brake fluid level in the reservoir.
- Remove the rubber cap.
- Attach a clear plastic hose to the calliper bleed nipple. Insert the other end of the hose into a container.
- Pump the brake lever quickly. Repeat several times, then keep the lever pulled in.
- Slacken the bleed nipple by one quarter of a turn to let the brake fluid drain into the container. This will remove any tension from the lever and help it travel fully home.
- Tighten the bleed nipple. Pump the lever repeatedly, then hold in the lever and slacken the bleed nipple again.
- Repeat process until the fluid draining into the container is totally clear of air bubbles.



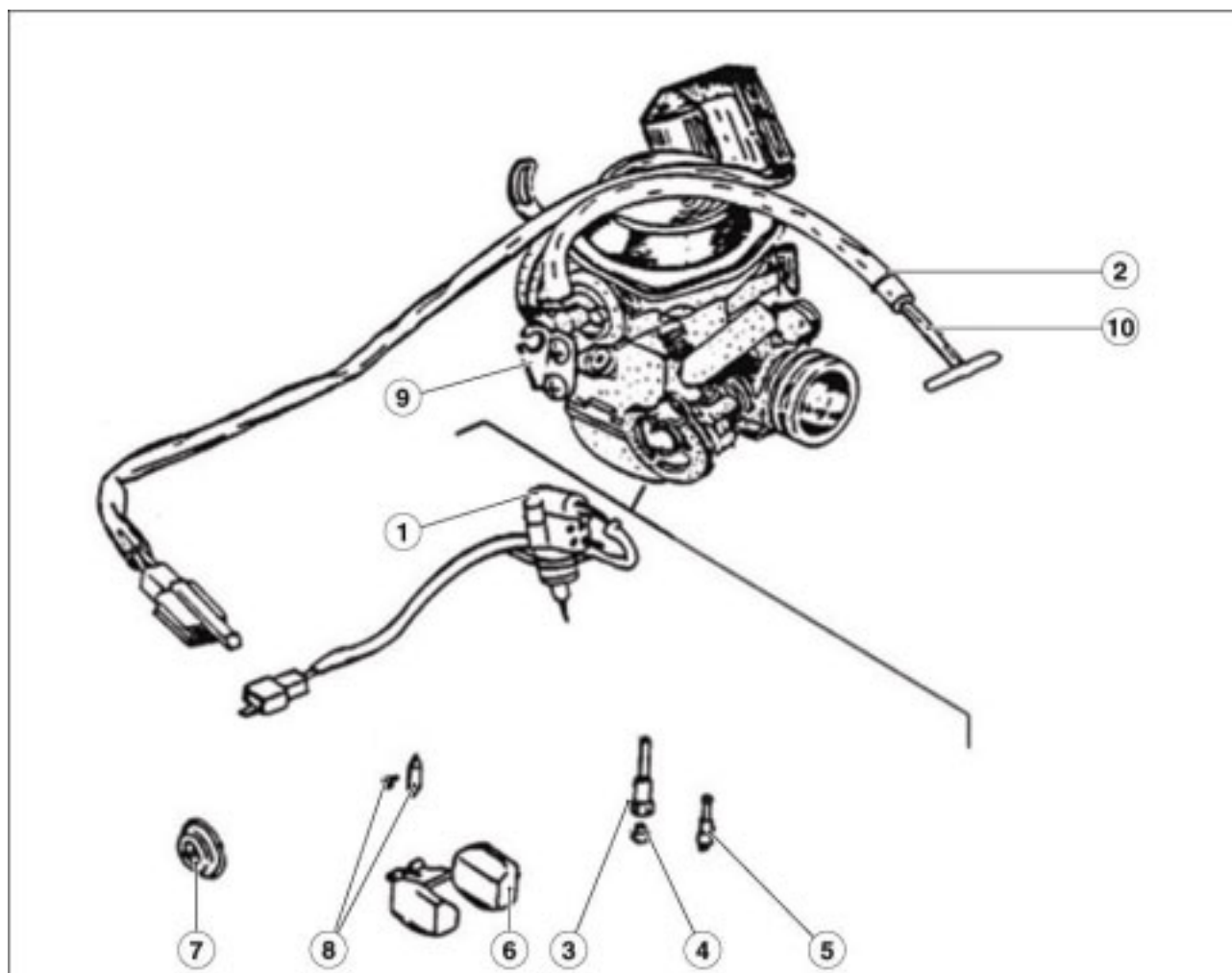
CAUTION During the bleeding procedure, top up reservoir with brake fluid if needed. The reservoir should not be empty during the bleeding procedure or air will enter the system.

- Tighten the bleed nipple and disconnect the hose.
- Add brake fluid to the reservoir until bringing fluid up to correct level.
- Refit the rubber cap.



8.3. FUEL FEEDING SYSTEM

8.3.1. CARBURETTOR SYSTEM DIAGRAM



Key:

- 1) Starter valve;
- 2) Snap ring;
- 3) Nozzle;
- 4) Max. jet: Ø 130 (125 cc), Ø 132,5 (180 cc)
- 5) Min. jet Ø 35;
- 6) Float;
- 7) Filter;
- 8) Needle valve;
- 9) Cable guide;
- 10) Fitting.

8.3.2. CARBURETTOR SPECIFICATIONS

Parts	SPECIFICATIONS	
	125 cc	180 cc
Intake manifold	Ø 22	
Throttle valve	Ø 22	
Float	5 g	5.5 g
Max. jet	Ø 130	Ø 132.5
Nozzle	Ø 3.2	
Min. jet	Ø 35	
Fuel level	29,5	
Air screw	2 ½ turns from fully closed position	

8.3.3. REMOVING THE CARBURETTOR

CAUTION Close the fuel tap to avoid fuel leaks.



WARNING

Place a cloth below the carburettor to collect any spillage.

- Remove both shields, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Disconnect fuel line from pump.



- Loosen clip and disconnect air hose.



- Loosen clip and remove carburettor from manifold.



WARNING

Plug the intake hose with a clean cloth.

- Loosen the two nuts and remove the cable.



- Remove the carburettor.
- Loosen and remove the locking nut.



- Slide out the cable, collect the cylinder and the spring.



8.4. ENGINE

8.4.1. REMOVING THE ENGINE FROM THE FRAME



DANGER

Switch off the engine and wait for the engine and exhaust system to cool down.

- Remove both shields, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove both footpegs, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).



WARNING

Clean the outer parts of the engine using a degreaser, small brushes and cloth.

Ensure that no rubber or plastic parts come in contact with detergents and corrosive or penetrating solvents.

Should you need a steam cleaner, do not direct water, steam or high-pressure air jets towards any of the following parts: wheel hubs, handlebar controls, main warning lights, exhaust silencer, main switch.

- Remove the exhaust system, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove the air box, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove the converter air scoop.

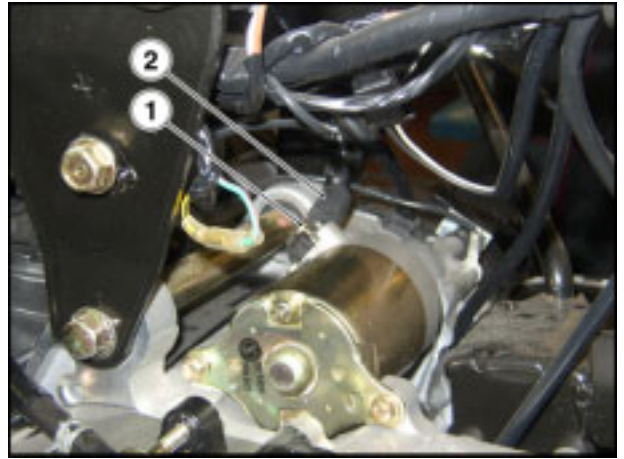


WARNING

Mark cables, hoses and pipes to avoid confusing them when refitting.



- Loosen and remove screw (1) and remove clip (2).



- Disconnect the alternator connectors.



- Remove the spark plug cap.

**DANGER**

Due to the weight and size of the parts, work with the greatest care.
Block off all openings of engine and hoses to prevent the ingress of dirt.

- Remove the carburettor, see page 8.3.3 (REMOVING THE CARBURETTOR).



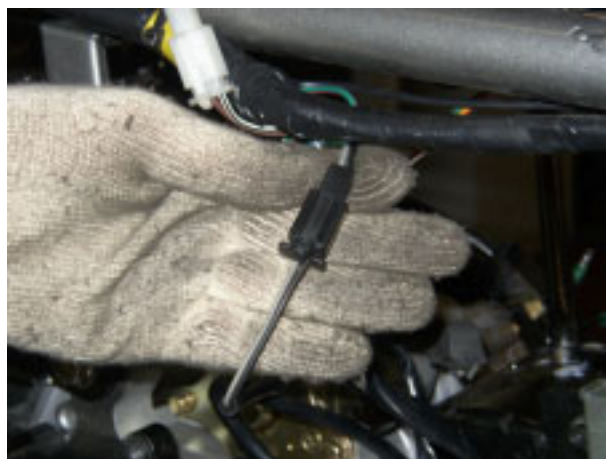
- Remove the clamp and disconnect the vacuum hose from fuel pump end.
- Loosen the tank front screw.



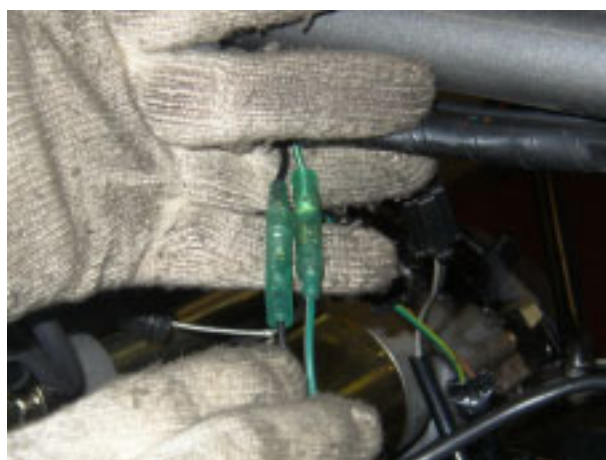
- Loosen and remove screw and remove the two clamps.



- Disconnect neutral sensor connector.



- Disconnect the two reverse gear sensor connectors.

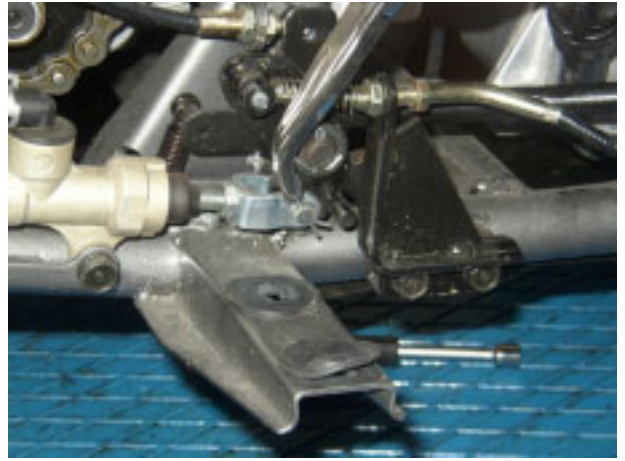


- Disconnect pedal stop switch connector.
- Release wirings from ties.



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- Remove chain, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove the lower protection, see 8.6.13 (REMOVING THE LOWER PROTECTION).
- Drain off all engine oil, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove engine oil lines, see 8.8.2 (REMOVING THE ENGINE OIL LINES).
- Remove the split pin and slide out the shaft.



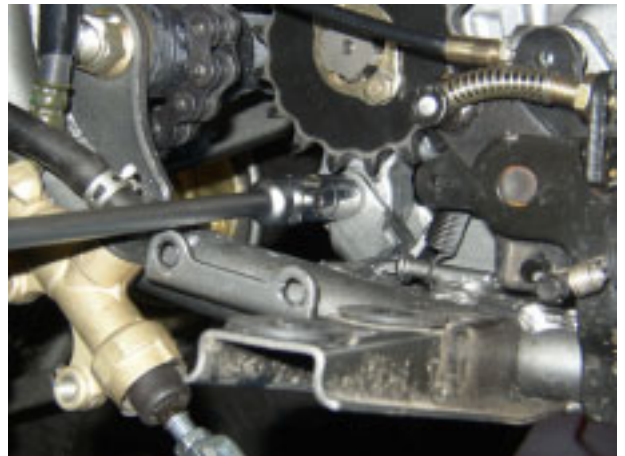
- Loosen and remove the two screws.
- Remove the pump, leave it connected to the hoses.



- Work on the right side, loosen the screw and turn the plate anticlockwise.



- Working on either side, loosen and remove the screw.





- Loosen and remove the nut.



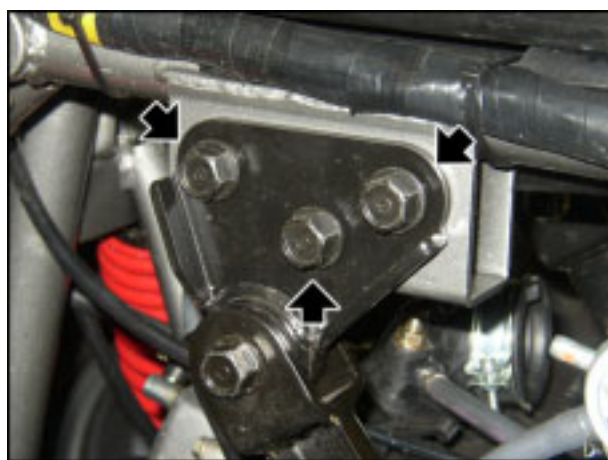
- Loosen and remove the three screws.



DANGER

All fasteners have now been removed.
Handle with care. Be careful to avoid injury to your hands, arms and legs.
Clear all tools from the area. Thoroughly clean the area of the floor where the engine is to be placed.

- Remove the engine from the left side.



8.4.2. FITTING THE ENGINE IN THE FRAME

- Read carefully the general safety rules as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).

CAUTION *To refit the engine in the frame, reverse the removal procedure, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS). Before proceeding, however, you will have to perform the operations detailed below.*

**DANGER**

Proceed with care.

Be careful to avoid injury to hands, arms and legs.

- Check the tension of the drive chain and adjust if necessary, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS)

**WARNING**

Inspect any parts you have removed, paying special attention to these components:

- wiring must be properly fastened with wire ties.

**WARNING**

Wires and hoses must not be twisted and/or crushed.

- Electrical connectors must be fitted to the matching connectors;
- Hoses and pipes and couplings must be securely in place and fastened with suitable clips;
- The throttle and brake cables must slide smoothly inside their housings and must not bind when handlebars are turned.

- Restore engine oil level and, if necessary, top up transmission oil as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).

FOREWORD

- Engine parts shall be disassembled working on a bench. The operations that can be carried out with the engine assembled on frame will be accompanied by a note.

**WARNING**

The manufacturer declines all responsibility for any damages originated by engine disassembly and reassembly operations carried out with unsuitable tools.

8.5. TRANSMISSION SYSTEM

8.5.1. REMOVING THE REAR SPROCKET

- Set a support under frame lower end.
- Remove the rear right wheel; see 8.6.14 (REMOVING THE WHEEL).
- Remove the two screws.



- Remove the crankcase but leave it connected to the speed sensor.



- Straighten the nut fastener ends.



- Loosen and remove the four nuts.



- Remove the two nut fasteners.

**WARNING**

Renew the nut fasteners every time they are removed.



- Remove the rear sprocket.

CAUTION In case it is replaced, collect the speed sensor magnet.



8.6. CHASSIS

8.6.1. REMOVING THE HEADLIGHT

- Working on either side, loosen and remove the screw.



- Disconnect the connector.



- Remove the headlight.



8.6.2. DISASSEMBLING THE HEADLIGHT

- Working on either side, loosen the side screw.



- Working on either side, slide out the support plate.



- Slide out the light from the shell.



8.6.3. REMOVING THE INSTRUMENT PANEL

- Remove the headlight; see 8.6.1 (REMOVING THE HEADLIGHT).
- Loosen the screw.



- Slide out instrument panel connectors.



WARNING

Mark the cables to avoid making the wrong connections at reassembly.



- Remove the display connector.



- Slide out the cap and the ignition switch connector.



- Slide out the instrument panel.



8.6.4. DISASSEMBLING THE INSTRUMENT PANEL

- Remove the ignition key.
- Remove the instrument panel, see 8.6.3 (REMOVING THE INSTRUMENT PANEL).
- Straighten the edges of the fastener.
- Remove the fastener.



- Slide the ignition switch out of the instrument panel.
- Loosen and remove the two nuts, collect the washers.
- Slide out the display in a forward motion.



8.6.5. REMOVING THE MANUAL COLD START

- Withdraw the protection.
- Loosen the lock nut.



- Disconnect the cold start cable.



- Loosen and remove the screw, collect the washer, remove the cover and the ring nut.



8.6.6. REMOVING THE HANDLEBAR

- Remove the headlight; see 8.6.2 (REMOVING THE HEADLIGHT).
- Remove the instrument panel, see 8.6.3 (REMOVING THE INSTRUMENT PANEL).
- Remove the side protection; see 8.6.7 (REMOVING THE SIDE PROTECTION).
- Fully loosen the locking washer (1).
- Fully tighten adjuster (2).
- Remove rear brake cable from its seat.



- Fully loosen the two locking washers (3).
- Fully tighten the two adjusters (4).
- Remove front brake cables.



- Loosen the two screws.
- Remove the cover.



- Remove throttle cable from its seat.



- Disconnect switch, stop light, direction indicators and instrument panel connectors.

**WARNING**

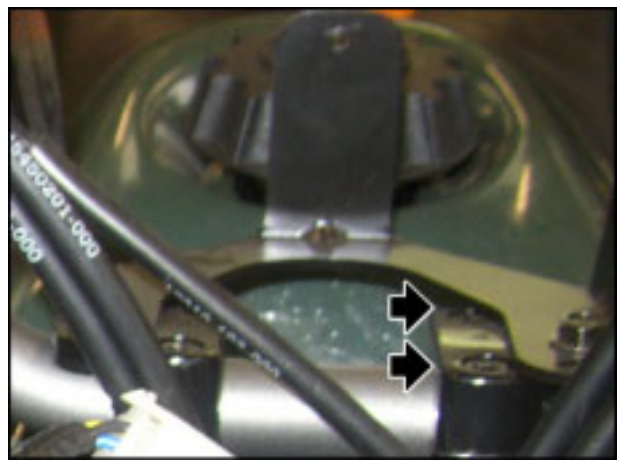
Mark cables to avoid their wrong positioning at reassembly.



- Working on either side, loosen and remove the screw.
- Remove the instrument panel support.



- Working on either side, loosen the two screws, remove them and remove the U-bolts.
- Remove the handlebar.



8.6.7. REMOVING THE SIDE PROTECTION

- Loosen and remove the screw, collect the nut.
- Loosen and remove the two inner screws and collect the nut.
- Remove the side protection.



8.6.8. REMOVING THE LUGGAGE RACK (GRIP VERSION)**REMOVING THE FRONT LUGGAGE RACK**

- Working on either side, loosen and remove the screw.



- Working on either side, loosen and remove the screw, collect the washer.



- Slide out the front luggage rack.

**REMOVING THE REAR LUGGAGE RACK**

- Loosen and remove the two screws.
- Remove the luggage rack rearward.



8.6.9. REMOVING THE BUMPER (GRIP VERSION)

- Loosen and remove the three screws.



- Slide out the bull-bar from its fasteners.



WARNING

The following operations refer to both sides.

- Unscrew and remove the screw.



- Loosen and remove the screw, collect the nut.



- Remove the headlight connector.
- Slide the bumper forward.

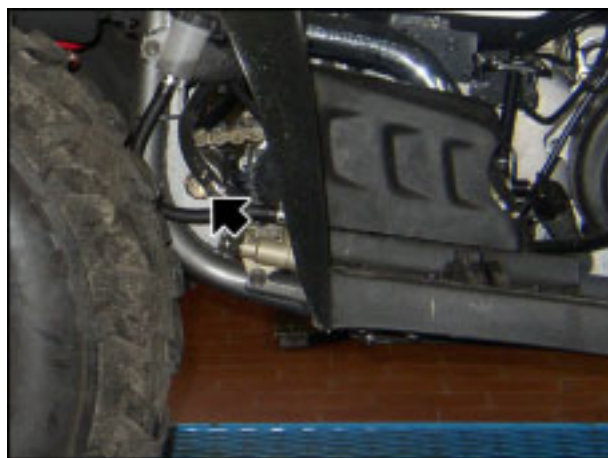


8.6.10. REMOVING THE SWINGING ARM

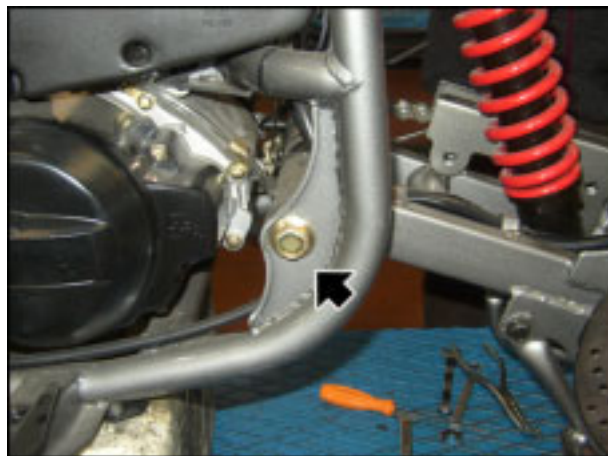
- Remove chain; as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove the rear brake calliper, see 8.7.6 (REMOVING THE REAR BRAKE DISC), leaving it connected to the brake fluid line.
- Release brake fluid line from its fasteners.
- Disconnect the speed sensor and release the cable.



- Remove rear shock absorber, as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Loosen and remove nut.



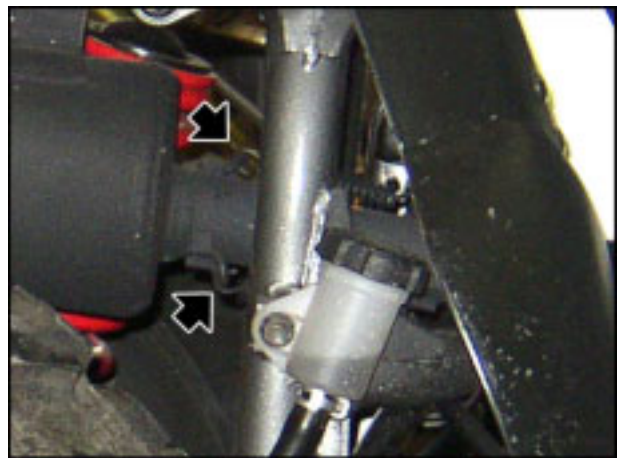
- Remove swinging arm spindle. Save washer.
- Remove the complete swinging arm.



8.6.11. REMOVING THE EXHAUST SILENCER**DANGER**

Allow for the engine and exhaust silencer to cool down completely before proceeding.

- Release the two springs on silencer side.



- Loosen and remove the two screws.
- Slide out the exhaust silencer in a rearward motion.



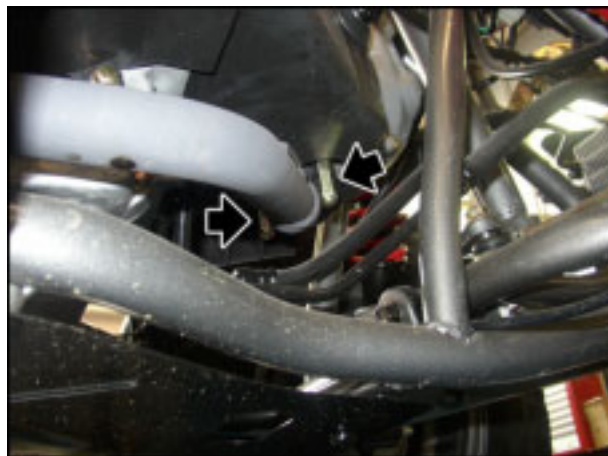
8.6.12. REMOVING THE EXHAUST PIPE



DANGER

Allow for the engine, pipes and exhaust silencer to cool down completely before proceeding.

- Remove the rear shield; as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove right footrest; as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Remove the exhaust silencer; see 8.6.11 (REMOVING THE EXHAUST SILENCER).
- Loosen and remove the two screws.



- Push down brake pedal.
- Turn the exhaust pipe slightly and remove it from behind.

CAUTION At reassembly, change the gasket between exhaust pipe and engine.



8.6.13. REMOVING THE LOWER PROTECTION

- Loosen and remove the screws.



- Remove the lower protection.



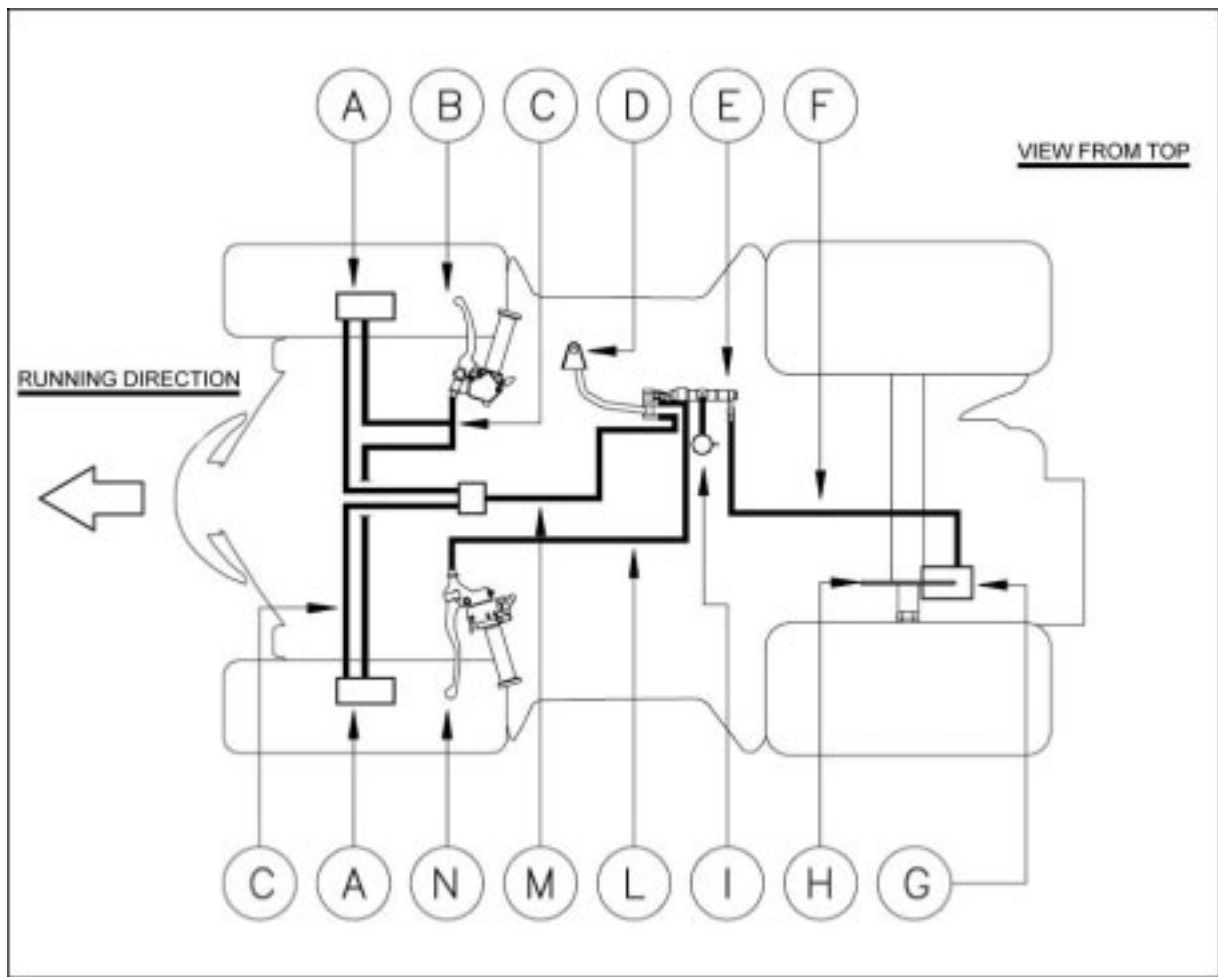
8.6.14. REMOVING THE WHEELS

- To remove one or both front wheels, raise the front part of frame with a suitable stand, while to remove one or both rear wheels, place the stand under the rear axle.
- Remove the split pin (1).
- Loosen and remove the four screws (2). Save washers.
- Remove wheel.



8.7. BRAKING SYSTEM

8.7.1. SYSTEM DIAGRAM



Key:

- A Front brake block (drum brake);
- B Front brake lever;
- C Front brake Bowden cable;
- D Integral braking system control lever (combines disc rear braking system with drum front braking system);
- E Rear brake master cylinder;
- F Rear brake fluid line;
- G Rear brake calliper;
- H Rear brake disc;
- I Rear brake fluid reservoir;
- L Bowden cable (from rear brake lever to brake master cylinder);
- M Bowden cable (from pedal D to front brake cables splitter);
- N Rear brake lever.

8.7.2. CHECKING AND TOPPING UP REAR BRAKE FLUID LEVEL

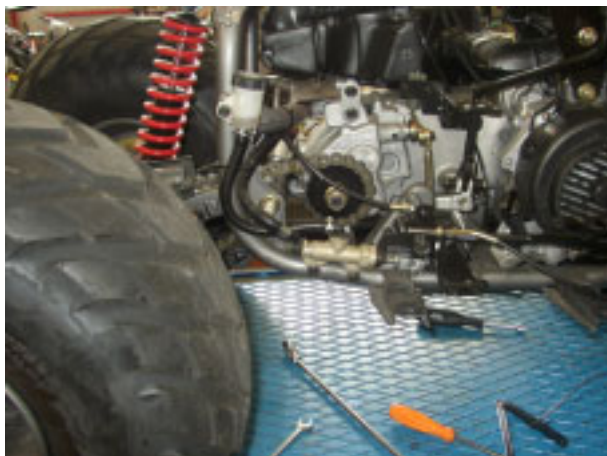


WARNING

Bleed the circuit when the brake lever has exceeding travel or feels spongy or whenever you suspect that there might be air trapped in the circuit; see 8.2.2 (BLEEDING THE BRAKE CIRCUIT).

Plastic or paint-finished parts will damage if brake fluid is spilt on them.

Before each ride, ensure that the brake lines are not twisted or cracked and check the fittings for leaks.



WARNING

Never top up with or mix different types of silicone or petroleum-based fluids.

Never use brake fluid from containers which have been open or kept in storage for long periods.

Take care to avoid that water or dust accidentally enter the circuit.

Check

CAUTION Place the motorcycle on flat and firm ground so that the fluid level in the reservoir is parallel with the plug.

- Make sure that the fluid level exceeds the "MIN" mark.

MIN = minimum level

MAX = maximum level

- If fluid is below the "MIN" mark, top up to correct level.



TOPPING UP



WARNING

Be careful, brake fluid may spill out.

Do not operate the rear brake lever if the brake fluid reservoir plug has been loosened or removed.

CAUTION Make sure the fluid in the reservoir is level with the reservoir rim (horizontal) to avoid spilling fluid when topping up.

- Loosen and remove filler cap with seal.

- Top up the reservoir with brake fluid, see 8.1.3 (LUBRICANTS TABLE) until bringing level between the "MIN" and "MAX" marks.

**WARNING**

Top up to "MAX" level after changing the brake pads. Brake fluid level decreases as the brake pads wear down.

Reverse the disassembly procedure to reassemble.

8.7.3. CHANGING REAR BRAKE FLUID

Change the rear brake fluid every two years.

- Remove the rubber cap.
- Attach a clear plastic hose to the bleed nipple. Insert the other end of the hose into a container.
- Loosen the bleed nipple by about one turn.



CAUTION Ensure that there is fluid in the reservoir at all times during the operation, or you will have to bleed the system when finished, see 8.2.2 (BLEEDING THE BRAKE CIRCUIT).

- Keep an eye on the reservoir while fluid drains off. Tighten the bleed nipple before fluid has drained off completely.
- Top up the reservoir, see 8.7.2 (CHECKING AND TOPPING UP REAR BRAKE FLUID LEVEL).



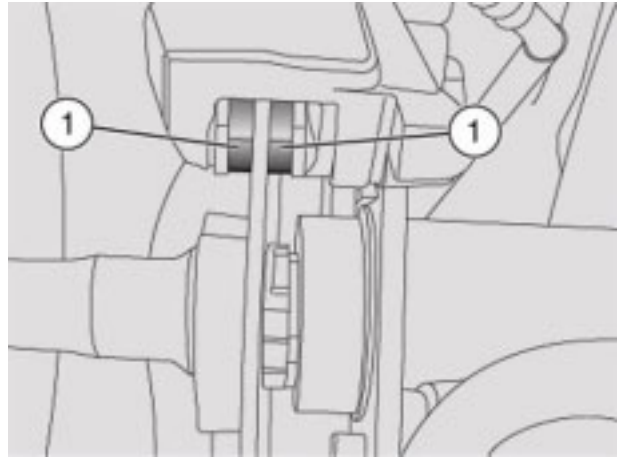
- Loosen the bleed nipple again by about half turn.
- Look at the fluid draining from the hose. When fluid colour changes from dark to a lighter shade, tighten the bleed nipple and disconnect the bleed hose.
- Refit the rubber cap.
- Add fluid to the reservoir until bringing fluid up to correct level, see 8.7.2 (CHECKING AND TOPPING UP REAR BRAKE FLUID LEVEL).

8.7.4. CHECKING REAR BRAKE PAD WEAR

Periodically check brake pad wear. The rate at which brake pads will wear depends on vehicle usage, riding style and road surface condition.

Outlined below is a quick brake pad inspection procedure:

- Visually check between brake disc and pads, check both pads (1) looking from the bottom at the rear end.
- Should friction material (of even one pad only) be worn down to 1.5 mm (0.059 in) of thickness, have both pads replaced.



DANGER

If brake pads were allowed to wear down until uncovering the metal substrate, metal-to-metal contact with the brake disc would lead to rattle and the brake calliper sparking; this would result in loss of braking and brake disc damage, causing a dangerous riding condition.

For brake pad replacement, see 8.7.5 (CHANGING REAR BRAKE PADS).

8.7.5. CHANGING REAR BRAKE PADS

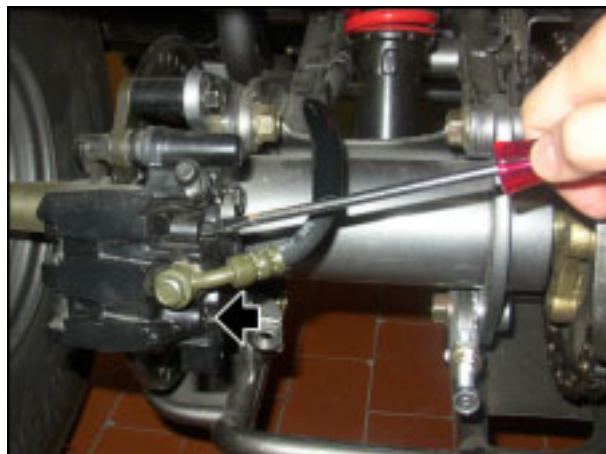
- Remove the rear brake calliper; see 8.7.6 (REMOVING THE REAR BRAKE CALLIPER).



WARNING

Do not operate the rear brake lever after removing the calliper; otherwise the piston may slip out of its seat, leading to brake fluid leakage.

- Loosen the two rear dowels.



- Loosen and remove the two inner screws.



- Slide out the rear brake pads from the bottom.



WARNING

Do not pull the brake lever once the pads have been removed as the calliper pistons are likely to come out of their slot, resulting in the spillage of brake fluid.

- Insert two new pads, positioning them so that the holes are lined up with those in the calliper.



WARNING

Always change both pads and make sure that they are correctly positioned inside the calliper.



- Refit and tighten the screws.
- Tighten the two rear dowels.
- Refit the brake calliper.
- Check brake fluid level.

8.7.6. REMOVING THE REAR BRAKE DISC

- Remove the rear right wheel; see 8.6.14 (REMOVING THE WHEEL).
- Loosen nut and lock nut.



- Remove the complete left wheel shaft.
- Loosen and remove the two screws, collect the spacers.



- Remove the rear brake calliper, leave the line connected and collect the disc together with hub.



- Loosen the three screws.

**WARNING**

On reassembly, apply LOCTITE ® 243 on screw threads.

- Remove the disc.



8.8. LUBRICATION SYSTEM

8.8.1. REMOVING THE ENGINE OIL COOLER

- Set a container under the oil cooler.
- Keep pipes (1) up and remove them from cooler end; see 8.8.2 (REMOVING THE ENGINE OIL LINES).
- Working on either side, loosen and remove the screw to which the wrench is fitted.



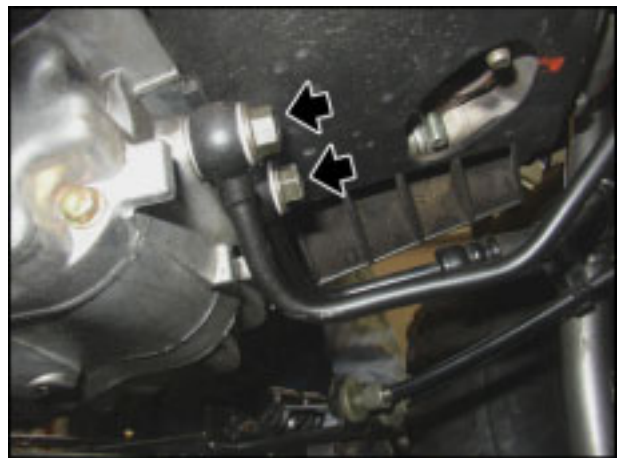
- Remove the oil cooler.

8.8.2. REMOVING THE ENGINE OIL LINES

- Remove the lower protection; see 8.6.13 (REMOVING THE LOWER PROTECTION).
- Drain all oil out of the circuit; as described in MY 2003 manual; see 8.1.1 (REFERENCE MANUALS).
- Set a container under the engine oil line.
- Working on either side, loosen and remove the screw.



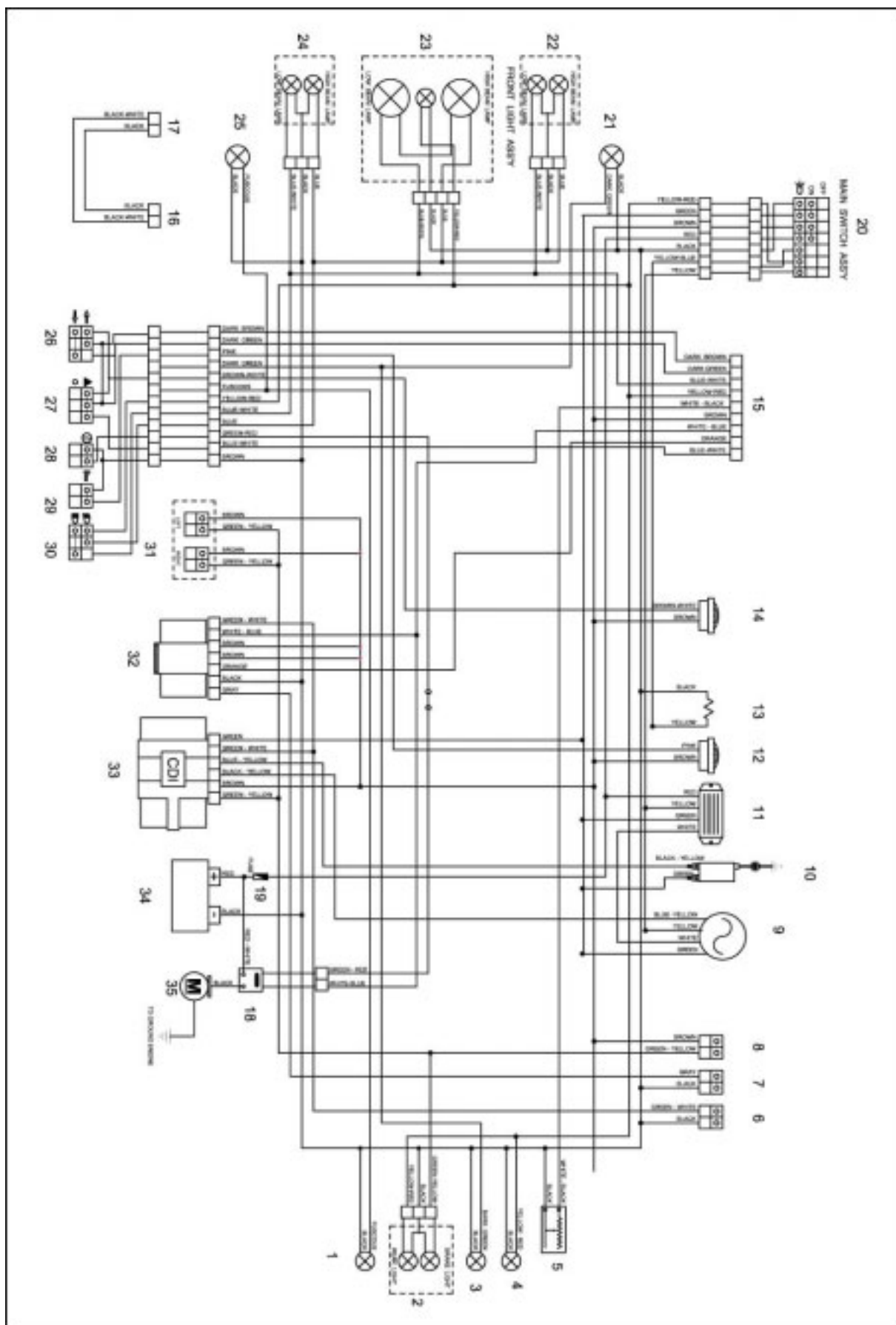
- Loosen and remove screw. Save the two washers.



- Remove the lines.

8.9. ELECTRIC SYSTEM

8.9.1. WIRING DIAGRAM



Key:

- 1) Rear left direction indicator
- 2) Tail light
- 3) Rear right direction indicator
- 4) Number plate light
- 5) Fuel level transmitter
- 6) Back switch
- 7) Neutral switch
- 8) Stop switch
- 9) Generator
- 10) Ignition coil
- 11) Voltage regulator
- 12) Horn
- 13) Resistor
- 14) Signal Buzzer
- 15) Speedometer assy
- 16) Speedometer holder
- 17) Magnet
- 18) Starter relay
- 19) Fuse
- 20) Main switch assy
- 21) Right front signal
- 22) Right front light assy
- 23) Head light assy
- 24) Left front light assy
- 25) Left front signal
- 26) Direction indicator switch
- 27) Emergency switch
- 28) Starter switch
- 29) Horn switch
- 30) Hi/low beam switch
- 31) Stop switch on front brake
- 32) Indicator control
- 33) CDI unit assy
- 34) Battery
- 35) Starter motor



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