

Sales division Technical network leadership

WORKSHOP MANUAL





TABLE OF CONTENTS

TABLE OF CONTENTS1
PRODUCTS DANGER SYMBOLS USED4
CHARACTERISTICS
Engine6
Capacities6
Chassis6
Dimensions and weight7
Tyres7
Brakes
SERVICE SCHEDULE AND COMMISSIONING
To be checked at each service9
Service operations10
Time required for maintenance10
Battery preparation (Except battery without maintenance)*11
New machine preparation11
SPECIAL IMPORTANT POINTS12
Oil and fuel12
TIGHTENING TORQUES
Engine part13
Body panels13
Cycle part14
Standard14
SPECIAL TOOLS
STANDARD TOOLS16
LOCATION OF COMPONENTS17

1

BODY PANELS	
Location of body components	18
Body component sequence of disassembly	19
Removal of the rear storage compartment	20
Removal of the rear cover assembly and mudflap	20
Removal of the RH or LH central cover panel	21
Removal of the instrument cluster	22
Removal of the RH or LH under body panel	22
Removal of the front top shield panel	23
Removal of the rear shield panel	23
Removal of the front lower shield pannel	24
Removal of the footboard	25
SERVICE OPERATIONS	
Changing the engine oil	26
Draining the relay box	27
Removal of the spark plug	28
Replacing the air filter	28
Transmission	29
Installing the valve clearance	34
Idle setting	35
Removal of the fuel filter	36
Brake inspection	36
Replacing the brake pads	36
Checking the brake fluid level	37
Rear brake linings	
Draining the front fork	41
MISCELLANEOUS OPERATIONS	
Removal of the fork	44
Replacing the bearings of the steering system	44
Steering system tightening method	46
Changing the front fork seals	48
The fork and its components	48

ELECTRICITY	53
Ignition principle schematic	53
Regulator/Ignition unit	54
Checking the ignition system	54
Removal of the fuel gauge	55
Removal of the high tension coil	55
FUEL SYSTEM	56
Removal of the fuel tank	56
Removal of the carburettor	56
The carburettor and its components	62
POWER UNIT	62 63
POWER UNIT	62
POWER UNIT	

PRODUCTS DANGER SYMBOLS USED

Protection of individuals and of the environment.

A)	Möbius band	Recyclable.	Means that the product or the package can be recycled. However, this does not guarantee that the product will be recycled.
×	Irritant	The product can irritate the skin, eyes and respiratory organs.	Avoid contact with skin and clothes. Wear gloves, safety glasses and appropriate clothing such as a cotton overall. Do not breath fumes. If in contact, wash thoroughly with water.
*	Flammable	The product is flammable.	Keep it away from any flame or heat source (barbecue, radiator, heating, etc.). Do not leave the product in the sun.
	Corrosive	The product can damage living tissues or other surfaces.	Avoid contact with skin and clothes. Wear gloves, safety glasses and appropriate clothing such as a cotton overall. Do not breath fumes.
	Explosive	The product can explode under certain circumstances (flame, heat, impact, friction).	Avoid impacts, friction, sparks and heat.
*	Hazardous to the environment	The product affects fauna and flora. Do not dump it in dustbins, sinks or in the environment.	The ideal solution is to bring this product to your nearest household waste recycling centre.
S	Toxic	The product can seriously affect health if it is inhaled, ingested or in contact with skin.	Avoid direct contact with the body, even by inhalation. If you feel unwell, seek medical advice immediately.
X	Do not throw away into a garbage can	One of the product's component is toxic and can be hazardous to environment. i.e.:. Used batteries.	This symbol informs the consumer that the used product shall not be thrown away into a garbage can, but shall be brought back to the merchant or dropped at a specific collection point.
	Compulsory gloves	Operation that can be dangerous for people.	People's safety can be seriously affected if the recommendations are not fully respected.

<u>.</u>	People's safety	Operation that can be dangerous for people.	People's safety can be seriously affected if the recommendations are not fully respected.
	Important	Operation that can be hazardous to the vehicle.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
~	Good operating condition of the vehicle	The operation must be carried out in strict compliance with the documents.	Serious damage to the vehicle and in certain cases a cancellation of the warranty can be involved if the recommendations are not fully respected.
\checkmark	Note	Operation that can be difficult.	Indicate a note which gives key information to make the procedure easier.
X	Lubricate	Lubricate the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	Grease	Grease the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
GLUE	Glue	Glue the parts to be assembled.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.
	New part	Use a new part.	Indicate the specific procedures that shall be followed in order not to damage the vehicle.

CHARACTERISTICS

Engine

Marking	139 QMB-E	
Туре	4-stroke single-cylinder 2 valves per cylinder with chain driven overhead camshaft	
Cooling	By a circulation of forced air by means of a turbine on the flywheel magneto	
Bore x stroke	39 x 41.4 mm	
Cubic capacity	49 cc	
Max. power output	2.7 kW at 7200 rpm	
Max. torque rating	3.6 Nm at 7000 rpm	
Compression	8.95 bars 500 rpm	
Lubrication	Pressurised wet sump lubrication. Trochoid pump driven by a chain from the crankshaft	
Transmission	By 2 variable pulleys and V-type belt	
Clutch	Centrifugal automatic	
Exhaust	Catalytic	
Starter motor	By kick starter or electric starter	
Spark plug	NGK CR7HSA Electrode gap: 0.6 to 0.7 mm	
Magneto flywheel	90 W	
Fuel supply	Carburettor. Deni DPD 18J	
Standards	Euro 2	

Capacities

Crankcase	0.8 I SAE 5W40
	Winimum grade. API 5L/5J
Relay box	0.12 I SAE 80W90
	Minimum grade: API GL4
Fuel tank	6.8 I 95 or 98 lead-free
Fork	0.035 I per tube (Hydraulic oil SAE 10W)

Chassis

Chassis	Steel tube	
Front suspension	Hydraulic telescopic fork. Ø27 mm Travel: 68 mm	
Rear suspension	Combined spring and hydraulically-damped shock absorber Travel: 68 mm	

Dimensions and weight

Overall length	1849 mm
Width at handlebar	667 mm
Height (without rear-view mirrors)	1156 mm
Wheelbase	1256 mm
Saddle height	760 mm
Unladen weight	95 kg

■ Tyres

Front wheel rim	12 inch aluminium alloy
Front tyre	110/70 - 12
Front tyre pressure	1.6 bars
Rear wheel rim	12 inch aluminium alloy
Rear tyre	110/70 - 12
Rear tyre pressure	1.8 bars

Brakes

Front brake	Single disc type, hydraulic control	
Disc diameter and thickness	170 mm - 4 mm	
Front caliper	Floating caliper equipped with one piston	
Rear brake	cable-controlled, single cam drum type	
Brake drum diameter	110 mm	
Brake lining thickness	4 mm	

Chassis markings	Engine marking
Manufacturer's plate (1)	Engine number (2)
Chassis no. (3)	

8

SERVICE SCHEDULE AND COMMISSIONING

Heavy duty servicing applies to vehicles used under rugged operating conditions: door-to-door deliveries, intensive urban use (courier), short journeys with engine cold, dusty areas, ambient temperature over 30°C.

Service operations	500	2000	5000	10000	15000	20000
Heavy duty servicing	500	1000	2500	5000	7500	10000
Minimum servicing	1 month	6 months	12 months	24 months	36 months	48 months
To be checked at each service						
Steering column play	V	V	V	V	V	V
Wheel bearing play	С	С	С	С	С	С
Throttle cable play	V	V	V	V	V	V
Operation of electrical equipment	V		V	V		V
Condition of the front brake hydraulic control	V	V	V	V	V	V
Brake fluid level	V	V	V	V	V	V
Front brake pad wear	С	С	С	С	С	С
Rear brake lining wear	С	С	С	С	С	С
Joints. (Central stand. Brake levers. Rear brake cam)			G	G	G	G
Condition of petrol pipes	С	С	С	С	С	С
Tyre condition, pressure and wear	С	С	С	С	С	С
State of front suspension. State of rear suspension	V	V	V	V	V	V
Battery electrolyte level. Battery charge.	V	V	V	V	V	V
Engine oil level	Every 1000 kms					
Headlight height adjustment	V	V	V	V	V	V
Tightness of nuts and bolts	V	V	V	V	V	V
Overall operation. Road test	V	V	V	V	V	V

V: Check, clean, adjust.

R: Change.

G: Check, clean, lubricate.

N: Clean.

C: Inspect and change if necessary.

Service operations	500	2000	5000	10000	15000	20000
Heavy duty servicing	500	1000	2500	5000	7500	10000
Minimum servicing	1 month	6 months	12 months	24 months	36 months	48 months
Service operations						
Spark plug	V		R	R	R	R
Air filter				R		R
Intake silencer drain				N		N
Drive pulley bearings and guides			V	С	V	С
Transmission belt				R		R
Kick starter mechanism				G		G
Valve clearances		V	V	V	V	V
Setting the carburettor				V		V
Joints. (Central stand. Brake levers. Rear brake cam)			G	G	G	G
Petrol filter						R
Engine oil (+ clean strainer)	R	R	R	R	R	R
Relay box oil	R		R	R	R	R
Fork oil						R
Petrol pipe	Once every 5 years					
Brake fluid	Once every 2 years					
Time required for maintenance						
Code	9100	9150	9300	9400	9500	9600
Servicing time in tenths of an hour (0.5 h = 30 min)	1.2	1.8	2.6	3.3	2.6	4.6

V: Check, clean, adjust.

R: Change.

G: Check, clean, lubricate.

N: Clean.

C: Inspect and change if necessary.

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10

Battery preparation (Except battery without maintenance)*

Remove the battery.

Remove the 6 filler caps and the vent plug.

Fill all the battery cells with electrolyte to the upper level shown on the battery " UPPER LEVEL".

Electrolyte: (35% sulfuric acid = 1.28g/cm3). 0.5 litre can P/N 739733.

Leave the battery to stand for around half an hour.

Top up if necessary.

Charge the battery for at least 2 hours with a current of 0.4 A.

Refit the battery and connect the vapour vent pipe.

Connect the red wire lug to the battery's + terminal, and the green wire lug to the battery's - terminal. Then, the battery level should be topped up if necessary, after fully charging, using distilled water only.

* Depending on equipment.

New machine preparation

Check the tightness of the carburettor float chamber drain screw.

Check the wheel nuts are tight.

Check nuts and bolts are tight.

Check brake adjustment and efficiency.

Check the tyre pressures cold.

Check operation of the lights, flashers, horn, and brake light.

Check the different warning lights work.

Carry out a road test.

SPECIAL IMPORTANT POINTS

Oil and fuel



This engine is designed to run on 95 or 98 unleaded fuel only.



Fuel pipes must absolutely be changed if there are any signs of wear, cracks, etc.

The air pipe between the air pump and the exhaust is specific owing to its heat resistance properties.

Should it be changed, replace it with a genuine pipe.



Petrol is highly inflammable, do not smoke in the working area and avoid proximity to flames or sparks.

Before carrying out any work, leave the engine to cool for at least 2 hours.

TIGHTENING TORQUES

Engine part

Spark plug	18 Nm
Filler cap	20 Nm
Screen	30 Nm
Relay box drain plug	12 Nm
Relay box filler cap	12 Nm
Cylinder head cover	10 Nm
Cylinder head	
 7 mm diameter nut 	18 Nm
 6 mm diameter screw 	8 Nm
Crankcase	10 Nm
RH casing cover	10 Nm
Automatic tensioner	10 Nm
Automatic tensioner plug	8 Nm
Starter motor	10 Nm
Rotor	50 Nm
Stator	8 Nm
Engine speed sensor	6 Nm
Transmission cover	10 Nm
Turbine	10 Nm
Drive pulley	50 Nm
Driven pulley	50 Nm
Clutch plate and shoes	50 Nm
Inlet manifold	10 Nm

Body panels

Front mudguard	8 to 10 Nm
Handlebar cover	2 to 4 Nm
Front shield panel	2 to 4 Nm
Rear shield	2 to 4 Nm
Bottom panel	2 to 4 Nm
Floor panel	6 to 8 Nm
Saddle storage compartment	8 to 10 Nm
Rear body panels	6 to 8 Nm
Grab handle	20 to 25 Nm
Rear mudguard	2 to 4 Nm

Cycle part

Front wheel spindle	60-70 Nm
Rear wheel spindle nut	110-130 Nm
Linkrod to engine pivot	57±5 Nm
Linkrod to frame pivot	57±5 Nm
Shock absorber top mount	43-50 Nm
Shock absorber bottom mount	20-25 Nm
Exhaust to cylinder head mounting nut	15-18 Nm
Exhaust to casing mounting bolt	20-25 Nm
Upper cone (in 2 operations)	38-42 Nm
	15-19 Nm
Upper cone locknut	Hand tightened
Steering locknut	70-80 Nm
Handle bar	35-45 Nm
Front brake caliper	27-32 Nm
Front brake disc	27-32 Nm
Fastening screw for brake linkrod on cam	8-11 Nm
Fastening screw for fork stanchion on tee	30-40 Nm

Standard

Nut and bolt 5 mm diameter	5 Nm
Nut and bolt 6 mm diameter	10 Nm
Nut and bolt 8 mm diameter	22 Nm
Nut and bolt 10 mm diameter	35 Nm
Nut and bolt 12 mm diameter	55 Nm

SPECIAL TOOLS

Tool N°	Designation	Used with		Tool N°	Designation	Used with
64765	Engine mount	755982	E	754035	Valve lifter	758595
68007	Protective end-piece small model	750806		755982	Engine mount adapter	64765
750806	Flywheel puller	68007		755996	Hose clamp	
752127	Clutch compression tool	756725		756668	Lip seal push tool	
752237	Adjustable pin wrench			756725	38 mm pipe wrench	752127
753726	Steeing head cup push tool			757860	Steering tool	

STANDARD TOOLS

Tool N°	Designation	Used with		Tool N°	Designation	Used with
757990	Steeing head cup push tool		B	758596	Valve stem seal drift	
758595	Valve spring lifter adapter	754035		759467	Fixed flange locking tool	

STANDARD TOOLS

Wrenches with interchangeable end fittings for valve clearance adjustment Type: Marolotest P/N 500140	Multimeter
Set of shims	Automatic resetting type torque wrench 5 to 25 Nm Type: Facom R.306A25
Automatic resetting type torque wrench 10 to 50 Nm Type: Facom J.208A50	Automatic resetting type torque wrench 40 to 200 Nm Type: Facom S.208A200

16 ·

LOCATION OF COMPONENTS



- 1. Fuel gauge
- 2. CDI unit
- 3. Regulator
- 4. Starter motor relay
- 5. Fuse
- 6. Flasher unit
- 7. Starter resistor
- 8. Horn

- 9. Battery
- 10. HT coil
- 11. Ignition sensor
- 12. Carburetor heater
- 13. Carburettor heater thermo-switch
- 14. Drive sensor

BODY PANELS

Location of body components

Description.



- 1. Handlebar front fairing
- 2. Handlebar rear fairing
- 3. Legshield top panel
- 4. Rear shield
- 5. Front lower legshields
- 6. Front mudguard
- 7. Front wheel
- 8. Mudguard

- 9. Bottom panel
- 10. Central bottom panel
- 11. Floor panel
- 12. Mudflap
- 13. Saddle and storage compartment
- 14. Rear body panels
- 15. Central panels

Body component sequence of disassembly



- 1. Handlebar front fairing
- 2. Handlebar rear fairing
- 3. Legshield top panel
- 4. Rear shield
- 5. Front lower legshields
- 6. Front mudguard
- 7. Front wheel
- 8. Mudguard
- * This item may be removed on its own.

- 9. Bottom panel
- 10. Central bottom panel
- 11. Floor panel
- 12. Mudflap
- 13. Saddle and storage compartment
- 14. Grab handle
- 15. Rear body panels
- 16. Central panels

Removal of the rear storage compartment

Procedure 1.

- Lift the saddle.
- Remove the tank filler cap.
- Remove the storage compartment (6 screw).



Procedure 2.

- Remove the rear storage compartment. See: Procedure 1. page 20.
- Remove the splash guard (6 screw).





- Remove the grab handle (3 screw).
- Remove the rear cover assembly (4 screw).
- Disconnect the taillight.



- Remove the taillight (4 screw).
- Remove the fastening screw on the fairings.
- Separate the 2 fairings.

Removal of the RH or LH central cover panel

Procedure 3.

- Remove the rear cover assembly. See: Procedure 2. page 20.
- Remove the battery access door (1 screw).
- Remove the complete footrest assembly (1 screw).
- Remove the 5 screws from the central fairing.





- Removal of the instrument cluster Procedure 4.
 - Remove the handlebar front cover (4 screw).



- Disconnect the instrument cluster.
- Unscrew the speedometer cable.
- Remove the handlebar rear cover and instrument cluster assembly (4 screw).
- Remove the instrument cluster (4 screw).



Removal of the RH or LH under body panel

Procedure 5.

- Remove the 2 screws from the bottom panel.
- Remove the bottom panel.



Removal of the front top shield panel

Procedure 6.

- Remove the 2 screws that secure the front shield panel.
- Remove the 4 screws that secure the front shield panel.
- Remove the front upper shield panel.
- Disconnect the headlight and the indicator lights.



Removal of the rear shield panel

Procedure 7.

- Remove the handlebar front and rear covers. See: Procedure 4. page 22.
- Remove the front upper shield panel. See: Procedure 6. page 23.
- Remove the ingnition switch trim.



- Remove the 2 screws that secure the rear shield panel.



- Remove the 4 screws that secure the rear shield panel.
- Pull upwards the lower part of the shield panel in order to separate it from the footboard.



Removal of the front lower shield pannel

Procedure 8.

- Remove the rear shield panel. See: Procedure 7. page 23.
- Remove the RH and LH under body panel. See: Procedure 5. page 22.
- Remove the 4 fastening screws from the mudguard (A).
- Remove the 2 screws that secure the front shield panel (B).



Removal of the footboard

Procedure 9.

- Remove the rear shield panel. See:Procedure 7. page 23.
- Remove the right and left central fairings. Procedure 3. page 21.
- Remove the RH and LH under body panel. Procedure 5. page 22.
- Remove the battery.
- Remove the starter relay.
- Remove the fuse holder.
- Remove the footboard (4 screw).



SERVICE OPERATIONS

Changing the engine oil



The engine must be drained when it is warm to allow the oil to run easier. Put on protective gloves.

- Place the vehicle on its central stand on flat ground.
- Remove the engine's oil filler cap (1).





Remove the drainage cap and its seal (2) and allow the oil to drip into a recipient.

- Remove the strainer cap (3) and clean the strainer.



- Insert the drain plug fitted with a new seal.

Tightening torque: 20 Nm.

- Re-install the filter cap fitted with a new seal.

Tightening torque: 30 Nm.

- Pour the required quantity of oil corresponding to the manufacturer's standards into the filler hole.

Quantity: 0.8 I.

- Start the engine and let it run for a short while.



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- Remove the engine's oil filler cap/gauge.
- Wipe dry the filler cap/gauge and fit it back but do not screw it into the filler hole.
- Remove the filler cap/gauge and check the oil level.
- The oil level shall not be between the minimum (A) and maximum (B) level marks without exceeding the latter.
- Add oil if necessary.



Draining the relay box



The gearbox must be drained when the engine is warm so that the oil will run easier.

Put on protective gloves.

- Place the vehicle on its central stand on flat ground.
- Remove the relay box filler cap (1).



Remove the drainage cap and its seal (2) and allow the oil to drip into a recipient.

- Insert the drain plug fitted with a new seal.

Tightening torque: 12 Nm.

- Pour the required quantity of oil corresponding to the manufacturer's standards into the filler hole.

Quantity: 0.12 I.

- Fit the filler cap (1).

Tightening torque: 12 Nm.



- Removal of the spark plug
 - Remove the rear storage compartment. See: Procedure 1. page 20.
 - Disconnect the suppressor (1).

- Remove the spark plug access hatch (A).
- Remove the spark plug.
- Essential precautions: When re-installing, srew in the spark plug (a few turns) by hand.
 - Tighten the spark plug.

Tightening torque: 18 Nm.







- Remove the 6 screws from the air filter cover.



- Remove the air filter.
- Clean inside the air filter box.



Fit a new air filter.

- Remove the inlet silencer drain plug to let humidity and oil drip out (A).





Transmission

Removal of the primary transmission cover

- Lift the air filter box to reach the transmission cover (1 screw) (B).
- Remove the transmission sensor (2 screw).
- Remove the transmission cover (9 screw).

Tightening torque: 10 Nm.

- Remove the paper gasket and the two 2 centering pins.



Removal of the drive pulley

- Hold the fixed flange with tool P/N 759467.
- Remove the fixed flange nut and washer.

Tightening torque: 50 Nm.

- Remove the starter hub (1) and the turbine (2).
- Remove the fixed flange.
- Remove the belt.
- Remove the drive pulley (3) together with the guide hud.





Removal of the driven pulley

- Lock the clutch drum with the pin wrench P/N 752237.
- Remove the clutch drum and the clutch and drive pulley assembly.

Tightening torque: 50 Nm.



Checking the drive pulley

- Remove the holder (2) and its 3 plastic guides.
- Remove the moving flange (4) 6 bearings (3).



The bearings must be changed if they show major signs of wear. The guides shall be replaced if they show signs of wear.



Reassembly

- Proceed in reverse order to disassembly and do not grease the bearings.
- When refitting, respect the way the rollers are installed.
- Grease the moving flange bore lightly (high temperature grease).



Checking the drive belt

- Measure the width of the belt (A).

Minimum width: 16.3 mm.

- Make sure the belt is not cracked.



Checking the clutch linings

- Using the depth calliper, measure the thickness of the clutch linings.

Mini. thickness 2 mm.

- Make sure surface of the plates in contact with the belt does not show any cracks or signs of abnormal wear.

Replacing the clutch lining assembly

- Compress the clutch drive pulley and driven pulley assembly with the tool P/N 752127 clamped in the jaws of a vice.
- Remove nut (1) using spanner P/N 756725.
- Slacken tool P/N 752127.

- Remove the clutch linings (2), the upper centring sleeve (3), the spring (4), and the lower centring sleeve (5).
- Remove the 3 pins (6) from the variable speed drive seat.
- Separate the fixed (7) and rotating (8) flanges.
- Make sure surface of the plates in contact with the belt does not show any cracks or signs of abnormal wear.







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Reassembly

- After checking the 2 lip seals (9) and the 2 O-rings (10) of the rotating flange (8) are in good condition, grease the governor seat 3 pins (6) (high temperature grease) and assemble the parts in reverse order to removal.
- Compress the clutch drive pulley and driven pulley assembly with the tool P/N 752127 clamped in the jaws of a vice.
- Tighten the nut (1).

Tightening torque: 50 Nm.



Before fitting the clutch drive pulley and driven pulley to the input shaft, fit the belt into the pulley bottom by opening the flanges by hand.

- Fit the clutch drive pulley and driven pulley assembly.
- Fit the clutch cover.
- Fit and tighten the nut.

Tightening torque: 50 Nm.



Installing the valve clearance

- Remove the central cover panel. See: Procedure 3. page 21.
- Disconnect the oil vapour return pipe (1).
- Disconnect the pipe from the pulsair reed valve (2).
- Remove the 2 screws that secure the pulsair pipe (3).

Tightening torque: 10 Nm.

- Remove the cylinder head cover and its Oring (4 screw).

Tightening torque: 10 Nm.



The O-ring must be changed every time it is removed.

- Remove the turbine on the the flywheel magneto side (4 screw).
- Rotate the engine by hand in the operating direction in order to align the (A) mark on the pinion with the mark on the cylinder head.




- Using the set of feeler gauges, measure the clearance of each valve.

- Clearances:

- 0.10 mm ± 0.02 at the intake.
- 0.10 mm $\pm^{0.02}$ at the exhaust.

- If the clearance is not correct, adjust by means of the cam follower screw.
- Use a wrench to adjust the valve clearance. Type: Marolotest, P/N 500140.

Checking the valve clearance

- At the intake a 0.15 mm feeler gauge shouldn't go.
- At the exhaust a 0.15 mm feeler gauge shouldn't go.
- On the contrary, if the fealer gauge goes, reset the clearances.

Idle setting

- Remove the rear storage compartment. See: Procedure 1. page 20.
- The engine must be at its operating temperature.
- Switch off the engine.
- Park the vehicle on its stand.
- Check the operating clearance in the throttle.
- Start the engine.
- Screw or unscrew the engine speed adjuster screw (1) to alter the idle speed.
- The rear wheel should not turn.

Idle speed: 1600 to 2000 rpm.







Removal of the fuel filter

- Remove the splash guard. See: Procedure 2. page 20.
- Empty the reservoir.
- Disconnect the fuel supply hose (1).
- Disconnect the vacuum hose (2).
- Loosen the collar (3).
- Remove the vacuum-operated cock (4).



- If one of the 2 brake pads is worn down to the minimum dimensions (A), the 2 brake pads must be changed.

A. Mini. thickness: 1.5 mm.





Replacing the brake pads

- Remove the calliper (2 screw).

Tightening torque: 27-32 Nm.



- Squeeze the caliper holder in order to remove the first brake pad (1).
- Remove the second brake pad (2).
- Remove the brake pad spring (3).

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When refitting the brake pads, push the piston all the way into its housing.



After refitting, actuate the brake levers several times to bring the brake pads against the brake disc.

Checking the brake fluid level

- Position the handlebars so that the master cylinder will be horizontal.
- Check the brake fluid level and if necessary top up in the master cylinder.

A. Maximum brake fluid level.

B. Minimum brake fluid level.







- Remove the handlebar front cover (6 screw). See: Procedure 4. page 22.
- Remove the cover and the diaphragm from the master cylinder (2 screw).
- Add brake fluid until it reaches the maximum level.

Rear brake linings

Check

- Actuate the brake control lever and check the position of the wear mark on the cam tierod (A) compared to the mark (B) on the engine housing.
- If the cam tierod mark is lined up with or passes the wear mark on the engine housing, the brake lining must be replaced.

Disassembly

- Remove the 2 screws that secure the muffler.

Tightening torque: 15-18 Nm.



Use a new exhaust gasket.

- Remove the 2 screws fastening the mudguard.
- Remove the 2 screws from the exhaust.

Tightening torque: 20-25 Nm.

- Remove the exhaust.







- Remove the wheel spindle nut and washer (1).

Tightening torque: 110-130 Nm.



When re-installing, use a new nut.

- Remove the rear wheel.
- Remove the brake linings (4).
- Remove the adjusting nut, the barrel (5) and the brake control cable (6).
- Remove the brake arm (7), the brake cam (8) and the spring (9).





Reassembly



Lubricate the brake cam spindle and fit it into the casing.

- Fit the brake arm onto the cam and align the punched marks (A).

Tightening torque: 8-11 Nm.



- Slightly lubricate the brake cam and pin.
- Install the brake linings (4).
- Install the spring (9).
- Install the brake control cable, the barrel and the adjusting nut (5).
- Refit the other items in the reverse order to disassembly.

- Measure the free travel of the rear brake control lever.
- Ajust the lever free travel using the adjusting nut.
 - B. Brake control free travel: 10 to 20 mm.





Draining the front fork

- Remove the front upper shield panel. See: Procedure 6. page 23.
- Turn the handlebars to the right to reveal the fork nut (1) in the hold in the mudguard.
- Before, loosen the fork tube caps (1).
- Repeat this operation by turning the handlebars to the left.
- Suspend or immobilize the machine securely.
- Remove the caliper 2 fixing bolts.
- Remove the front wheel.
- Removal of the front mudguard (4 screw).
- Unscrew and remove the 2 upper screws (2) from the fork Tee.
- Unscrew the 2 lower screws (3) from the fork Tee.
- Remove the fork stanchions.





- Remove the fork tube cap (1).
- Remove the spring (4).





Turn the fork tube upside down to drain the oil into a recipient.



- Pour new oil into the fork tube. Type: SAE10W.

Quantity: 0.035 I.

- Install the spring (4).
- Fit and screw the cap home (1).

Tightening torque: 18-20 Nm.



- Insert the fork stanchions into the fork tee.
- Fit and tighten the 4 clamping bolts.

Tightening torque: 30-40 Nm.

- Fit the front shield panel.



- Fit the front mudguard.
- Fit the speedometer drive gear assembly to the wheel drive pins.
- Fit the wheel, matching the speedometer drive gear assembly to the pin (A) on the fork stanchion.
- Fit the wheel spindle and tighten.

Tightening torque: 50-60 Nm.



When re-installing, use a new nut.

- Refit the other items in the reverse order to disassembly.



MISCELLANEOUS OPERATIONS

Removal of the fork

Replacing the bearings of the steering system

- Remove the front upper shield panel. See: Procedure 6. page 23.
- Remove the handlebars from the fork tube (1 screws and 1 nut) (1).



When re-installing, use a new nut.

Tightening torque: 35-45 Nm.

- Suspend or immobilize the machine securely.
- Remove the front brake caliper from the fork tube.

Tightening torque: 27-32 Nm.

- Remove the front wheel.



When re-installing, use a new nut.

Tightening torque: 50-60 Nm.

- Remove the front mudguard.
- Remove the brake control cable grommet and the speed sensor located under the fork triple clamp (2) (2 screw).
- Using tool P/N 757860 remove the steering locknut.
- Remove:
 - The brake washer.
 - The nut.
 - The rubber washer.
 - The nut.
 - The dust cover.
 - The upper cone.
- Remove the fork.
- Remove the caged ball bearings.









44

- Using a drift, remove the steering head cups.

- Using a chisel, pry the steering head cup off by pressing the tool behind the dust cover.





Reassembly

- Install the following new parts:
 - The dust cover (1).
 - The fork cone (2).



Steering system tightening method

- Using push tool P/N 753726, fit a new upper cup into the steering tube.
- Using push tool P/N 757990, fit a lower cup into the steering tube.

- Grease the cup bearing races.
- Install new ball cage bearings (3).
- Fit the fork into the steering column.







- Grease the cup bearing races.
- Install new ball cage bearings (4).
- Install the upper cone (5).
- Install the dust cover (6).
- Fit and tighten the nut (7).

Tightening torque: 38-42 Nm.

- Loosen and re-tighten the nut.

Tightening torque: 15-19 Nm.

- Install the rubber washer (4).
- Fit and finger tighten the nut (5) so that its notches are aligned with those of the nut.
- Fit the lock washer (6) in the notches of the 2 nuts.

- Install the steering head locknut and tighten it (7).

Tightening torque: 70-80 Nm.





Changing the front fork seals

The fork and its components

- 1. Fork tube cap.
- 2. Spring.
- 3. Calibrated hydraulic tube.
- 4. Expansion stop spring.
- 5. Dust cover.
- 6. Retaining clip.
- 7. Tightness seal.
- 8. Fork tube.
- 9. End of compression cone.
- 10. Hollow shaft.
- 11. Stanchion assembly screw.



Disassembly

- Suspend or immobilize the machine securely.
- Remove the front brake caliper from the fork tube (2 screw).
- Remove the front wheel.
- Remove the front mudguard (4 screw).
- Remove the front upper shield panel. See: Procedure 6. page 23.
- Before, loosen the fork tube caps (1).
- Unscrew and remove the 2 upper screws (A) from the fork Tee.
- Unscrew the 2 lower screws (B) from the fork Tee.
- Remove the fork stanchions.



- Remove the fork tube cap (1).
- Remove the spring (2).





Turn the fork tube upside down to drain the oil into a recipient.



- Remove the stanchion assembly screw (11) and its seal.
- If necessary use a mallet to dislodge the screws.
- Separate the fork's tube (8) from the cover (10).





The compression stop cone may remain inside the shaft.

- Remove the compression stop cone (9).
- Remove the calibrated hydraulic tube (3).
- Remove the expansion stop spring (4).



- Remove the dust cover (5).
- Remove the retaining clip (6).
- Remove the seal (7).



Pre-assembly checks

- Clean all the parts with a degreasing agent:
 - Biosane type ref. 754748.
 - Or use an ultrasonic cleaning tank.
- Check the condition of the fork tube, there shall be no corrosion or impact marks, and the tube shall be perfectly straight and clean.

Reassembly

- Fit a new lightly greased lip seal using push tool P/N 757893 (7).
- Install the retaining ring.
- Install the dust cover.



- Install the expansion stop spring (4).
- Install the calibrated hydraulic tube (3).
- Install the compression stop cone (9) on the calibrated hydraulic tube.



- Fit the fork sleeve (10) to the slightly oiled fork tube (8).
- Install the stanchion assembly screw and its seal (11).

Tightening torque: 25-30 Nm.



- Pour 0.035 I SAE10W hydraulic oil into the fork tube.
- Fit the spring (2) with the close coils upwards.
- Fit and screw the cap home (1).

Tightening torque: 18-20 Nm.

- Fit the fork tubes into the fork triple clamps.
- Fit and tighten the (4) clamping bolts.

Tightening torque: 30-40 Nm.

- Re-install all the fork equipment.
- Refit the fairings in reverse order to removal.



ELECTRICITY

■ Ignition principle schematic



- 1. Ignition switch
- 2. Battery
- 3. CDI unit
- 4. Spark plug socket
- 5. Spark plug
- 6. HT coil
- 7. Starter resistor

- 8. Automatic starter
- 9. Magneto flywheel
- 10. Voltage regulator
- 11. Carburetor heater
- 12. Carburettor heater thermo-switch
- 13. Drive sensor

Regulator/Ignition unit

- Remove the rear cover assembly. See: Procedure 2. page 20.
- Removal:
 - Regulator (1).
 - The ignition module (2).

Checking the ignition system

Disconnect the ignition unit and perform the measurements on the harness side (3 Connectors).

If the values are correct, replace the ignition module.

If the values are incorrect, check:

- The harness.
- The ignition switch.
- The high voltage coil.
- The magneto.
- The transmission sensor.





Component	Connector	Wire colours	Standard values
Ground	A	Green_Ground	R = 0 Ω
Ignition switch: Ignition on Ignition off	A A	Black_Green Black_Green	V = 12 Volt (Battery voltage) V = 0 Volt
Engine cut-off	В	White/black_Green	Ignition on: $\infty \Omega$ Ignition off: 0Ω
Drive sensor	С	Blue_Green	R = 145 Ω ^{±20%}
Ignition sensor	A	Yellow/blue_Green	R = 145 Ω ^{±20%}
Low voltage coil	В	Red/black_Green	R = 517 Ω
HT coil: Primary Secondary	Α	Yellow/black_Green High voltage wire_Green	R = 0.5 Ω ^{±20%} R = 3.7 KΩ ^{±20%}
Spark plug socket			R = 5 KΩ

54

Removal of the fuel gauge

- Remove the rear storage compartment. See: Procedure 1. page 20.
- Disconnect the fuel gauge (1).
- Remove the fuel gauge (4 screw) (when dismantling notice in which direction it is so that you will replace it in its initial position when reassembling).
- Remove the rubber gasket.



When re-installing, use a new gasket.

Check:

- A. Full fuel tank: 8 $\Omega^{\pm 20\%}$.
- B. Empty fuel tank: 95 $\Omega^{\pm 20\%}$





Removal of the high tension coil

- Remove the rear storage compartment. See: Procedure 1. page 20.
- Disconnect the suppressor (1).
- Disconnect and remove the high voltage coil (2) (1 screw).



FUEL SYSTEM

Removal of the fuel tank

- Remove the rear cover assembly. See: Procedure 2. page 20.
- Disconnect the fuel supply hose.
- Disconnect the vacuum hose.
- Disconnect the fuel gauge (1).

- Remove the 3 screws on the rear support.
- Remove the fuel tank (3 screw).







- Remove the rear storage compartment. See: Procedure 1. page 20.
- Disconnect:
 - The throttle control (1).
 - The fuel supply hose (2).
- Disconnect:
 - The choke (3).
 - The carburettor heater (2 Connectors) (4).



56

- Remove the carburettor (2 collars) (5 / 6).





Disassembly

Removal of the choke

- Remove the choke cap.
- Remove the screw (1) and the holder plate (2).
- Locate the position of the choke (3) and then remove it.
- Remove the choke holder and its gasket (2 screw).



Check the condition of the O-ring.



Removal of the carburetor heater

- Remove the carburator warming resistor (4).
- Remove the heater earthing connection (5).



Removal of the throttle valve

- Remove the 2 screws that secure the chamber cap.
- Remove the chamber cap (6).
- Remove the spring.
- Remove the needle, valve and membrane assembly.



Check that the membrane is in good condition.

- Remove the needle stop (7).
- Remove the spring (8).
- Remove the needle (9).



The height oif the needle is factory set and cannot be modified.





58

Removal of the float, needle valve and jets

- Remove the 3 screws that secure the float chamber (10).
- Remove the float chamber and its O-ring.



Check the condition of the float chamber O-ring.

- Remove the float (11), its pin (12) and the needle valve (13).





- Remove the idle jet (14).
- Remove the main jet (15).
- Remove the needle well (16).



- Check the condition of the needle valve and the needle valve seat (A).



- Remove the 2 screws from the sheathing holder plate.





- Turn clockwise the mixture control screw (15) while counting the number of turns until it is screwed home.

\checkmark	Do not turn the screw home forcefully.
 Remove the mixture screw and its spring (17). 	



When re-fitting, this operation allows you to put it back to its initial adjustment position.



Removal of the deceleration enrichment device

- Remove the 2 bolts that secure the cover.
- Remove the cover (18).



- Remove the spring (19).
- Remove the membrane (20).



Check that the membrane is in good condition.



- Clean the carburettor body with Biosane cleanser ref. 754748 or use an ultrasonic cleaning tank.
- Blow into every jet and duct of the carburettor body with compressed air.



Do not use any metal tool which can damage the ducts of these items.

- Re-install all the other components and, if necessary, when starting the engine, readjust according to the values indicated on the technical data card.



The carburettor and its components



- 1. Starter support
- 2. Choke
- 3. Carburettor chamber cap
- 4. Needle
- 5. Spring
- 6. Needle stop
- 7. Sump
- 8. Float
- 9. Float pin
- 10. Needle valve
- 11. Idle jet

- 12. Main jet
- 13. Needle well
- 14. Mixture screw
- 15. Choke cover
- 16. Spring
- 17. Diaphragm
- 18. Idle screw
- 19. Piston
- 20. Float chamber gasket
- 21. Carburetor heater
- 22. Heater earth connection

62

POWER UNIT

Removal of the power unit

Note: To remove the cylinder head, remove the power propulsion unit.

- Disconnect the battery.
- Remove the rear cover assembly. See: Procedure 2. page 20.
- Remove the RH and LH under body panel. See: Procedure 5. page 22.
- Disconnect:
 - The magneto (3 Connectors) (1).
 - The choke (2).
 - The carburettor heater (3).
 - The suppressor (4).
 - Starter power supply wires.
 A.The power wire (5).
 B.Starter earth wire.
 - The transmission sensor (6).
- Disconnect:
 - The throttle control (7).
 - The fuel inlet pipe (8).
 - The vacuum pressure hose (9).





- Disconnect the rear brake control cable.
- Suspend the rear of the machine.
- Remove the 2 pins which secure the engine to the linkrod (10).

Tightening torque: 57±5 Nm.



When re-installing, use a new nut.

- Remove the shock absorber upper mount (11).

Tightening torque: 43-50 Nm.

- Lift the rear of the machine.
- Remove the power propulsion unit from the frame.

Removal of the cylinder head

- Remove the inlet pipe and the carburettor.

Tightening torque: 10 Nm.

- Remove the exhaust.
- Remove the cooling volutes. (7 screw).
- Remove the spark plug.
- Removal of the chain tensioner.
- Remove the screw, the O-ring and the tensioner spring (1).

Tightening torque: 8 Nm.

- Remove the 2 mounting screws (2) from the tensioner body.

Tightening torque: 10 Nm.

- Remove the chain tensioner and slacken it by pressing the ratchet tooth (A).







64

- Disconnect the oil vapour return pipe (3).
- Disconnect the pipe from the pulsair reed valve (4).
- Remove the 2 screws that secure the pulsair pipe (5).

Tightening torque: 10 Nm.

- Remove the cylinder head cover and its Oring (4 screw).

Tightening torque: 10 Nm.





The O-ring must be changed every time it is removed.

- Rotate the engine manually in the direction of operation in order to bring the rocker pads over the cam lobes (B).



- Remove the rubber plug (6).



- Hold the magnetic wheel to unscrew the 2 fastening screws from the camshaft pinion.
- Remove the camshaft gear (7).
- Tie a wire to the timing chain in order to prevent it from falling into the crankcase.

- Loosen the 2 washers screws (8).
- Gradually loosen in a crosswise order the 4 nuts which secure the cylinder head (9).
- Remove the cylinder head.





Removal of the camshaft and/or rockers

- Remove the pins from the rockers using a 5 mm screw.
- Remove the inlet (1) and exhaust (2) rockers.
- Remove the stopper plate (3).

Tightening torque: 15 Nm.

- Remove the camshaft (4).



Removal of the valves or valve stem seals

- Compress the spring of one of the valves using the valve lifter P/N 754035.
- Remove the 2 half cones (1).
- Uncompress the spring and remove the tool.

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Use the valve lifter provided with adaptor P/N 758595.



- Remove:
 - The upper cup (2).
 - The spring (3).
 - The lower washer (4).
 - The valve (5).
 - Remove the 2nd valve in the same way.



When re-installing, fit the valve springs, the closest coils against the cylinder head.When removing a valve, always change the valve stem seal. Using tool P/N 758596, fit a new valve stem seal.



When re-installing, lubricate the 2 half cones (1) so as to hold them in the groove of the valve's stem.

- Placing the 2 half cones (1) into the cup using the tool shall not be done forcefully when decompressing the spring (3).





When re-installing, the camshaft bearings, the rocker shafts and the contact between the rockers and the valves shall well lubricated in order to avoid any risk of seizure when starting the engine (Use lithium soap grease). Seals and valve stems must be lubricated.

Fitting the cylinder head

- Fit the 2 guiding pillars and the metal gasket (6) on the cylinder.
- Fit the timing chain through the cylinder head timing well.
- Install the cylinder head.



You must set the timing every time you remove the cylinder head when servicing.

Method for tightening the cylinder head

- Fit the 4 washers.
- Tighten the 4 nuts (1) and the 2 washer screws (2) slightly.
- Torque the 4 nuts in a crosswise order to 18 Nm and the 2 washer screws to 8 Nm.



- Setting the timing
 - Rotate the flywheel magneto (1) to bring the "T" mark in front of the crankcase boss (A).

- Fit the timing chain on the camshaft gear.

- Make sure the mark (B) of the camshaft gear is aligned with the mark (C) of the

- If necessary, dislodge the gear from the camshaft without removing it and move the chain around the gear on the required side.

- Install the camshaft gear.

cylinder head.

- Fit the 2 screws.
- Immobilise the magnetic wheel using a wrench and tighten the camshaft pinion.

Tightening torque: 10 Nm.



- Install a new paper gasket.
- Install the chain tensioner and the 2 attachment screws (2).

Tightening torque: 10 Nm.

- Install the spring (3).
- Fit the chain tensioner gasket (5).



Check the condition of the O-ring and change it if necessary.

- Install the tensioner cap (4).

Tightening torque: 8 Nm.

Checking the timing

- Rotate the engine twice: 2 revolutions in the engine's operating direction.
- Rotate the flywheel magneto (1) to bring the "T" mark in front of the crankcase boss (A).
- Make sure the mark (B) of the camshaft gear is aligned with the mark (C) of the cylinder head.

If the marks are not alined, reset the valve timing.




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