8.1. GENERAL INFORMATION

8.1.1. REFERENCE MANUALS

### SPARE PARTS CATALOGUE

<table>
<thead>
<tr>
<th>Aprilia part# (description)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L60400</td>
<td></td>
</tr>
</tbody>
</table>

### OWNER'S MANUALS

<table>
<thead>
<tr>
<th>Aprilia part# (description)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>8911245</td>
<td></td>
</tr>
</tbody>
</table>

### WORKSHOP MANUAL

<table>
<thead>
<tr>
<th>Aprilia part# (description)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MY 2003</td>
<td></td>
</tr>
<tr>
<td>8910593</td>
<td></td>
</tr>
</tbody>
</table>

### CD FOR THE NETWORK

<table>
<thead>
<tr>
<th>Aprilia part# (description)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>MY 2003</td>
<td></td>
</tr>
<tr>
<td>8CM0042</td>
<td></td>
</tr>
</tbody>
</table>
### 8.1.2. SPECIFICATIONS

<table>
<thead>
<tr>
<th><strong>DIMENSIONS</strong></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum length</td>
<td>1775 mm (69.88 in.)</td>
<td>1685 mm (66.34 in.)</td>
</tr>
<tr>
<td>Maximum width</td>
<td>990 mm (38.97 in.)</td>
<td></td>
</tr>
<tr>
<td>Max. height (handlebar height)</td>
<td>1070 mm (42.13 in.)</td>
<td></td>
</tr>
<tr>
<td>Wheelbase</td>
<td>1065 mm (41.93 in.)</td>
<td></td>
</tr>
<tr>
<td>Minimum ground clearance</td>
<td>160 mm (6.30 in.)</td>
<td></td>
</tr>
<tr>
<td>Weight in running order</td>
<td>180 kg (396.83 lb)</td>
<td>170 kg (374.78 lb)</td>
</tr>
</tbody>
</table>

**ENGINE**

<table>
<thead>
<tr>
<th></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>horizontal one-cylinder, 4-stroke engine - 2 valves controlled by one overhead camshaft</td>
<td></td>
</tr>
<tr>
<td>Total displacement</td>
<td>125 cu cm (7.63 cu in)</td>
<td>169 cu cm (10.37 cu in)</td>
</tr>
<tr>
<td>Bore/stroke</td>
<td>52.4/57.8 mm (2.06/2.28 in.)</td>
<td>61/57.8 mm (2.40/2.28 in.)</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>9.1 ± 1 : 1</td>
<td></td>
</tr>
<tr>
<td>Valve clearance</td>
<td>0.08 mm (0.0031 in) (INT - EXH)</td>
<td></td>
</tr>
<tr>
<td>Starting</td>
<td>electric + kick starter</td>
<td></td>
</tr>
<tr>
<td>Engine idling speed</td>
<td>1800 ± 100 rpm</td>
<td></td>
</tr>
<tr>
<td>Gearbox</td>
<td>Automatic dry centrifugal clutch</td>
<td></td>
</tr>
<tr>
<td>Lubrication</td>
<td>wet sump, forced lubrication with mechanical pump and oil cooler</td>
<td></td>
</tr>
<tr>
<td>Cooling system</td>
<td>forced air-cooling</td>
<td></td>
</tr>
</tbody>
</table>

**CAPACITIES**

<table>
<thead>
<tr>
<th></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel (including reserve)</td>
<td>8 litres (2.11 gallons)</td>
<td></td>
</tr>
<tr>
<td>Fuel reserve</td>
<td>1.5 litres (0.39 gallons)</td>
<td></td>
</tr>
<tr>
<td>Gearbox oil</td>
<td>150 cu cm (9.15 cu in)</td>
<td></td>
</tr>
<tr>
<td>Engine oil</td>
<td>- engine oil and engine oil filter change only 0.9 litres (0.24 gallons)</td>
<td></td>
</tr>
<tr>
<td>Mixer oil (reserve included)</td>
<td>- 1.2 litres (0.32 gallons)</td>
<td></td>
</tr>
<tr>
<td>Mixer oil reserve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seat</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Allowed load (Rider + passenger + luggage)</td>
<td>180 kg (396.832 lb)</td>
<td>190 kg (418.88 lb)</td>
</tr>
</tbody>
</table>

**TRANSMISSION SYSTEM**

<table>
<thead>
<tr>
<th></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Converter</td>
<td>Stepless automatic converter</td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>V belt</td>
<td></td>
</tr>
<tr>
<td>Primary drive ratios</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>- minimum for stepless gearbox</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>- maximum for stepless gearbox</td>
<td>0.789</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>Gears</td>
<td></td>
</tr>
<tr>
<td>Final ratio</td>
<td>11.584</td>
<td></td>
</tr>
</tbody>
</table>

**CARBURETTOR**

<table>
<thead>
<tr>
<th></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>Mikuni</td>
<td></td>
</tr>
<tr>
<td>Choke</td>
<td>Ø 22 mm (0.87 in.)</td>
<td></td>
</tr>
</tbody>
</table>

**FUEL SYSTEM**

<table>
<thead>
<tr>
<th></th>
<th>Grip</th>
<th>Hp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel</td>
<td>Premium grade unleaded petrol - DIN 51607- with 95 RON and MON octane rating minimum.</td>
<td></td>
</tr>
<tr>
<td>FRAME</td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>tube</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SUSPENSIONS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>with independent linkages</td>
</tr>
<tr>
<td>Rear</td>
<td>hydraulic monoshock</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BRAKES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>Drum brake Ø 109 mm (4.29 in) with mechanical transmission</td>
</tr>
<tr>
<td>Rear</td>
<td>Disc brake Ø 200 mm (7.87 in) with hydraulic transmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>WHEEL RIMS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>in steel</td>
</tr>
<tr>
<td>Front</td>
<td>10 x 5.5&quot;</td>
</tr>
<tr>
<td>Rear</td>
<td>8 x 8.0&quot;</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>TYRES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>tubeless</td>
</tr>
<tr>
<td>Front</td>
<td>21 x 7–10</td>
</tr>
<tr>
<td>Rear</td>
<td>21 x 10–8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AS AN ALTERNATIVE:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Front</td>
<td>AT 21 x 7–10</td>
</tr>
<tr>
<td>Rear</td>
<td>AT 22 x 10–8</td>
</tr>
<tr>
<td>Front inflation pressure</td>
<td>35 kPa (0.35 bar)</td>
</tr>
<tr>
<td>Rear inflation pressure</td>
<td>21 kPa (0.21 bar)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IGNITION</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>C.D.I. control unit</td>
</tr>
<tr>
<td>Spark advance</td>
<td>15° ± 2° (125) - 13° ± 2° (180)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SPARK PLUG</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>NGK CR7HSA</td>
</tr>
<tr>
<td>Spark plug electrode gap</td>
<td>0.6 – 0.7 mm (0.023 – 0.027 in.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ELECTRIC SYSTEM</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>12 V - 9 Ah</td>
</tr>
<tr>
<td>Fuse</td>
<td>15 A</td>
</tr>
<tr>
<td>Generator (with permanent magnet)</td>
<td>12 V - 110 W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BULBS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Parking light</td>
<td>12 V – 5 W</td>
</tr>
<tr>
<td>Low/high beam</td>
<td>12 V – 35/35 W</td>
</tr>
<tr>
<td>Direction indicators</td>
<td>12 V – 10 W</td>
</tr>
<tr>
<td>Rear parking light/stoplight</td>
<td>12 V – 5 / 21 W</td>
</tr>
<tr>
<td>Number plate light</td>
<td>12 V – 5 W</td>
</tr>
</tbody>
</table>
### 8.1.3. LUBRICANT TABLE

<table>
<thead>
<tr>
<th>LUBRICANT</th>
<th>PRODUCT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine oil</td>
<td>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.</td>
</tr>
<tr>
<td>Gearbox oil</td>
<td>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.</td>
</tr>
<tr>
<td>Bearings and other lubrication points</td>
<td>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 oxidisation.</td>
</tr>
<tr>
<td>Battery terminals</td>
<td>Use neutral grease or Vaseline.</td>
</tr>
<tr>
<td>Brake fluid</td>
<td>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.</td>
</tr>
<tr>
<td>Chain spray grease</td>
<td>RECOMMENDED: CHAIN SPRAY, or CHAIN LUBE.</td>
</tr>
<tr>
<td>Engine coolant</td>
<td>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.</td>
</tr>
</tbody>
</table>
### SCHEDULED MAINTENANCE CHART

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

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

**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.

<table>
<thead>
<tr>
<th>Parts</th>
<th>Nm</th>
<th>kgm</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spark plug</td>
<td>20</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Throttle control covers</td>
<td>13</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Oil filter cover</td>
<td>15</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Flywheel retaining nut</td>
<td>38</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Camshaft flange nut</td>
<td>27</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Mobile belt roller nut</td>
<td>38</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Valve adjusting nut</td>
<td>5</td>
<td>0.5</td>
<td></td>
</tr>
<tr>
<td>Cylinder head nut</td>
<td>27</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Primary drive gear nut</td>
<td>38</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Engine front support pin</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Head stud bolt</td>
<td>13</td>
<td>1.3</td>
<td></td>
</tr>
<tr>
<td>Oil bleeder</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Engine support plate screw</td>
<td>49</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Right casing screw</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Left casing screw</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Valve cover screw</td>
<td>14</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Converter cover screw</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Oil cooler retaining screw</td>
<td>9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Starter motor screw</td>
<td>14</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Oil pump screw</td>
<td>14</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Stator screw</td>
<td>14</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Engine rear mount screw</td>
<td>28</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Parts</td>
<td>Nm</td>
<td>kgm</td>
<td></td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td>Upper handlebars braces</td>
<td>4</td>
<td>0.4</td>
<td></td>
</tr>
<tr>
<td>Steering stem nut</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Rear shock absorber retaining nut</td>
<td>40</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td>Front hub retaining nut</td>
<td>60</td>
<td>6.0</td>
<td></td>
</tr>
<tr>
<td>Rear hub retaining nut</td>
<td>95</td>
<td>9.5</td>
<td></td>
</tr>
<tr>
<td>Front wheel retaining nut</td>
<td>38</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Rear wheel retaining nut</td>
<td>38</td>
<td>3.8</td>
<td></td>
</tr>
<tr>
<td>Steering stem flange nut</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Swinging arm spindle nut</td>
<td>90</td>
<td>9.0</td>
<td></td>
</tr>
<tr>
<td>Chain adjusting nut</td>
<td>22</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Handlebar lower fastener</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Front brake lever</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Rear brake lever</td>
<td>10</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Brake pads pin</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Chain sprocket retaining screw</td>
<td>29</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Oil line retaining screw</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Rear axle (inner) retaining screw</td>
<td>9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>Rear axle (outer) retaining screw</td>
<td>15</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>Steering arm retaining screw</td>
<td>30</td>
<td>3.0</td>
<td></td>
</tr>
<tr>
<td>Brake disc retaining screw</td>
<td>27</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>Headlight retaining screw</td>
<td>16</td>
<td>1.6</td>
<td></td>
</tr>
<tr>
<td>Muffler retaining screw</td>
<td>25</td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>Footpeg retaining screw</td>
<td>4</td>
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<tr>
<td>Component</td>
<td>Code</td>
<td>Torque</td>
<td></td>
</tr>
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<td>--------</td>
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</tr>
<tr>
<td>Brake caliper retaining</td>
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<td>3.4</td>
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<td>Brake master cylinder</td>
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<td>2.5</td>
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<tr>
<td>Front shield retaining</td>
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<td></td>
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<tr>
<td>Front suspension screw</td>
<td>40</td>
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</tr>
</tbody>
</table>
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 caliper 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 caliper.

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 caliper;
- 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

<table>
<thead>
<tr>
<th>Parts</th>
<th>125 cc</th>
<th>180 cc</th>
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<tbody>
<tr>
<td>Intake manifold</td>
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<td></td>
</tr>
<tr>
<td>Throttle valve</td>
<td>Ø 22</td>
<td></td>
</tr>
<tr>
<td>Float</td>
<td>5 g</td>
<td>5.5 g</td>
</tr>
<tr>
<td>Max. jet</td>
<td>Ø 130</td>
<td>Ø 132.5</td>
</tr>
<tr>
<td>Nozzle</td>
<td>Ø 3.2</td>
<td></td>
</tr>
<tr>
<td>Min. jet</td>
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<tr>
<td>Fuel level</td>
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<td></td>
</tr>
<tr>
<td>Air screw</td>
<td>2 ½ turns from fully closed position</td>
<td></td>
</tr>
</tbody>
</table>
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.
• 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.

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

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