SERVICE STATION MANUAL

633665 - . . . - 633672

Typhoon 50
The descriptions and illustrations given in this publication are not binding. While the basic specifications as described and illustrated in this manual remain unchanged, PIAGGIO-GILERA reserves the right, at any time and without being required to update this publication beforehand, to make any changes to components, parts or accessories, which it considers necessary to improve the product or which are required for manufacturing or construction reasons.

Not all versions/models shown in this publication are available in all countries. The availability of each model should be checked at the official Piaggio sales network.

"© Copyright 2008 - PIAGGIO & C. S.p.A. Pontedera. All rights reserved. Reproduction of this publication in whole or in part is prohibited."

PIAGGIO & C. S.p.A. - After sales
V.le Rinaldo Piaggio, 23 - 56025 PONTEDERA (Pi)
This service station manual has been drawn up by Piaggio & C. Spa to be used by the workshops of Piaggio-Gilera dealers. It is assumed that the user of this manual for maintaining and repairing Piaggio vehicles has a basic knowledge of mechanical principles and vehicle repair technique procedures. Any significant changes to vehicle characteristics or to specific repair operations will be communicated by updates to this manual. Nevertheless, completely satisfactory work cannot be carried out without the necessary equipment and tools. It is therefore advisable to read the sections of this manual relating to appropriate tools, along with the appropriate tool catalogue.

**N.B.** Provides key information to make the procedure easier to understand and carry out.

**CAUTION** Refers to specific procedures to carry out for preventing damages to the vehicle.

**WARNING** Refers to specific procedures to carry out to prevent injuries to the repairer.

- **Personal safety** Failure to completely observe these instructions will result in serious risk of personal injury.

- **Safeguarding the environment** Sections marked with this symbol indicate the correct use of the vehicle to prevent damaging the environment.

- **Vehicle intactivity** The incomplete or non-observance of these regulations leads to the risk of serious damage to the vehicle and sometimes even the invalidity of the guarantee.
<table>
<thead>
<tr>
<th>INDEX OF TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARACTERISTICS</td>
</tr>
<tr>
<td>TOOLING</td>
</tr>
<tr>
<td>MAINTENANCE</td>
</tr>
<tr>
<td>TROUBLESHOOTING</td>
</tr>
<tr>
<td>ELECTRICAL SYSTEM</td>
</tr>
<tr>
<td>ENGINE FROM VEHICLE</td>
</tr>
<tr>
<td>ENGINE</td>
</tr>
<tr>
<td>SUSPENSIONS</td>
</tr>
<tr>
<td>BRAKING SYSTEM</td>
</tr>
<tr>
<td>CHASSIS</td>
</tr>
<tr>
<td>PRE-DELIVERY</td>
</tr>
<tr>
<td>TIME</td>
</tr>
</tbody>
</table>
Rules

This section describes general safety rules for any maintenance operations performed on the vehicle.

Safety rules

- If work can only be done on the vehicle with the engine running, make sure that the premises are well ventilated, using special extractors if necessary; never let the engine run in an enclosed area. Exhaust fumes are toxic.
- The battery electrolyte contains sulphuric acid. Protect your eyes, clothes and skin. Sulphuric acid is highly corrosive; in the event of contact with your eyes or skin, rinse thoroughly with abundant water and seek immediate medical attention.
- The battery produces hydrogen, a gas that can be highly explosive. Do not smoke and avoid sparks or flames near the battery, especially when charging it.
- Fuel is highly flammable and it can be explosive given some conditions. Do not smoke in the working area, and avoid naked flames or sparks.
- Clean the brake pads in a well-ventilated area, directing the jet of compressed air in such a way that you do not breathe in the dust produced by the wear of the friction material. Even though the latter contains no asbestos, inhaling dust is harmful.

Maintenance rules

- Use original PIAGGIO spare parts and lubricants recommended by the Manufacturer. Non-original or non-conforming spares may damage the vehicle.
- Use only the appropriate tools designed for this vehicle.
- Always use new gaskets, sealing rings and split pins upon refitting.
- After removal, clean the components using non-flammable or low flash-point solvents. Lubricate all the work surfaces, except tapered couplings, before refitting these parts.
- After refitting, make sure that all the components have been installed correctly and work properly.
- Use only equipment with metric sizes for removal, service and reassembly operations. Metric bolts, nuts and screws are not interchangeable with coupling members using English measurements. Using unsuitable coupling members and tools may damage the vehicle.
- When carrying out maintenance operations on the vehicle that involve the electrical system, make sure the electrical connections have been made properly, particularly the ground and battery connections.
Vehicle identification

Chassis prefix ZAPC29 xxxx xxxxxxx
Engine prefix C216M xxxx

Dimensions and mass

<table>
<thead>
<tr>
<th>Specification</th>
<th>Desc./Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum length</td>
<td>1820</td>
</tr>
<tr>
<td>Maximum width</td>
<td>730</td>
</tr>
<tr>
<td>Maximum height</td>
<td>1160</td>
</tr>
<tr>
<td>Lead</td>
<td>1260</td>
</tr>
<tr>
<td>Kerb weight</td>
<td>84 Kg</td>
</tr>
</tbody>
</table>

Typhoon 50

Characteristics
## Engine

### Specifications

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine type</td>
<td>Two-stroke, single cylinder Piaggio Hi-PER2</td>
</tr>
<tr>
<td>Bore x stroke</td>
<td>40 X 39.3 mm</td>
</tr>
<tr>
<td>Cubic capacity</td>
<td>49.40 cc</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>9.4 to 10.4 :1</td>
</tr>
<tr>
<td>Carburettor</td>
<td>DELL’ORTO PHVA 17.5</td>
</tr>
<tr>
<td>CO adjustment</td>
<td>3.5% ± 0.5</td>
</tr>
<tr>
<td>Engine idle speed</td>
<td>1800 to 2000 r.p.m.</td>
</tr>
<tr>
<td>Air filter</td>
<td>Sponge, soaked in a mixture (50% SELENA Air Filter Oil and 50% unleaded petrol).</td>
</tr>
<tr>
<td>Starting system</td>
<td>Electric starter/kick starter</td>
</tr>
<tr>
<td>Lubrication</td>
<td>With blend and variable oil variable according to the engine revolutions and the throttle valve opening by means of a pump controlled by the driving shaft with toothed belt.</td>
</tr>
<tr>
<td>Fuel supply</td>
<td>With vacuum operated cock, lead-free gasoline (with 95 octane minimum) by means of the carburettor.</td>
</tr>
<tr>
<td>Cooling</td>
<td>Forced air circulation.</td>
</tr>
</tbody>
</table>

### Transmission

### Capacities

### Electrical System
### Frame and suspensions

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of chassis</td>
<td>Welded tubular steel chassis with stamped sheet reinforcements.</td>
</tr>
<tr>
<td>Front suspension</td>
<td>Upside-down hydraulic telescopic fork.</td>
</tr>
<tr>
<td>Front stroke</td>
<td>73 mm</td>
</tr>
<tr>
<td>Rear suspension stroke</td>
<td>58 mm</td>
</tr>
<tr>
<td>Rear suspension stroke</td>
<td>With coaxial spring and hydraulic shock absorber. Chassis to engine support with swinging arm.</td>
</tr>
</tbody>
</table>

### Brakes

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front brake</td>
<td>Disc D=190 / 200 mm with hydraulic control, operated by right brake lever on the handlebars.</td>
</tr>
<tr>
<td>Rear brake</td>
<td>Drum D=110 mm with expansion brake shoes, mechanically controlled by the left brake lever on the handlebars.</td>
</tr>
</tbody>
</table>

### Wheels and tyres

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front tyre</td>
<td>Tubeless 120/90 x -10&quot;</td>
</tr>
<tr>
<td>Rear tyre</td>
<td>Tubeless 120/90 x -10&quot;</td>
</tr>
<tr>
<td>Wheels</td>
<td>with 3.50x10&quot; wheel rims in light alloy.</td>
</tr>
</tbody>
</table>

### Carburettor

#### 50cc Version

### Dell'Orto

<table>
<thead>
<tr>
<th>Specification</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>PHVA 17.5 RD</td>
</tr>
<tr>
<td>Diffuser diameter</td>
<td>Ø 17.5</td>
</tr>
<tr>
<td>Regulation reference number</td>
<td>8423</td>
</tr>
<tr>
<td>Maximum nozzle:</td>
<td>53</td>
</tr>
<tr>
<td>Maximum air nozzle (on the body):</td>
<td>Ø 1.5</td>
</tr>
<tr>
<td>Tapered pin stamped code:</td>
<td>A22</td>
</tr>
<tr>
<td>Pin position (notches from above):</td>
<td>1</td>
</tr>
<tr>
<td>Diffuser:</td>
<td>209 HA</td>
</tr>
<tr>
<td>Minimum nozzle:</td>
<td>32</td>
</tr>
<tr>
<td>Minimum air nozzle (on the body):</td>
<td>Free</td>
</tr>
<tr>
<td>Secondary minimum air hole</td>
<td>Ø 2.5</td>
</tr>
<tr>
<td>Initial minimum mix screw opening:</td>
<td>1 1/2</td>
</tr>
<tr>
<td>Starter jet</td>
<td>50</td>
</tr>
<tr>
<td>Starter air nozzle (on the body):</td>
<td>Ø 1.5</td>
</tr>
<tr>
<td>Stroke of starter pin:</td>
<td>11 mm</td>
</tr>
<tr>
<td>Gasoline inlet hole</td>
<td>Ø 1.5</td>
</tr>
</tbody>
</table>
## Tightening Torques

### STEERING ASSEMBLY

<table>
<thead>
<tr>
<th>Name</th>
<th>Torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upper steering ring nut (safety locks)</td>
<td>35 to 40 Nm</td>
</tr>
<tr>
<td>Lower steering ring nut (safety locks)</td>
<td>8 to 10 Nm</td>
</tr>
<tr>
<td>Handlebar fixing pin (safety locks)</td>
<td>45 to 50 Nm</td>
</tr>
</tbody>
</table>

### FRAME ASSEMBLY

<table>
<thead>
<tr>
<th>Name</th>
<th>Torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swinging arm-engine pin (safety locks)</td>
<td>33 to 41 Nm</td>
</tr>
<tr>
<td>Swinging arm-frame pin (safety locks)</td>
<td>64 to 72 Nm</td>
</tr>
<tr>
<td>Shock absorber - frame nut (safety locks)</td>
<td>20 to 25 Nm</td>
</tr>
<tr>
<td>Shock absorber-engine pin (safety locks)</td>
<td>33 to 41 Nm</td>
</tr>
<tr>
<td>Rear wheel axis (safety locks)</td>
<td>104 to 126 Nm</td>
</tr>
<tr>
<td>Bolt holding stand to the engine</td>
<td>18 to 19 Nm</td>
</tr>
</tbody>
</table>

### FRONT SUSPENSION

<table>
<thead>
<tr>
<th>Name</th>
<th>Torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front wheel axle nut (safety locks)</td>
<td>45 to 50 Nm</td>
</tr>
<tr>
<td>Wheel axle clamp screw</td>
<td>6 to 7 Nm</td>
</tr>
<tr>
<td>Lower leg screw</td>
<td>15 to 20 Nm</td>
</tr>
<tr>
<td>Hydraulic cartridge stem nut</td>
<td>15 to 18 Nm</td>
</tr>
</tbody>
</table>

### FRONT BRAKE

<table>
<thead>
<tr>
<th>Name</th>
<th>Torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viti fissaggio coperchio pompa freno</td>
<td>1.5 ÷ 2 Nm</td>
</tr>
<tr>
<td>Brake pump support fixing screw</td>
<td>7 to 10 Nm</td>
</tr>
<tr>
<td>Brake fluid pump - hose fitting</td>
<td>13 to 18 Nm</td>
</tr>
<tr>
<td>Brake fluid tube - caliper fitting</td>
<td>20 to 25 Nm</td>
</tr>
<tr>
<td>Caliper tightening screw</td>
<td>20 to 25 Nm</td>
</tr>
<tr>
<td>Disc tightening screw (safety locks - lock with LOCTITE THREADLOCK MEDIUM TYPE 243)</td>
<td>6 ÷ 7 Nm</td>
</tr>
<tr>
<td>Oil bleed screw</td>
<td>7 to 10 Nm</td>
</tr>
<tr>
<td>Calliper coupling screw</td>
<td>20 to 25 Nm</td>
</tr>
</tbody>
</table>

### ENGINE ASSEMBLY

<table>
<thead>
<tr>
<th>Name</th>
<th>Torque in Nm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch bell nut</td>
<td>40 to 44 Nm</td>
</tr>
<tr>
<td>Clutch lock ring nut</td>
<td>55 ÷ 60</td>
</tr>
<tr>
<td>Nut locking driving pulley on the crankshaft</td>
<td>40 to 44 Nm</td>
</tr>
<tr>
<td>Start-up lever screw</td>
<td>12 ÷ 13</td>
</tr>
<tr>
<td>Flywheel nut</td>
<td>40 to 44 Nm</td>
</tr>
<tr>
<td>Flywheel fan screws</td>
<td>3 to 4</td>
</tr>
<tr>
<td>Half-crank case joint bolts</td>
<td>12 ÷ 13</td>
</tr>
<tr>
<td>Bolts holding exhaust pipe to the crankcase</td>
<td>22 ÷ 24</td>
</tr>
<tr>
<td>Screws holding the filter box to the crank case</td>
<td>4 ÷ 5</td>
</tr>
<tr>
<td>Head nuts</td>
<td>10 ÷ 11</td>
</tr>
<tr>
<td>Starter screws</td>
<td>12 ÷ 13</td>
</tr>
<tr>
<td>Ignition spark plug</td>
<td>25 ÷ 30</td>
</tr>
<tr>
<td>Hub oil drainage cap</td>
<td>3 ÷ 5</td>
</tr>
<tr>
<td>Oil hub level dipstick</td>
<td>Manual</td>
</tr>
<tr>
<td>Rear hub cap screws</td>
<td>12 ÷ 13</td>
</tr>
<tr>
<td>Transmission cover screws</td>
<td>12 ÷ 13</td>
</tr>
<tr>
<td>Inlet manifold screws</td>
<td>8 ÷ 9</td>
</tr>
<tr>
<td>Flywheel hood fixing screws</td>
<td>1 ÷ 2</td>
</tr>
<tr>
<td>Cylinder hood fixing screws</td>
<td>3.5 ÷ 5</td>
</tr>
<tr>
<td>Stator clamping screws</td>
<td>3 ÷ 4</td>
</tr>
<tr>
<td>Pick-Up clamping screw</td>
<td>4 ÷ 5</td>
</tr>
<tr>
<td>Mixer clamping screws</td>
<td>3 ÷ 4</td>
</tr>
<tr>
<td>Screw fixing brake lever to the journal on the engine</td>
<td>12 ÷ 13</td>
</tr>
</tbody>
</table>

CHAR - 10
Overhaul data

Assembly clearances

Cylinder - piston assy.

<table>
<thead>
<tr>
<th>Name</th>
<th>Initials</th>
<th>Cylinder</th>
<th>Piston</th>
<th>Play on fitting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard coupling</td>
<td>M</td>
<td>40.005 - 40.012</td>
<td>39.943 - 39.95</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Standard coupling</td>
<td>N</td>
<td>40.012 - 40.019</td>
<td>39.95 - 39.957</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Standard coupling</td>
<td>O</td>
<td>40.019 - 40.026</td>
<td>39.957 - 39.964</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Standard coupling</td>
<td>P</td>
<td>40.026 - 40.033</td>
<td>39.964 - 39.971</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 1st oversize</td>
<td>M1</td>
<td>40.205 - 40.212</td>
<td>40.143 - 40.15</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 1st oversize</td>
<td>N1</td>
<td>40.212 - 40.219</td>
<td>40.15 - 40.157</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 1st oversize</td>
<td>O1</td>
<td>40.219 - 40.226</td>
<td>40.157 - 40.164</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 1st oversize</td>
<td>P1</td>
<td>40.226 - 40.233</td>
<td>40.164 - 40.171</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 2nd oversize</td>
<td>M2</td>
<td>40.405 - 40.412</td>
<td>40.343 - 40.35</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 2nd oversize</td>
<td>N2</td>
<td>40.412 - 40.419</td>
<td>40.35 - 40.357</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 2nd oversize</td>
<td>O2</td>
<td>40.419 - 40.426</td>
<td>40.357 - 40.364</td>
<td>0.055 - 0.069</td>
</tr>
<tr>
<td>Coupling 2nd oversize</td>
<td>P2</td>
<td>40.426 - 40.433</td>
<td>40.364 - 40.371</td>
<td>0.055 - 0.069</td>
</tr>
</tbody>
</table>

Piston rings

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Dimensions</th>
<th>Initials</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compression ring</td>
<td></td>
<td>40</td>
<td>A</td>
<td>0.10 to 0.25</td>
</tr>
<tr>
<td>Compression ring 1st</td>
<td></td>
<td>40.2</td>
<td>A</td>
<td>0.10 to 0.25</td>
</tr>
<tr>
<td>oversize</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compression ring 2nd</td>
<td></td>
<td>40.4</td>
<td>A</td>
<td>0.10 to 0.25</td>
</tr>
<tr>
<td>Oversize</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Crankcase - crankshaft - connecting rod

#### AXIAL CLEARANCE BETWEEN CRANKCASE, CRANKSHAFT AND CONNECTING ROD

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
<th>Dimensions</th>
<th>Initials</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connecting rod</td>
<td></td>
<td>11.750-0.05</td>
<td>A</td>
<td>clearance E = 0.25 to 0.50</td>
</tr>
<tr>
<td>shoulder washer</td>
<td></td>
<td>0.5 ± 0.03</td>
<td>G</td>
<td>clearance E = 0.25 to 0.50 - clearance F = 0.20 to 0.75</td>
</tr>
<tr>
<td>Half-shaft, transmission</td>
<td></td>
<td>13.75+0.040</td>
<td>C</td>
<td>clearance E = 0.25 to 0.50 - clearance F = 0.20 to 0.75</td>
</tr>
<tr>
<td>Flywheel-side half-shaft</td>
<td></td>
<td>13.75+0.040</td>
<td>D</td>
<td>clearance E = 0.25 to 0.50 - clearance F = 0.20 to 0.75</td>
</tr>
<tr>
<td>Lining between the shoulders</td>
<td></td>
<td>40.64</td>
<td>H</td>
<td>clearance E = 0.25 to 0.50 - clearance F = 0.20 to 0.75</td>
</tr>
<tr>
<td>Cage</td>
<td></td>
<td>11.800-0.35</td>
<td>B</td>
<td>clearance F = 0.20 to 0.75</td>
</tr>
</tbody>
</table>
Slot packing system

- Fit the cylinder without installing the basic gasket.
- Apply a centimetre dial gauge on the special tool and zero it on the ground plane.
- Fit the tool to the top of the cylinder fixing it with two nuts to the studbolts and take the piston to the T.D.C.
- The thickness of the gasket to fit will change depending on the value detected. For this purpose, there are three with different thicknesses.

Specific tooling

020272Y Piston position check tool

<table>
<thead>
<tr>
<th>Shimming System</th>
<th>Measure A</th>
<th>Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shimming</td>
<td>2.80 ÷ 3.04</td>
<td>0.4</td>
</tr>
<tr>
<td>Shimming</td>
<td>3.04 ÷ 3.24</td>
<td>0.6</td>
</tr>
<tr>
<td>Shimming</td>
<td>3.25 ÷ 3.48</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Products

<table>
<thead>
<tr>
<th>Product</th>
<th>Description</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGIP ROTRA 80W-90</td>
<td>Rear hub oil</td>
<td>SAE 80W/90 Oil that exceeds the requirements of API GL3 specifications</td>
</tr>
<tr>
<td>AGIP FILTER OIL</td>
<td>Oil for air filter sponge</td>
<td>Mineral oil with specific additives for increased adhesiveness</td>
</tr>
<tr>
<td>AGIP CITY TEC 2T</td>
<td>Mixer oil</td>
<td>Synthetic oil for 2-stroke engines: JASO FC, ISO-L-EGD</td>
</tr>
<tr>
<td>AGIP GP 330</td>
<td>Grease for brake lever, gas</td>
<td>White calcium complex soap-based spray grease with NLGI 2; ISO-L-XBCIB2</td>
</tr>
<tr>
<td>AGIP GREASE SM 2</td>
<td>Grease for the C-ring of the tone wheel</td>
<td>Soap-based lithium grease containing NLGI 2 Molybdenum disulphide; ISO-L-XBCHB2_3; DIN KF2K-20</td>
</tr>
<tr>
<td>AGIP BRAKE 4</td>
<td>Brake fluid</td>
<td>FMVSS DOT 4 Synthetic fluid</td>
</tr>
<tr>
<td>MONTBLANC MOLYBDENUM GREASE</td>
<td>Grease for driven pulley shaft adjusting ring and movable driven pulley housing</td>
<td>Grease with molybdenum disulphide</td>
</tr>
<tr>
<td>AGIP GREASE PV2</td>
<td>Grease for steering bearings, pin seats and swinging arm</td>
<td>White anhydrous-calcium based grease to protect roller bearings; temperature range between -20 C and +120 C; with NLGI 2; ISO-L-XBCIB2.</td>
</tr>
<tr>
<td>TOOLING</td>
<td>TOOL</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>--------------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>001330Y</td>
<td>Tool for fitting steering seats</td>
<td></td>
</tr>
<tr>
<td>001467Y006</td>
<td>Pliers to extract 20 mm bearings</td>
<td></td>
</tr>
<tr>
<td>001467Y007</td>
<td>Driver for OD 54 mm bearing</td>
<td></td>
</tr>
<tr>
<td>001467Y009</td>
<td>Driver for OD 42-mm bearings</td>
<td></td>
</tr>
<tr>
<td>001467Y013</td>
<td>Calliper to extract ø 15-mm bearings</td>
<td></td>
</tr>
<tr>
<td>001467Y014</td>
<td>Calliper to extract ø 15-mm bearings</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>001467Y017</td>
<td>Bell for bearings, OD 39 mm</td>
<td></td>
</tr>
<tr>
<td>001467Y021</td>
<td>Extraction pliers for ø 11 mm bearings</td>
<td></td>
</tr>
<tr>
<td>002465Y</td>
<td>Calliper for circlips</td>
<td></td>
</tr>
<tr>
<td>006029Y</td>
<td>Punch for fitting fifth steering bearing on steering tube</td>
<td></td>
</tr>
<tr>
<td>020004Y</td>
<td>Punch for removing steering bearings from headstock</td>
<td></td>
</tr>
<tr>
<td>020055Y</td>
<td>Wrench for steering tube ring nut</td>
<td></td>
</tr>
<tr>
<td>020150Y</td>
<td>Air heater mounting</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------</td>
<td></td>
</tr>
<tr>
<td>020151Y</td>
<td>Air heater</td>
<td></td>
</tr>
<tr>
<td>020162Y</td>
<td>Flywheel extractor</td>
<td></td>
</tr>
<tr>
<td>020163Y</td>
<td>Crankcase splitting plate</td>
<td></td>
</tr>
<tr>
<td>020164Y</td>
<td>Driven pulley assembly sheath</td>
<td></td>
</tr>
<tr>
<td>020165Y</td>
<td>Start-up crown lock</td>
<td></td>
</tr>
<tr>
<td>020166Y</td>
<td>Pin lock fitting tool</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>------------------------------------</td>
<td></td>
</tr>
<tr>
<td>020261Y</td>
<td>Starter spring fitting</td>
<td></td>
</tr>
<tr>
<td>020262Y</td>
<td>Crankcase splitting plate</td>
<td></td>
</tr>
<tr>
<td>020265Y</td>
<td>Bearing fitting base</td>
<td></td>
</tr>
<tr>
<td>020325Y</td>
<td>Pliers for brake-shoe springs</td>
<td></td>
</tr>
<tr>
<td>020329Y</td>
<td>Mity-Vac vacuum-operated pump</td>
<td></td>
</tr>
<tr>
<td>020330Y</td>
<td>Stroboscopic light to check timing</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>---------------------------------</td>
<td></td>
</tr>
<tr>
<td>020331Y</td>
<td>Digital multimeter</td>
<td></td>
</tr>
<tr>
<td>020332Y</td>
<td>Digital rpm indicator</td>
<td></td>
</tr>
<tr>
<td>020334Y</td>
<td>Multiple battery charger</td>
<td></td>
</tr>
<tr>
<td>020335Y</td>
<td>Magnetic mounting for dial gauge</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>-------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>020350Y</td>
<td>Electrical system check instrument</td>
<td></td>
</tr>
<tr>
<td>020357Y</td>
<td>32x35-mm Adaptor</td>
<td></td>
</tr>
<tr>
<td>020359Y</td>
<td>42x47-mm Adaptor</td>
<td></td>
</tr>
<tr>
<td>020376Y</td>
<td>Adaptor handle</td>
<td></td>
</tr>
<tr>
<td>020412Y</td>
<td>15-mm guide</td>
<td></td>
</tr>
<tr>
<td>020456Y</td>
<td>Ø 24 mm adaptor</td>
<td></td>
</tr>
<tr>
<td>Stores code</td>
<td>Description</td>
<td></td>
</tr>
<tr>
<td>------------</td>
<td>--------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>020483Y</td>
<td>30-mm guide</td>
<td></td>
</tr>
<tr>
<td>020565Y</td>
<td>Flywheel lock calliper spanner</td>
<td></td>
</tr>
<tr>
<td>020625Y</td>
<td>Kit for sampling gas from the exhaust manifold</td>
<td></td>
</tr>
</tbody>
</table>
### INDEX OF TOPICS

| MAINTENANCE | MAIN |
Maintenance chart

EVERY 2 YEARS

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake fluid - change</td>
</tr>
</tbody>
</table>

AFTER 1000 KM

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil - change</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Odometer gear - greasing</td>
</tr>
<tr>
<td>Steering - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Safety fasteners - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

AFTER 5000 KM, 25000 KM, 35000 KM, 55000 KM

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil level - check</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - clean</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

AFTER 10000 KM, 50000 KM

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil - change</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - clean</td>
</tr>
<tr>
<td>Idling speed (*) - adjustment</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Variable speed rollers - replacement</td>
</tr>
<tr>
<td>Odometer gear - greasing</td>
</tr>
<tr>
<td>Drive belt - check</td>
</tr>
<tr>
<td>Steering - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Transmission - lubrication</td>
</tr>
<tr>
<td>Safety fasteners - check</td>
</tr>
<tr>
<td>Suspensions - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Headlight - adjustment</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

(*) See instructions in the "Adjusting the idle speed" section

AFTER 15000 KM AND 45000 KM
<table>
<thead>
<tr>
<th>Maintenance</th>
<th>Typhoon 50</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil level - check</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - cleaning</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Drive belt - replacement</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>SAS box (sponge) (**) - cleaning</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

**(*) See regulations in the «Secondary air system» section**

### After 20000 KM and 40000 KM

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil - change</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - clean</td>
</tr>
<tr>
<td>Idling speed (*) - adjustment</td>
</tr>
<tr>
<td>Cylinder cooling system - check/cleaning</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Drive belt - check</td>
</tr>
<tr>
<td>Variable speed rollers - replacement</td>
</tr>
<tr>
<td>Mixer belt - replacement</td>
</tr>
<tr>
<td>Odometer gear - greasing</td>
</tr>
<tr>
<td>Steering - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Transmission - lubrication</td>
</tr>
<tr>
<td>Safety fasteners - check</td>
</tr>
<tr>
<td>Suspensions - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Headlight - adjustment</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

**(*) See section «Adjusting the idle speed»**

### After 30000 Km

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil - change</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - clean</td>
</tr>
<tr>
<td>Idling speed (*) - adjustment</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Drive belt - replacement</td>
</tr>
<tr>
<td>Variable speed rollers - replacement</td>
</tr>
<tr>
<td>Odometer gear - greasing</td>
</tr>
<tr>
<td>Steering - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Flexible brake tubes - replacement</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Transmission - lubrication</td>
</tr>
<tr>
<td>Safety fasteners - check</td>
</tr>
<tr>
<td>Suspensions - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Headlight - adjustment</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>SAS box (sponge) (**) - cleaning</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>
AFTER 60000 KM

<table>
<thead>
<tr>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hub oil - change</td>
</tr>
<tr>
<td>Spark plug/electrode gap - replacement</td>
</tr>
<tr>
<td>Air filter - clean</td>
</tr>
<tr>
<td>Idling speed (*) - adjustment</td>
</tr>
<tr>
<td>Cylinder cooling system - check/cleaning</td>
</tr>
<tr>
<td>Oil mixer/throttle linkage - adjustment</td>
</tr>
<tr>
<td>Drive belt - replacement</td>
</tr>
<tr>
<td>Variable speed rollers - replacement</td>
</tr>
<tr>
<td>Mixer belt - replacement</td>
</tr>
<tr>
<td>Odometer gear - greasing</td>
</tr>
<tr>
<td>Steering - adjustment</td>
</tr>
<tr>
<td>Brake levers - greasing</td>
</tr>
<tr>
<td>Brake pads - check condition and wear</td>
</tr>
<tr>
<td>Flexible brake tubes - replacement</td>
</tr>
<tr>
<td>Brake fluid level - check</td>
</tr>
<tr>
<td>Transmission - lubrication</td>
</tr>
<tr>
<td>Safety fasteners - check</td>
</tr>
<tr>
<td>Suspensions - check</td>
</tr>
<tr>
<td>Electrical system and battery - check</td>
</tr>
<tr>
<td>Headlight - adjustment</td>
</tr>
<tr>
<td>Tyre pressure and wear - check</td>
</tr>
<tr>
<td>SAS box (sponge) (**) - cleaning</td>
</tr>
<tr>
<td>Vehicle test and brake test - Road test</td>
</tr>
</tbody>
</table>

(*) See regulations in the «Adjusting the idle speed» section
(**) See regulations in the «Secondary air system» section

Checking the spark advance

- Check to be made at over 4000 rpm with stroboscopic gun. The advanced ignition measured must be 17° before the TDC.
- This value is correct when the reference mark on the flywheel hood is aligned with the reference mark on the cooling fan and the phase shifter on the stroboscopic gun is set on 17°.

N.B.
IN CASE OF MALFUNCTION, CARRY OUT THE CHECKS PROVIDED FOR IN THE ELECTRICAL SYSTEM CHAPTER.
CAUTION
BEFORE CARRYING OUT THE ABOVE CHECKS, CHECK THE CORRECT KEYING OF THE FLYWHEEL ON THE CRANKSHAFT.

Specific tooling
020330Y Stroboscopic light to check timing
Spark plug

Place the vehicle on its central stand
- Remove the central cover by undoing the three clamping screws indicated in the figure;
- Disconnect spark plug HV wire hood;
- Undo the spark plug using the socket wrench;
- Examine the condition of the spark plug, check that the insulating material is whole and measure the distance between the electrodes using a thickness gauge.
- Adjust the distance if necessary by bending the side electrode very carefully.
In the case of defects, replace the spark plug with one of the specified type;
- Engage the spark plug with the due inclination and screw it right down by hand, then do it up with the wrench at the prescribed torque;
- Put the hood on the sparking plug as far as it will go;
- Refit the central flap.

**CAUTION**
THE SPARK PLUG MUST BE REMOVED WHEN THE MOTOR IS COLD. THE SPARK PLUG MUST BE REPLACED EVERY 5000 KM. USE OF STARTERS NOT CONFORMING OR SPARK PLUGS NOT THOSE DESCRIBED CAN SERIOUSLY DAMAGE THE ENGINE.

**Characteristic**

**Recommended spark plug**
CHAMPION RN3C

**Electric characteristic**

**Electrode gap**
0.6 to 0.7 mm.

**Locking torques (N·m)**
Spark plug 25 - 30 Nm

**Hub oil**
Check

Do the following to check the correct level:
1) Stand the vehicle on the centre-stand on flat ground;
2) Remove the dipstick «A», and dry it with a clean cloth. Reinsert it, screwing it in all the way;
3) Remove the stick and check that the oil level is slightly over the second notch starting from the lower end;
4) Screw the dipstick back in, checking that it is locked in place.

Recommended products
AGIP ROTRA 80W-90 Rear hub oil
SAE 80W/90 Oil that exceeds the requirements of API GL3 specifications

Replacement

- Remove the oil filler cap «A».
- Unscrew the oil drainage cap "B" and drain out all the oil.
- Screw in the drainage cap again and fill the hub with the prescribed oil.

Characteristic
Rear hub oil
Quantity: approx. 80 cm³
Air filter

- Remove the cap of the purifier, unscrewing the six clamping screws and removing the filter.

Cleaning:
- Wash with water and neutral soap.
- Dry with a clean cloth and short blasts of compressed air.
- Saturate with a 50% mixture of gasoline and oil.
- Drip dry the filter and then squeeze it between the hands without wringing.
- Let it dry and refit it again.

CAUTION
NEVER RUN THE ENGINE WITHOUT THE AIR FILTER, THIS WOULD RESULT IN AN EXCESSIVE WEAR OF THE PISTON AND CYLINDER.

Recommended products
AGIP FILTER OIL Oil for air filter sponge
Mineral oil with specific additives for increased adhesiveness

transmissions

During this stage, the engine must be fed with a 2% mixture (at least 0.5 litres if the tank is empty).
Remove the casing covering the carburettor. Put the vehicle in gear and regulate the idling by turning the adjustment screw on the carburettor. Adjust the control cables:

Handlebar control: remove the rubber hood and regulate the cable adjustment in such a way that it causes a minimum backlash on the throttle.

Carburettor control: remove the rubber hood and regulate the cable adjustment in such a way that the sheath has a minimum backlash.

Oil mixer control: remove the cap on the engine crankcase and regulate the adjustment in such a way that with the throttle released, the reference mark on the rotating plate is lined up with the ref-
reference mark on the mixer body as indicated in the figure.

Bring the throttle a couple of times to the end of the stroke and check that the adjustments have been made properly, then tighten them all up.

N.B.

TO VERIFY THE CORRECT TIMING OF THE MIXER IT IS NECESSARY TO REMOVE THE AIR CONDUIT OF THE TRANSMISSION COVER.

CAUTION


Recommended products

AGIP CITY TEC 2T Mixer oil

synthetic oil for 2-stroke engines: JASO FC, ISO-L-EGD

Braking system

Level check

Proceed as follows:
- Rest the vehicle on its centre stand with the handlebars perfectly horizontal;
- Check the level of liquid with the related warning light «A».

A certain lowering of the level is caused by wear on the brake pads.
Top-up

Proceed as follows:
- Remove the rearview mirrors
- Remove the front handlebar cover.
- Remove the tank cap by loosening the two screws, remove the gasket and top up using only the liquid specified without exceeding the maximum level.

**CAUTION**
ONLY USE DOT 4-CLASSIFIED BRAKE FLUID.

**CAUTION**
AVOID CONTACT OF THE BRAKE FLUID WITH YOUR EYES, SKIN, AND CLOTHING. IN CASE OF ACCIDENTAL CONTACT, WASH WITH WATER.

**CAUTION**
BRAKING CIRCUIT FLUID IS HIGHLY CORROSIVE; MAKE SURE THAT IT DOES NOT COME INTO CONTACT WITH THE PAINTWORK.

**CAUTION**
The brake fluid is hygroscopic, in other words, it absorbs moisture from the surrounding air. If the content of moisture in the braking fluid exceeds a certain value, braking will be inefficient.

**NEVER USE BRAKE LIQUID IN OPEN OR PARTIALLY USED CONTAINERS.**

**UNDER NORMAL CLIMATIC CONDITIONS, THE FLUID MUST BE CHANGED EVERY 20,000 KM OR ANYWAY EVERY TWO YEARS.**

**N.B.**
SEE THE BRAKING SYSTEM CHAPTER WITH REGARD TO THE CHANGING OF BRAKE FLUID AND THE BLEEDING OF AIR FROM THE CIRCUITS.

**Recommended products**
AGIP BRAKE 4 Brake fluid
FMVSS DOT 4 Synthetic fluid

Headlight adjustment

Proceed as follows:
1. Place the vehicle, in riding condition, with the tyres correctly inflated, on a flat piece of ground at a distance of 10 m from a white screen situated in a shaded area, making sure that the scooter is perpendicular to the screen;
2. Turn on the headlight and check that the edge of the beam of light projected on the screen is not more than 9/10 of the height of the centre of the front light from the ground and is not less than 7/10;

3. If this is not the case, regulate the headlight by turning screw «A».

N.B.
THE ABOVE PROCEDURE COMPLIES WITH THE EUROPEAN STANDARDS REGARDING MAXIMUM AND MINIMUM HEIGHT OF LIGHT BEAMS. REFER TO THE STATUTORY REGULATIONS IN FORCE IN EVERY COUNTRY WHERE THE VEHICLE IS USED.
INDEX OF TOPICS

TROUBLESHOOTING

TROUBL
This section makes it possible to find the solutions to use in troubleshooting. For each breakdown, a list of the possible causes and respective interventions is given.

**Engine**

### Poor performance

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defective fuel cock or vacuum hose damaged.</td>
<td>Replace the cock or the control hose.</td>
</tr>
<tr>
<td>Carburettor nozzles clogged or dirty</td>
<td>Dismantle, wash with solvent and dry with compressed air</td>
</tr>
<tr>
<td>Fuel filter on the tank outlet fitting dirty or clogged</td>
<td>Clean the fitting filter</td>
</tr>
<tr>
<td>Excess of encrustations in the combustion chamber</td>
<td>Remove the encrustations</td>
</tr>
<tr>
<td>Lack of compression wear of the piston rings or cylinder</td>
<td>Check the worn parts and replace them</td>
</tr>
<tr>
<td>Exhaust pipe clogged due to excessive encrustations</td>
<td>Replace the exhaust pipe and check the carburation and mixer timer</td>
</tr>
<tr>
<td>Air filter blocked or dirty</td>
<td>Clean according to the procedure</td>
</tr>
<tr>
<td>Starter inefficient (stays on)</td>
<td>Check the mechanical sliding, continuity of the circuit, the presence of power and electrical wiring</td>
</tr>
<tr>
<td>Clutch slipping</td>
<td>Check the centrifugal brake shoe assembly and / or clutch bell and replace if necessary</td>
</tr>
<tr>
<td>Defective mobile pulley sliding</td>
<td>Check the parts, change the faulty parts and lubricate the driven pulley using only Montblanc-Molibdenum Grease (dis. 498345) grease</td>
</tr>
<tr>
<td>Driving belt worn</td>
<td>Replace</td>
</tr>
<tr>
<td>Roller wear; Presence of oil; Dirt</td>
<td>Clean the speed variator, replace the rollers if worn out</td>
</tr>
</tbody>
</table>

### Rear wheel spins at idle

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idling rpm too high</td>
<td>Check the idling speed and, if necessary, adjust the C.O.</td>
</tr>
<tr>
<td>Clutch fault</td>
<td>Check the spring/friction mass and the clutch bell</td>
</tr>
<tr>
<td>Air filter housing not sealed</td>
<td>Correctly refit the filter housing and replace it if it is damaged</td>
</tr>
</tbody>
</table>

### Starting difficulties

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carburettor nozzles clogged or dirty</td>
<td>Dismantle, wash with solvent and dry with compressed air</td>
</tr>
<tr>
<td>Defective fuel cock or vacuum hose damaged.</td>
<td>Replace the cock or the control hose.</td>
</tr>
<tr>
<td>Starter inefficient</td>
<td>Check: electric wiring, circuit continuity, mechanical sliding and power supply</td>
</tr>
<tr>
<td>Flat battery</td>
<td>Check the state of the battery. If it shows signs of sulphation replace it and bring the new battery into service charging it for eight hours at a current of 1/10 of the capacity of the battery itself</td>
</tr>
<tr>
<td>Engine flooded</td>
<td>Start the vehicle keeping the throttle fully open alternately making the engine run for approx. five seconds and stopping for other five seconds. If however it does not start, remove the spark plug, the engine over with the throttle open being careful to keep the cap in contact with the spark plug and the spark plug grounded but away from its hole. Refit a dry spark plug and start the vehicle.</td>
</tr>
<tr>
<td>Altered fuel characteristics</td>
<td>Drain off the fuel no longer up to standard; then, refill</td>
</tr>
</tbody>
</table>
### Possible Cause

**Defective spark plug or with incorrect electrode gap**

Remove the encrustation, restore the plug gap or replace being sure to use the types of spark plug recommended at all times. Bear in mind that many problems engines have, derive from the use of the wrong spark plug.

**Intake joint cracked or with a bad seal**

Replace the intake joint and check its tightness on the crank-case and on the carburettor.

**Purifier-carburettor fitting damaged**

Replace

### Excessive oil consumption/Exhaust smoke

**EXCESSIVE OIL CONSUMPTION/SMOKEY EXHAUST**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excess of encrustations in the combustion chamber</td>
<td>Remove the encrustations</td>
</tr>
</tbody>
</table>

### Engine tends to cut-off at full throttle

**ENGINE STOP FULL THROTTLE**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum nozzle dirty - lean mixture</td>
<td>Wash the nozzle with solvent and dry with compressed air</td>
</tr>
<tr>
<td>Dirty carburettor</td>
<td>Wash the carburettor with solvent and dry with compressed air</td>
</tr>
<tr>
<td>Water in the carburettor</td>
<td>Empty the tank through the appropriate bleed nipple.</td>
</tr>
<tr>
<td>Air filter dirty</td>
<td>Clean or replace</td>
</tr>
<tr>
<td>Defective floating valve</td>
<td>Check the proper sliding of the float and the functioning of the valve</td>
</tr>
<tr>
<td>Tank breather hole obstructed</td>
<td>Restore the proper reservoir aeration</td>
</tr>
</tbody>
</table>

### Engine tends to cut-off at idle

**ENGINE STOP IDLING**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum nozzle dirty</td>
<td>Wash the nozzle with solvent and dry with compressed air</td>
</tr>
<tr>
<td>Starter that stays open</td>
<td>Check: electric wiring, circuit continuity, mechanical sliding and power supply</td>
</tr>
<tr>
<td>Reed valve does not close</td>
<td>Check / replace the reed pack</td>
</tr>
<tr>
<td>Wrong idling adjustment</td>
<td>Correctly adjust the engine idling and check the level of the C.O.</td>
</tr>
<tr>
<td>Spark plug defective or faulty</td>
<td>Replace the spark plug with one with the specified degree and check the plug gap</td>
</tr>
</tbody>
</table>

### Excessive exhaust noise

**INCREASED NOISINESS**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary metal air pipe deteriorated</td>
<td>Check the seal of the piping on the crankcase and on the housing, check the piping between the housing and the muffler.</td>
</tr>
<tr>
<td>Good condition of the missing secondary air circuit components</td>
<td>Check the individual components and the piping, check the precision of the fitting. Replace the damaged components</td>
</tr>
</tbody>
</table>
High fuel consumption

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air filter blocked or dirty</td>
<td>Clean according to the procedure</td>
</tr>
<tr>
<td>Inefficient Starter</td>
<td>Check: electric wiring, circuit continuity, mechanical sliding and power supply</td>
</tr>
</tbody>
</table>

SAS malfunctions

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary air reed blocking</td>
<td>Replace</td>
</tr>
<tr>
<td>Secondary air filter clogging</td>
<td>Clean the filter and the housing</td>
</tr>
<tr>
<td>Blockage of the secondary air fitting on the muffler</td>
<td>Remove the encrustations from the joint being careful not to let the debris fall into the muffler</td>
</tr>
</tbody>
</table>

Transmission and brakes

Clutch grabbing or performing inadequately

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tear or irregular functioning</td>
<td>Check that the masses open and return normally</td>
</tr>
<tr>
<td></td>
<td>Check that there is no grease on the masses</td>
</tr>
<tr>
<td></td>
<td>Check that the clutch masses' contact surface with the clutch bell is mainly in the middle with characteristics equivalent on the three masses</td>
</tr>
<tr>
<td></td>
<td>Check that the clutch bell is not scored or worn abnormally</td>
</tr>
<tr>
<td></td>
<td>Never operate the engine without the clutch bell</td>
</tr>
</tbody>
</table>

Insufficient braking

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poor braking</td>
<td>The rear (drum type) brake is adjusted by regulating the special adjustment (on the wheel) bearing in mind that, with the control levers in the rest position, the wheels must turn freely. The braking action should begin when the brake levers are pressed by about a third. Check the brake pad wear. If it is not possible to remove any problems by simply adjusting the transmissions, check the brake pads and front brake disc, the brake shoes and the rear drum. If you encounter excessive wear or scoring, make the necessary replacements.</td>
</tr>
<tr>
<td>Air bubbles inside the hydraulic braking system</td>
<td>Carefully bleed the hydraulic braking system. (There must be no flexible movement of the brake lever).</td>
</tr>
<tr>
<td>Fluid leakage in hydraulic braking system</td>
<td>Elastic fittings, piston seals or brake pump breakdown, replace</td>
</tr>
<tr>
<td>The brake fluid has lost its properties</td>
<td>Replace the front brake fluid and top up to the correct level in the pump</td>
</tr>
<tr>
<td>Defective sliding of the cables in their sheathes</td>
<td>Lubricate or substitute</td>
</tr>
<tr>
<td>Brake noise</td>
<td>Check the wear of the brake pads and/or shoes</td>
</tr>
</tbody>
</table>

Typhoon 50

Troubleshooting
Brakes overheating

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Defective piston sliding</td>
<td>Check caliper and replace any damaged part.</td>
</tr>
<tr>
<td>Brake disc or drum deformed</td>
<td>Using a dial gauge, check the planarity of the disk with the wheel correctly fitted or the concentricity of the rear drum.</td>
</tr>
</tbody>
</table>

Electrical system

Battery

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td>The battery is the electrical device in the system that requires the most frequent inspections and thorough maintenance. If the vehicle is not used for some time (1 month or more) the battery needs to be recharged periodically. The battery runs down completely in the course of 5 to 6 months. If the battery is fitted on a motorcycle, be careful not to invert the connections, keeping in mind that the black ground wire is connected to the negative terminal while the red wire is connected to the terminal marked +. Follow the instructions in the ELECTRICAL SYSTEM chapter for the recharging of the batteries.</td>
</tr>
</tbody>
</table>

Steering and suspensions

Rear wheel

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faulty suspension</td>
<td>Check that the rear shock absorber and/or the front fork is/are in good working order. Replace or overhaul the front fork and/ or replace the rear shock absorbers in case of malfunction.</td>
</tr>
<tr>
<td>Tyres deflated or damaged</td>
<td>Check the correct pressure of the tyres and the condition of the tread. Inflate to the correct pressure or replace.</td>
</tr>
<tr>
<td>Loosen the anchorage points of the front and/or rear suspension unit.</td>
<td>Check the tightness between the frame, swinging arm and engine and the fixing of the wheels to the hub and/or the axle. Check the correct tightening of the steering ring nut.</td>
</tr>
</tbody>
</table>

Heavy steering

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque not conforming</td>
<td>Check the tightening of the top and bottom ring nuts. If irregularities continue in turning the steering even after making the above adjustments, check the seats in which the ball bearings rotate: replace if they are recessed.</td>
</tr>
</tbody>
</table>
Excessive steering play

**EXCESSIVE STEERING CLEARANCE**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXCESSIVE STEERING CLEARANCE</td>
<td>Check the tightening of the top and bottom ring nuts.</td>
</tr>
<tr>
<td></td>
<td>If irregularities continue in turning the steering even after making</td>
</tr>
<tr>
<td></td>
<td>the above adjustments, check the seats in which the ball bearings rotate:</td>
</tr>
<tr>
<td></td>
<td>replace if they are recessed.</td>
</tr>
</tbody>
</table>

Noisy suspension

**NOISY SUSPENSION**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Components of the front suspension damaged.</td>
<td>Check the quiet operation in the compression or release phases of the fork and if necessary overhaul it. Check that there is no noise or seizing during the wheel rotation; if there is, change the wheel bearing.</td>
</tr>
<tr>
<td>Components of the rear suspension damaged.</td>
<td>Check the absence of noise in the compression or release of the suspension, if necessary check the proper tightness to the swinging arm unit and the absence of rust or replace the entire shock absorber. Check that there is no noise or seizing during the wheel rotation; if there is noise or seizing overhaul the final reduction assembly.</td>
</tr>
</tbody>
</table>

Suspension oil leakage

**OIL LEAKAGE FROM SUSPENSION**

<table>
<thead>
<tr>
<th>Possible Cause</th>
<th>Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shock absorbers malfunctioning</td>
<td>Replace the complete shock absorption unit</td>
</tr>
<tr>
<td>Hydraulic cartridge in the fork damaged.</td>
<td>Replace the hydraulic cartridge</td>
</tr>
</tbody>
</table>
**INDEX OF TOPICS**

<table>
<thead>
<tr>
<th>Electrical System</th>
<th>ELE SYS</th>
</tr>
</thead>
</table>

Typhoon 50

Electrical system

Key

Key: typhoon 50 my 2006
1. Electronic ignition device
2. Spark plug
3. Magneto flywheel
4. Voltage regulator
5. Main fuse
6. Key switch
7. Battery
8. Starter
9. Remote control ignition
10. Ignition switch
11. Rear brake STOP button
12. Front brake STOP button
13. Horn button
14. Horn
15. Left rear turn indicator lamp
16. Tail light/stop light lamp
17. Turn indicator switch
18. Right rear turn indicator lamp
19. Left front turn indicator lamp
20. Front optical unit
   A. Tail light
   B. High beam/low beam lamp
21. Right front turn indicator lamp
22. Light switch
23. Fuel level transmitter
24. Instruments unit
   A. Instrument lighting lamp and lights warning light
   B. Left-hand flashing light.
   C. Right-hand flashing light.
   D. High-beam warning light
   E. Mixer oil warning light
   F. Fuel level indicator
   G. Rev counter
   H. Low fuel warning light
25. Automatic starter
26. Oil warning light control

Key
Ma: Brown  Ne: Black  Ro: Pink  Rs: Red  Ve: Green  Vi: Purple

Conceptual diagrams
Ignition

Key
1. Electronic ignition device
2. Spark plug
3. Magneto flywheel
6. Key switch
Headlights and automatic starter section

Key
3. Magneto flywheel
4. Voltage regulator
16. Tail light /stop light lamp
20. Front optical unit
A. Tail light
B. High beam/low beam lamp
22. Light switch
24. Instruments unit
A. Instrument lighting lamp and lights warning light
B. Left-hand flashing light.
C. Right-hand flashing light.
D. High-beam warning light
E. Mixer oil warning light
F. Fuel level indicator
G. Rev counter
H. Low fuel warning light
25. Automatic starter
Battery recharge and starting

Key
3. Magneto flywheel
4. Voltage regulator
5. Main fuse
6. Key switch
7. Battery
8. Starter
9. Remote control ignition
10. Ignition switch
11. Rear brake STOP button
12. Front brake STOP button
16. Tail light/stop light lamp
26. Oil control warning light
Level indicators and enable signals section

Key
3. Magneto flywheel
4. Voltage regulator
5. Main fuse
6. Key switch
7. Battery
23. Fuel level transmitter
24. Instruments unit
A. Instrument lighting lamp and lights warning light
B. Left-hand flashing light.
C. Right-hand flashing light.
D. High-beam warning light
E. Mixer oil warning light
F. Fuel level indicator
G. Rev counter
H. Low fuel warning light
26. Oil warning light control
Turn signal lights

Key
3. Magneto flywheel
4. Voltage regulator
5. Main fuse
6. Key switch
7. Battery
13. Horn button
14. Horn
15. Left rear turn indicator lamp
18. Right rear turn indicator lamp
19. Left front turn indicator lamp
21. Right front turn indicator lamp
24. Instruments unit
A. Instrument lighting lamp and lights warning light
B. Left-hand flashing light.
C. Right-hand flashing light.
D. High-beam warning light
E. Mixer oil warning light
F. Fuel level indicator
G. Rev counter
H. Low fuel warning light

Instruments and warning lights control board

A = High beam warning light;
B = Mixer oil reserve warning light;
C = Turn indicator warning light;
D = Low fuel warning light;
E = Headlight warning lights;
F = Rev counter;
M = Odometer
N = Speedometer;
P = Coolant temperature indicator (not available on this model);
S = Fuel level indicator;

Checks and inspections

Checks to be made in the case of ignition irregularities and/or no spark on the spark plug

1. Check the condition of the spark plug (clean it with a metal brush, remove the encrustations, blast it with compressed air and, if necessary, replace it).
2. Without removing the stator, carry out the following checks:

   After visually checking the electrical wiring, perform measurements on the loading reel, the pickup (see chart) and the continuity using the appropriate tester.

   If checks on the loading reel, pickup and continuity show abnormalities, replace the stator; otherwise replace the central unit. Remember that disconnections due to replacement of the central unit must be done with the engine off.

Specific tooling

020331Y Digital multimeter

<table>
<thead>
<tr>
<th>Specification</th>
<th>Desc./Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red and white cable</td>
<td>90±140 ohm</td>
</tr>
</tbody>
</table>
RECHARGE COIL CHECK UP

<table>
<thead>
<tr>
<th>Specification</th>
<th>Desc./Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Yellow and blue cable</td>
</tr>
</tbody>
</table>

CHECK CONTINUITY

<table>
<thead>
<tr>
<th>Specification</th>
<th>Desc./Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White cable-frame</td>
</tr>
<tr>
<td>2</td>
<td>White cable-engine</td>
</tr>
</tbody>
</table>

Ignition circuit

All the control operations of the system that require the disconnection of cables (checks of the connections and the devices making up the ignition circuit) must be done with the engine off: if this is not done, the controls might be irretrievably damaged.
**Stator check**

- Using a tester, check the resistance between the stator wiring.

**N.B.**

VALUES ARE STATED AT AMBIENT TEMPERATURE. A CHECK WITH THE STATOR AT OPERATING TEMPERATURE LEADS TO VALUES HIGHER THAN THOSE STATED.

**Electric characteristic**

Stator : Grey ÷ Ground  
~ 1 ohm

Stator : White ÷ Ground  
~ 1 ohm

Stator : Green - Ground  
~ 1Kohm

Stator : Blue ÷ Yellow  
~ 1 ohm

Pick-Up: Red - ground  
~ 170 Ω (Pick-Up)

**Voltage regulator check**

The malfunctioning of the voltage regulator might cause the following problems depending on the type of fault:

1. The lighting system bulbs burn out.
2. The lighting system bulbs stop working.
3. The battery overcharges (the main fuse blows).
4. Non-recharging of the battery.
5. Non functioning of the turn indicators.

**Measures**

**FAULT 1**

Replace the regulator because it is certainly inefficient.

**FAULT 2**

Check the efficiency of the bulbs.

With the vehicle in gear, check the battery voltage on the yellow-black cable of the light switch. If there is no voltage check the presence of voltage between the yellow-black cable on the regulator and ground. If there is voltage here, the fault needs
to be sought in the wiring from the regulator to the light switch or the correct supply of voltage to the stator is to be checked: without disconnecting the regulator connector and with the vehicle in gear, using the tester for alternate voltage readings check that the voltage supplied between the connection of the grey-blue cable (pin 2) and the black cable (pin 6) is within the values indicated. If faults are detected, replace the stator.

If no faults are detected in the controls carried out, replace the regulator.

If functioning is still not correct even when the regulator is replaced, check the connections of the electrical system.

**Specific tooling**

020331Y Digital multimeter

**Characteristic**

Voltage distributed at 3000 rpms

25 to 30V

**FAULT 3**

After checking that there are no short circuits in the system towards the earth, replace the regulator because it is certainly inefficient and replace it with a protective fuse.

Following the replacement, measure the current and the recharging voltage on the battery end.

**FAULT 4**

Put the vehicle in gear and check when the tester for the detection of alternate voltages put between the blue cable connection and the yellow cable connection on the stator, the voltage distributed by the generator is within the values indicated. In the case of malfunction, check the continuity of the stator or continue with the tests.

Insert an ammeter between the stator (blue cable) and the battery and check, with the tester, that the current is properly distributed at 3000 rpm and the battery is kept between 12 and 13V as indicated. If the values detected are lower than those speci-
fied, replace the regulator; otherwise replace the battery.

N.B.
BEFORE CARRYING OUT THE CHECKS ON THE REGUL- LATOR AND RELATIVE SYSTEM, IT IS ALWAYS GOOD PRACTICE TO CHECK THAT THERE IS CONTINUITY BETWEEN THE BLACK CABLE AND THE GROUND.

N.B.
TO KEEP THE BATTERY BETWEEN 12 AND 13V, CAUSING CURRENT ABSORPTION BY THE SYSTEM, A 12V - 35W BULB CONNECTED BETWEEN THE + BATTERY AND GROUND CAN BE USED.

Specific tooling
020331Y Digital multimeter

Characteristic
Distributed current
1.5 to 2A

Voltage distributed at 3000 rpms
25 to 30V

FAULT 5
If the turn indicators do not work, do the following:

- Without removing the connector from the voltage regulator, move the key-controlled switch to ON and verify the presence of intermittent voltage between contact 7 and the ground. If there is voltage, the failure must be attributed to the flashing indicator switch or the wiring, otherwise carry on with tests.

- With the engine off, remove the regulator connector, and insert the ends of the tester between contact 5 and the ground.

- Move the key controlled switch to ON and check there is battery voltage. If no voltage is detected, check the wiring and the contacts on the key switch and on the battery.
• Repeat the same procedure with the ends of the tester inserted between contact 5 (+) and 6 (-) and check the presence of the battery voltage with the key switch at on. If this does not happen, check the regulator's ground cable.

• If these last two tests have a positive result replace the regulator because it is certainly not functioning properly.

Specific tooling
020331Y Digital multimeter

Fuses

The electrical system is protected by a fuse connected on the left-hand side of the helmet compartment next to the battery. To get at it, it is necessary to remove the battery cover and the transparent protection B over the fuse block. The ignition system, headlight and the rear tail light are not fuse-protected.

CAUTION

BEFORE REPLACING THE BLOWN FUSE, SEARCH AND ELIMINATE THE BREAKDOWN THAT HAS LED TO THE BLOW OUT.
NEVER TRY TO REPLACE A FUSE USING DIFFERENT MATERIAL (FOR EXAMPLE A PIECE OF ELECTRIC WIRE) OR A FUSE FOR A HIGHER AMPERAGE THAN THE INDICATED ONE.

Electric characteristic
Fuse
7.5 A

Sealed battery

Using the sealed battery for the first time

INSTRUCTIONS FOR REFRESHING THE STOCK CHARGE OF AN OPEN CIRCUIT

1) Voltage check

Before installing the battery on the vehicle, check the open circuit voltage with a standard tester.
- If the voltage exceeds 12.60 V, the battery may be installed without any renewal recharge.
- If voltage is below 12.60 V, a renewal recharge is required as explained in 2).
2) Constant voltage battery charge mode
- Constant voltage equal to 14.40÷14.70V
- Initial charge voltage equal to 0.3÷0.5 for nominal capacity
- Duration of the charge: 10 to 12 h recommended
  Minimum 6 h
  Maximum 24 h

3) Constant current battery charge mode
- Charge current equal to 1/10 of the nominal capacity of the battery
- Duration of the charge: 5 h

WARNING
- WHEN THE BATTERY IS REALLY FLAT (WELL BELOW 12.6V) IT MIGHT BE THAT 5 HOURS OF RECHARGING ARE NOT ENOUGH TO ACHIEVE OPTIMAL PERFORMANCE. GIVEN THESE CONDITIONS IT IS HOWEVER ESSENTIAL NOT TO EXCEED 8 HOURS OF CONTINUOUS RECHARGING SO AS NOT TO DAMAGE THE BATTERY ITSELF.

Dry-charge battery

WARNING
THE BATTERY ELECTROLYTE IS POISONOUS AS IT MAY CAUSE SERIOUS BURNS. IT CONTAINS SULPHURIC ACID. AVOID CONTACT WITH THE EYES, THE SKIN AND CLOTHING. IF COMING INTO CONTACT WITH EYES OR SKIN, WASH ABUNDANTLY WITH WATER FOR APPROX. 15 MIN. AND SEEK IMMEDIATE MEDICAL ATTENTION. IN THE EVENT OF ACCIDENTAL INGESTION OF THE LIQUID, IMMEDIATELY DRINK LARGE QUANTITIES OF WATER OR MILK, MAGNESIUM MILK, BATTERED EGG OR VEGETABLE OIL. SEEK IMMEDIATE MEDICAL ATTENTION.
THE BATTERIES PRODUCE EXPLOSIVE GAS; KEEP CLEAR OF NAKED FLAMES, SPARKS OR CIGARETTES; VENTILATE THE AREA WHEN RECHARGING INDOORS.
ALWAYS WEAR EYE PROTECTION WHEN WORKING IN THE PROXIMITY OF BATTERIES.
KEEP OUT OF REACH OF CHILDREN

Use of dry-cell batteries:
1. Having removed the short, closed tube and removed the caps, put into the elements sulphuric acid of the type for specific weight 1.26 accumulators corresponding to 30° Bé at a temperature of no less than 15°, until you reach the upper level.
2. Leave to stand for at least 2 hours; afterwards top-up to the level with sulphuric acid.
3. Within twenty four hours, recharge with the special (single or multiple) battery charger that recharges at an intensity the same as approximately 1/10 the rated capacity of the said battery. At the end of the charge, make sure that the density of the acid is around 1.27, corresponding to 31° Bé and that these values are stabilised.
4. Once the charge is over, level the acid (by adding distilled water). Close and clean carefully.
5. Once the above operations have been performed, install the battery in the vehicle ensuring that it is wired up properly.

WARNING
- ONCE THE BATTERY HAS BEEN INSTALLED IN THE VEHICLE IT IS NECESSARY TO REPLACE THE SHORT TUBE (WITH CLOSED END) NEAR THE + POSITIVE TERMINAL WITH THE CORRESPONDING LONG TUBE (WITH OPEN END), THAT YOU FIND FITTED TO THE VEHICLE, TO ENSURE THAT THE GASES THAT FORM CAN ESCAPE PROPERLY.
Battery maintenance
The battery is an electrical device which requires careful monitoring and diligent maintenance. The maintenance rules are:

1) Check the level of the electrolyte
The electrolyte level must be checked frequently and must reach the upper level. Only use distilled water, to restore this level. If it is necessary to add water too frequently, check the vehicle's electrical system: the battery works overcharged and is subject to quick wear.

2) Load status check
After restoring the electrolyte level, check its density using an appropriate densitometer (see the figure). When the battery is charged, you should detect a density of 30 to 32 Bé corresponding to a specific weight of 1.26 to 1.28 at a temperature of no lower than 15° C.
A density reading of less than 20° Bé indicates that the battery is completely flat and it must therefore be recharged.
If the scooter is not used for a given time (1 month or more) it will be necessary to periodically recharge the battery.

The battery runs down completely in the course of three months. If it is necessary to refit the battery in the vehicle, be careful not to reverse the connections, remembering that the ground wire (black) marked (−) must be connected to the negative clamp while the other two red wires marked (+) must be connected to the clamp marked with the positive sign.

3) Recharging the battery
Remove the battery from the vehicle removing the negative clamp first.
The normal bench charging must be carried out with the specific (single or multiple) battery charger, placing the battery charger selector on the type of battery to be recharged. The connections to the power supply must be made by connecting to the corresponding poles (+ with + and - with −).

4) Battery cleaning
The battery should always be kept clean, especially on its top side, and the terminals should be coated with Vaseline.
WARNING
BEFORE RECHARGING THE BATTERY, REMOVE THE PLUGS OF EACH CELL. KEEP SPARKS AND NAKED FLAMES AWAY FROM THE BATTERY WHILE RECHARGING.

CAUTION
NEVER USE FUSES WITH A CAPACITY HIGHER THAN THE RECOMMENDED CAPACITY. THE USE OF A FUSE OF UNSUITABLE CAPACITY MAY RESULT IN SERIOUS DAMAGES TO THE WHOLE VEHICLE OR EVEN CAUSE A FIRE.

CAUTION
ORDINARY AND DRINKING WATER CONTAINS MINERAL SALTS THAT ARE HARMFUL FOR THE BATTERY. FOR THIS REASON, YOU MUST ONLY USE DISTILLED WATER.

CAUTION
CHARGE THE BATTERY BEFORE USE TO ENSURE OPTIMUM PERFORMANCE. INADEQUATE CHARGING OF THE BATTERY WITH A LOW LEVEL OF ELECTROLYTE BEFORE IT IS FIRST USED SHORTENS THE LIFE OF THE BATTERY.

Specific tooling
020334Y Multiple battery charger
020333Y Single battery charger
| Engine from Vehicle | Eng Ve |
Removal of the engine from the vehicle

1) Disconnect the battery
2) Remove the full muffler.
3) Remove the rear wheel.
4) Remove the rear brake mechanical transmission.
5) Disconnect the electrical system connector from the magneto flywheel, from the starter and from the automatic starter.
6) Disconnect the accelerator and mixer control transmissions.
7) Disconnect the mixer oil, fuel pipes and vacuum pump control on the carburettor.
8) Disconnect the high-voltage cable from the spark plug.
9) Remove the bolt fixing the rear shock absorber from the engine.
10) Undo the nut on the right-hand side then remove the engine-swinging arm fixing pin from the left-hand side.

Locking torques (N*m)

- Engine-swinging arm bolt 33 to 41 Nm
- Shock absorber-engine pin 33 to 41 Nm
- Rear wheel axle nut 104 to 126
INDEX OF TOPICS

ENGINE  ENG
Automatic transmission

Transmission cover

- Loosen the 15 screws and remove the transmission cover with the aid of a mallet.

N.B.
THE CRANKCASE IS SLIGHTLY BLOCKED BY THE TIGHT FIT BETWEEN THE SHAFT OF THE DRIVEN HALF-PULLEY AND THE BEARING HOUSED ON THE CRANKCASE.

Kickstart

- Remove the screws shown in the figure and remove the engine starting lever.
- For the assembly, work in reverse and tighten the screws to the prescribed torque.

Locking torques (N*m)
Starter lever replacement 12 to 13 Nm

- Upon refitting, apply the recommended grease to the bushing, to the spring and along the toothed sector.
- Use the special tool for the charging of the spring, as shown in the figure.
- Refit the seeger ring after checking that it is in good condition.

Specific tooling
020261Y Starter spring fitting

Recommended products
AGIP GREASE MU3 Grease for odometer transmission gear case
Soap-based lithium grease with NLGI 3; ISO-L-XBCHA3, DIN K3K-20
- Remove the seeger ring located on the exterior of the crankshaft.
- Dismantle the dog gear from its seat, slackening the tension that the toothed sector applies to it by means of the spring; to do this, it is necessary to rotate the toothed sector slightly (see the figure).

**CAUTION**

WHILE REMOVING THE TOOTHED SECTOR, BE VERY CAREFUL OF THE SPRING TENSION: IT COULD CONTRIBUTE A HAZARD FOR THE OPERATOR.

### Removing the driven pulley shaft bearing

- Slightly heat the crankshaft from the inside side to avoid damaging the coated surface and use the driven pulley shaft or a pin of the same diameter to remove the bearing.

**N.B.**

IN CASE OF DIFFICULTY A STANDARD 8MM-INSIDE DIAMETER EXTRACTOR CAN BE USED.

### Refitting the driven pulley shaft bearing

- Refit the bearing with the aid of a bushing with the same diameter as the external plate of the bearing after slightly heating the crankcase from the inside.

**N.B.**

WHEN REFITTING, ALWAYS REPLACE THE BEARING WITH A NEW ONE.

**CAUTION**

WHEN REMOVING/REFITTING THE BEARING, TAKE CARE NOT TO DAMAGE THE PAINTED SURFACE.
Removing the driven pulley

- Lock the clutch bell housing with the specific tool.
- Remove the nut, the clutch bell housing and the whole of the driven pulley assembly.

N.B.
THE UNIT CAN ALSO BE REMOVED WITH THE DRIVING PULLEY MOUNTED.

Specific tooling
020565Y Flywheel lock calliper spanner

Inspecting the clutch drum

- Check that the clutch bell is not worn or damaged.
- Measure the inner diameter of the clutch bell.

Characteristic

Clutch bell diameter/standard value
Ø 107+0.2 +0 mm

Clutch bell diameter/max. value allowed after use
Ø 107.5 mm

Eccentricity measured /max.
0.20 mm

Removing the clutch

- Equip the tool with long pins screwed into position «A» from the outside, insert the entire driven pulley in the tool and put the central screw under stress.

CAUTION
THE TOOL WILL BE DEFORMED IF THE CENTRAL SCREW IS TIGHTENED UP TOO FAR.
- Using a 34 mm socket wrench remove the clutch locking nut.
- Loosen the central screw thereby undoing the driven pulley unit
- Separate the components.

**Specific tooling**

020444Y Tool for fitting/ removing the driven pulley clutch

**Inspecting the clutch**

- Check the thickness of the clutch mass friction material.
- The masses must not show traces of lubricants; otherwise, check the driven pulley unit seals.

**N.B.**

UPON RUNNING-IN, THE MASSES MUST EXHIBIT A CENTRAL FAYING SURFACE AND MUST NOT BE DIFFERENT FROM ONE ANOTHER. VARIOUS CONDITIONS CAN CAUSE THE CLUTCH TO TEAR.

**CAUTION**

DO NOT OPEN THE MASSES USING TOOLS TO PREVENT A VARIATION IN THE RETURN SPRING LOAD.

**Characteristic**

Check minimum thickness

1 mm

**Pin retaining collar**

- Remove the collar with the aid of 2 screwdrivers.
- Remove the three guide pins and the mobile half pulley.

Removing the driven half-pulley bearing

- Remove the roller bearing with the special extractor inserted from the bottom of the fixed half-pulley.

CAUTION

Specific tooling
001467Y029 Bell for bearings, O.D. 38 mm

- Remove the ball bearing retention snap ring.
- Expel the ball bearing from the side of the clutch housing by means of the special tool.

N.B.
PROPERLY SUPPORT THE HALF-PULLEY SO AS NOT TO DEFORM THE SLIDING SURFACE OF THE DRIVE BELT

Specific tooling
020376Y Adaptor handle
020363Y 20-mm guide

Inspecting the driven fixed half-pulley

- Check that there are no signs of wear on the work surface of the belt. If there are, replace the half-pulley.
- Make sure the bearings do not show signs of unusual wear.
- Measure the external diameter of the pulley bushing.

Characteristic
Stationary driven half-pulley/Standard diameter
Ø 33.965 to 33.985 mm
Stationary driven half-pulley/Minimum diameter admitted after use
Ø 33.96 mm

Inspecting the driven sliding half-pulley

- Remove the 2 inner sealing rings and the two O-rings.
- Measure the inside diameter of the mobile half-pulley bushing.

Characteristic
Mobile driven half-pulley/Maximum diameter allowed
Ø 34.08 mm

- Check the belt contact surfaces.
- Insert the new oil seal and O-rings on the mobile half-pulley.
- Fitting the half-pulley on the bushing.

Recommended products
AGIP GREASE SM 2 Grease for the C-ring of the tone wheel
Soap-based lithium grease containing NLGI 2 Molybdenum disulphide; ISO-L-XBCHB2, DIN KF2K-20

- Make sure the pins and collar are not worn, reassemble the pins and collar.
- Use a greaser with a curved spout to lubricate the driven pulley unit with around 6 g of grease. This operation must be done through one of the holes inside the bushing until grease comes out of the opposite hole. This procedure is necessary to prevent the presence of grease beyond the O-ring.

Recommended products
AGIP GREASE SM 2 Grease for the C-ring of the tone wheel
Soap-based lithium grease containing NLGI 2 Molybdenum disulphide; ISO-L-XBCHB2, DIN KF2K-20
Refitting the driven half-pulley bearing

- Fit a new ball bearing with the specific tool.
- Fit the ball bearing retention snap ring.
- Fit the new roller bearing with the wording visible from the outside.

**CAUTION**

PROPERLY SUPPORT THE HALF-PULLEY TO PREVENT DAMAGE TO THE THREADED END WHILE THE BEARINGS ARE BEING FITTED.

**Specific tooling**

020376Y Adaptor handle
020456Y Ø 24 mm adaptor
020362Y 12 mm guide
020171Y Punch for Ø 17 mm roller case

Inspecting the clutch spring

- Check that the contrast spring of the driven pulley does not show signs of deformation
- Measure the free length of the spring

**Characteristic**

**Standard length**

118 mm

**Minimum length allowed after use**

113 mm

Refitting the clutch

- Preassemble the driven pulley group with spring, sheath and clutch.
- Position the spring with the sheath
- Insert the components in the tool and preload the spring being careful not to damage the plastic sheath and the end of the threaded bar.
- Reassemble the nut securing the clutch and tighten to the prescribed torque.

---

**CAUTION**

SO AS NOT TO DAMAGE THE CLUTCH NUT USE A SOCKET WRENCH WITH SMALL CHAMFER.

**CAUTION**

POSITION THE NON-CHAMFERED SURFACES OF THE NUT IN CONTACT WITH THE CLUTCH

**Locking torques (N\*m)**

Nut locking clutch unit on pulley 55 to 60 Nm

---

**Refitting the driven pulley**

- Refit the driven pulley assembly, the clutch bell and the nut, using the specific tool.

**Specific tooling**

020565Y Flywheel lock caliper spanner

**Locking torques (N\*m)**

Driven pulley shaft nut 40 to 44 Nm

---

**Drive-belt**

- Make sure the drive belt is not damaged and does not have cracks in the toothed grooves.
- Check the width of the belt.

**Characteristic**

Transmission belt/Minimum width

17.5 mm
Removing the driving pulley

- Lock the driving pulley using the appropriate tool.
- Remove the central nut with the related washer, then remove the drive and the plastic fan.
- Remove the stationary half-pulley.

- Remove the belt, washer and remove the mobile half-pulley with its bushing, being careful that the rollers and contrast plate fitted loosely on it do not come off.

Specific tooling
020451Y Starting ring gear lock

Mixer gears and belt

- Remove gear and belt.

CAUTION
PAY PARTICULAR ATTENTION TO NOT TOUCHING OR BENDING THE BELT BECAUSE THIS COULD BREAK SUDDENLY DURING OPERATION.

CAUTION
ON REFITTING, MAKE SURE THAT DIRT DOES NOT GET INTO THE INNER BUSHING OF THE MIXER CONTROL GEAR AND THAT IT DOES NOT EXERT ANY STRESS ON THE CRANKCASE PIN.

N.B.
REPLACE THE BELT EVERY 20000 KM.

Inspecting the rollers case

1) Check that the bushing and the sliding rings of the mobile pulley do not show signs of scoring or deformation.
2) Check the roller running tracks on the contact pulley; there must not be signs of wear and check the condition of the contact surface of the belt on the half-pulleys (mobile and stationary).
3) Check that the rollers do not show signs of marked facetting on the sliding surface and that the metallic insert does not come out of the plastic shell borders.
4) Check the integrity of the sliding shoes of the contact plate.

- Check that the internal bushing shown in the figure is not abnormally worn and measure inside diameter «A».
- Measure outside diameter «B» of the pulley sliding bushing shown in the figure.

**CAUTION**
DO NOT LUBRICATE OR CLEAN THE BUSHING.

**Characteristic**

**Driving pulley / Maximum diameter:**
20.12 mm

**Driving pulley / Standard diameter:**
20.021 mm

**Driving pulley bushing / Diameter maximum:**
XXX mm

**Driving pulley bushing / Standard diameter:**
20 -0.020/-0.041 mm

**Refitting the driving pulley**

- Manually move the movable driven half-pulley away by pulling it towards the clutch unit and insert the belt observing the direction of rotation of the first fitting.

**N.B.**
IT IS GOOD PRACTICE ALWAYS TO FIT THE BELT SO THAT THE WORDS CAN BE READ IN CASE IT DOES NOT SHOW A FITTING SIDE.

- Refit the components of the assembly (roller container assembly with bushing, limiting washer, stationary half-pulley, cooling fan belt with drive, washer and nut).

- With the specific tool, tighten the lock nut to 20 Nm and then perform a final 90° locking in order to prevent the rotation of the driving pulley.

**N.B.**
REPLACE THE NUT WITH A NEW ONE AT EVERY REFIT

**CAUTION**
UPON FITTING THE DRIVING PULLEY UNIT IT IS OF UTMOST IMPORTANCE THAT THE BELT IS FREE INSIDE IN
ORDER TO AVOID WRONG TIGHTENING AND CONSEQUENTLY DAMAGING THE CRANKSHAFT KNURLING.

Specific tooling
020451Y Starting ring gear lock

Locking torques (N*m)
Crankshaft pulley nut 18 to 20 + 90° Nm

End gear

Removing the hub cover

- Remove the transmission cover
- Remove the clutch assembly
- Discharge the rear hub oil.
- Remove the 5 screws indicated in the figure.
- Remove the hub cover with driven pulley shaft.

See also
Refitting the clutch

Removing the wheel axle

- Remove the intermediate gear and the complete gear wheel axle.
- When removing the intermediate gear pay attention to the various shim adjustments.
Removing the wheel axle bearings

- Remove the oil seal and the Seeger ring.
- Remove the bearing by pushing from the outside towards the inside of the gear compartment, using the appropriate punch.

Specific tooling
020363Y 20-mm guide
020376Y Adaptor handle
020358Y 37x40-mm Adaptor

Removing the driven pulley shaft bearing

- Remove the Seeger ring inside the cover.
- Remove the oil seal from the outside.
- Remove the centring dowels and position the cover on a plane.
- Position the special tool on the internal track of the bearing and remove said bearing with the aid of a press.

Specific tooling
020452Y Tube for removing and refitting the driven pulley shaft

- Position the special tube on the internal raceway of the bearing and from the shaft toothed side as indicated in the figure. Expel the driven pulley shaft with the aid of a press.

Specific tooling
020452Y Tube for removing and refitting the driven pulley shaft
Inspecting the hub shaft

- Check that the three shafts exhibit no wear or deformation on the toothed surfaces, at the bearing housings and at the oil guards.
- In case of anomalies, replace the damaged components.
- Check that the fitting surface is not dented or distorted.
- If faults are found, replace the hub cover.

Inspecting the hub cover

- Check that the fitting surface is not dented or distorted.
- If faults are found, replace the hub cover.

Refitting the driven pulley shaft bearing

- Support the inner track of the bearing from the outside of the hub cover with the specific tool positioned under the press and insert the driven pulley axle.
- Refit the oil seal flush with the cover.

Specific tooling

020452Y Tube for removing and refitting the driven pulley shaft

• Heat the hub cover and insert the bearing with the specific punch.
• Fit the snap ring with the concave or radial part on the bearing side.

N.B.
FIT THE BALL BEARING WITH THE SHIELD FACING THE OIL SEAL.

Specific tooling

020151Y Air heater
020376Y Adaptor handle
020439Y 17-mm guide
020358Y 37x40-mm Adaptor
Refitting the wheel axle bearing

- Heat the half crankcase on the transmission side using a thermal gun.
- After lubricating its outer strip, insert the bearing with the special adapter with the aid of a hammer.
- Refit the Seeger ring and the oil seal using the 42 x 47 mm adapter and the handle.

Specific tooling

020151Y Air heater
020376Y Adaptor handle
020363Y 20-mm guide
020359Y 42x47-mm Adaptor

Refitting the ub cover

- Refit the whole wheel axle.
- Refit the intermediate gear paying attention to the two shim thicknesses.
- Apply LOCTITE 510 for surfaces to the hub covers and refit the same with driven pulley shaft.
- Refit the 5 screws and tighten them to the specified torque.

N.B.
CLEAN THE CONTACT SURFACES OF THE HUB COVER AND THE HALF CRANKCASE OF RESIDUE FROM PREVIOUS GASKETS BEFORE APPLYING A NEW ONE.

Locking torques (N*m)
Locking torque: 11 to 13 Nm

Flywheel cover
Cooling hood

- Remove the four fixings shown in the figure.
- Remove the fan cover

- Remove the oil piping retention band from the hood
- Remove the 2 screws shown in the figure

Cooling fan

- Remove the cooling fan by acting on the three fixings indicated in the figure.
Removing the stator

- Remove the three stator fixings shown in the photo
- Remove the two pick-up fixings shown in the photo
- Remove the stator with the wiring

Refitting the stator

- Refit the stator and flywheel carrying out the removal procedure in reverse, tightening the retainers to the specified torque.

N.B.

THE PICK-UP CABLE MUST BE POSITIONED ADHERING TO THE FUSION TONGUE ON THE CRANKSHAFT IN SUCH A WAY AS TO AVOID BEING CRUSHED BY THE FAN COVER ASSEMBLY.

Locking torques (N*m)
Pick-up screws 3 to 4 Stator screws 3 to 4

Flywheel and starting

Removing the starter motor

- Remove the center stand by unscrewing the four clamping screws (two per side) of the engine block
- Remove the two clamps shown in the figure
Removing the flywheel magneto

- Lock the rotation of the flywheel using the calliper spanner.
- Remove the nut.

CAUTION
THE USE OF A CALLIPER SPANNER OTHER THAN THE ONE SUPPLIED COULD DAMAGE THE STATOR COILS

- Extract the flywheel with the extractor.

Specific tooling
020565Y Flywheel lock calliper spanner
020162Y Flywheel extractor

Inspecting the flywheel components

- Check the condition of the flywheel and any distortions that might cause rubbing on the stator and on the Pick-Up.
Refitting the flywheel magneto

- Fit the flywheel being careful to insert the key properly.
- Lock the flywheel nut at the prescribed torque
- Check the Pick-Up air gap.
- The air gap may not be modified in the fitting of the Pick-Up.
- Other values derive from deformations visible on the Pick-Up support.

**N.B.**

A VARIATION OF THE AIR GAP DISTANCE CAN LEAD TO A VARIATION IN THE IGNITION ADVANCE SUCH AS TO CAUSE PINGING, KNOCKING ETC.

**Locking torques (N*m)**

Flywheel nut 40 to 44 N.m

Refitting the starter motor

- Fit a new O-ring on the starter and lubricate it.
- Fit the starter motor on the crankcase and lock the 2 screws to the prescribed torque.

**N.B.**

REFIT THE REMAINING PARTS AS DESCRIBED IN THE CYLINDER HEAD, TIMING, LUBRICATION, FLYWHEEL AND TRANSMISSION CHAPTERS.

**Locking torques (N*m)**

Starter screws 11 to 13

Cylinder assy. and timing system

Removing the intake manifold

Use an anti-tampering TORX spanner to remove the two clamping screws of the intake manifold.
Removing the cylinder head

Remove the 4 screws shown in the figure

Removing the cylinder - piston assy.

Remove the cylinder very carefully

Remove the snap rings and remove the pin

**CAUTION**

AFTER EACH REMOVAL OPERATION REPLACE THE PIN RETENTION SNAP RINGS
Inspecting the small end

- Measure the internal diameter of the small end using an internal micrometer.

**N.B.**
If the diameter of the connecting rod small end exceeds the maximum diameter allowed, shows signs of wear or overheating replace the crankshaft as described in the "Crankcase and Crankshaft" chapter.

**Characteristic**
Rod small end: standard diameter
17 +0.011 -0.001

Rod small end: maximum allowable diameter
17,060 mm

Inspecting the wrist pin

- Check the wrist pin external diameter using a micrometer

**Characteristic**
Wrist pin: standard diameter
12 +0.005 +0.001 mm

Inspecting the piston

- Measure the bearings on the piston using a bore meter
- Calculate the piston-pin coupling clearance.

**Characteristic**
Wrist pin housing: standard diameter
12 +0.007 +0.012

Wrist pin housing: standard clearance
0.002 ÷ 0.011 mm
- Measure the outer diameter of the piston, perpendicular to the pin axis.
- Take the measurement in the position shown in the figure
To classify the cylinder-piston fitting, check the appropriate table

See also
Cylinder - piston assy.

Inspecting the cylinder
- Check that the cylinder does not show seizures. Otherwise, replace it or adjust it respecting the allowable increases
- Measure the internal diameter of the cylinder with a bore meter, according to the directions given in the figure
- Check that the fitting surface with the head is not dented or distorted.
To classify the cylinder-piston fitting, check the appropriate table
See also
Cylinder - piston assy.

Inspecting the piston rings
- Alternatively insert the two sealing rings in the cylinder
Using the piston, insert the seals perpendicularly to the cylinder axis.
- Measure the opening of the sealing rings using a thickness gauge as shown in the photograph
- If the values are higher than the values prescribed in the chart, substitute the rings
Removing the piston

- Position the snap ring in detail 1 with the opening straddling the arrow printed on the tool.
- Push detail 2 into detail 1 until the stop and extract detail 2.
- Insert detail 3 into detail 1, position the assembly in the snap ring assembly area, and push detail 3 all the way in.

N.B.
REFIT THE REMAINING PARTS FOLLOWING THE OPERATIONS IN REVERSE ORDER FROM THE REMOVAL OPERATIONS

Specific tooling
020166Y Pin lock fitting tool

Locking torques (N*m)
Locking head nuts: 10 to 11 N·m

- Use new wrist pin snap rings.
- Use new cylinder base gasket.
- Before refitting carefully clean all the surfaces.
- Use oil to be mixed during the fitting of the piston and the cylinder.

CAUTION
POSITION THE ARROW PRINTED ON THE PISTON CROWN TOWARDS THE EXHAUST OPENING. THE WRIST PIN SNAP RINGS MUST BE POSITIONED ON THE PISTON WITH THE SPECIFIC TOOL

Recommended products
AGIP CITY TEC 2T Oil

Recommended oil
Inspecting the timing system components

CAUTION
CHECK THE CORRECT REED UNIT SEAL; NO LIGHT MUST PASS BETWEEN THE SUPPORT AND LAMELLA.

Crankcase - crankshaft

Splitting the crankcase halves

Remove the eight crankcase union fasteners.
Install the special strip on the half crankcase on the flywheel side and separate the half crankcase on the flywheel side from the transmission side

Specific tooling
020163Y Crankcase splitting plate

Removing the crankshaft

- Install the specific tool on the half crankcase on the transmission side using four M6 screws of an adequate length.
- Remove the crankshaft from the transmission side half crankcase

Specific tooling
020163Y Crankcase splitting plate

Removing the crankshaft bearings

The bearings can stay on either the half crankcase or the crankshaft indifferently
- Using the special tool, remove any bearings that have been left on the crankshaft

N.B.
The half rings must be inserted on the bearings with a few mallet blows.

Specific tooling
004499Y001 Bearing extractor bell
004499Y006 Bearing extractor ring
004499Y002 Bearing extractor screw
004499Y007 Half rings
- Using the specific tool remove any bearings left on the half crankcase

**Specific tooling**
001467Y007 Driver for OD 54 mm bearing
001467Y006 Pliers to extract 20 mm bearings

**Refitting the crankshaft bearings**

Heat the bearings in an oil bath at around 150°C and fit them on the crankshaft, if necessary using a section of tube that acts on the bearing's inner track

**Specific tooling**
020265Y Bearing fitting base

**Inspecting the crankshaft alignment**

With the specific tool shown check that the eccentricity of the surfaces of diam. «A»-«B»-«C» are within 0.03 mm. (reading limit on the dial gauge); in addition, check the eccentricity of diam. «D», for which a maximum reading of 0.02 mm is permitted.

In the case where eccentricity is not much above prescribed levels, **straighten** the shaft by acting on the counterweights with a shim or tighten them in a clamp (with an aluminium bushing) as required.

**Specific tooling**
020335Y Magnetic mounting for dial gauge
020074Y Support base for checking crankshaft alignment
Refitting the crankshaft

- Position the transmission side half crankcase on two wooden supports
- Using a thermal gun, heat the bearing seat to about 120°

- Firmly insert the crankshaft until the bearing reaches the end-of-stroke stop

- Let the temperature of the half crankcase settle at the temperature of the crankshaft.
- Again install the special crankcase separation plate NOT installing the crankshaft protection
- During the assembly phase keep the central thrust screw loose.
- Take the four clamping screws to the end of the stroke and loosen them again with the same angle (e.g. 90°)
- When the temperature has settled, preload the thrust screw of the tool manually until the ball bearing clearance is cancelled out.

**Specific tooling**

020163Y Crankcase splitting plate
Refitting the crankcase halves

- Prepare the coupling surface with LOCTITE 510 applying a thin layer of it after degreasing the surface using a suitable solvent (e.g. trichloroethylene)
- Heat the flywheel-side half crankcase with a thermal gun.

Recommended products
Loctite 510 Liquid sealant
Gasket

- Keeping the half crankcase on the transmission side, insert the flywheel side half crankcase with a clean precise movement
- Insert at least three clamping screws and tighten up rapidly
- Insert the other 5 screws and tighten them to the specified torque.

Locking torques (N·m)
crankcase coupling screws 11 - 13

- Move the crankcase separation plate in a position back from the one indicated in the figure
- Install the special magnetic support with dial gauge at the end of the crankshaft
- Check the axial clearance of the crankcase
If this is not within the maximum limit allowed, repeat the crankcase coupling procedure

Specific tooling
020335Y Magnetic mounting for dial gauge

Characteristic
Axial clearance with warm crankcase
0.10 ÷ 0.12 mm
Axial clearance with cold crankcase
0.06 to 0.08 mm
Limit value with cold crankcase
0.02 ÷ 0.03 mm
Lubrication

Crankshaft oil seals

Refitting

- Install a new flywheel-side oil seal only with the special tool's punch.
  The flywheel-side oil seal is recognised by its smaller diameter.

  N.B. THE USE OF THE SPECIFIC TOOL IS NOT COMPATIBLE
       WITH THE FITTED WRENCH

Specific tooling

020340Y Flywheel and transmission oil seals fitting punch

- Install a new transmission side oil seal using the special tool with adapter ring.
  The transmission-side oil seal is recognised by the larger diameter.

Specific tooling

020340Y Flywheel and transmission oil seals fitting punch

Oil pump

Removal

- Remove the 2 screws shown in the figure.
Remove the tube passage seal from the crank-case shown in the figure

Refitting

To refit, perform the steps in the reverse direction to disassembly
Remember to drain after refitting using the screw shown in the figure

Fuel supply

- Disconnect the fuel supply and the suction taking pipe from the carburettor.
- Check that there are no fuel leaks between the two tubes.
- Close the fuel outlet pipe.
- By means of the MITYVAC pump apply 0.1 bar of suction to the tap.
- Make sure that the suction is kept stable and that there are no fuel leaks.
- Reconnect the vacuum pipe to the manifold.
- Position the fuel pipe with the outlet at the point of the tap.
- Turn the engine by using the starter motor for five seconds with the carburettor at minimum.
- Take up the fuel by means of a graded burette.

N.B. THE MEASUREMENT MAY BE FALSIFIED BY THE INCORRECT NUMBER OF REVS OR BY THE WRONG POSITION
OF THE TUBE. IN THIS CASE, THE TENDENCY IS TO OBTAIN A REDUCED FUEL FLOW RATE. THE SUCTION OUTLET ON THE MANIFOLD HAS A SECTION INTENTIONALLY REDUCED FOR THE PURPOSE OF ENHANCING THE SUCTION PULSATION AND THEREBY GUARANTEE A CONSTANT TAP FLOW RATE.

Specific tooling
020329Y Mity-Vac vacuum-operated pump

Characteristic
Minimum flow rate
20 cc

- Completely empty the fuel tank.
- Remove the petrol delivery pipe and the low-pressure pipe.
- Loosen the clip and remove the cock.
- Clean the tank and the filter of the cock with a specific solvent.
- Refit the cock making sure that there is an O-Ring.
- Turn the cock to the direction it had before it was removed and block the clip.

N.B.
THE FILTER CAN BE UNSCREWED FROM THE COCK TO FACILITATE CLEANING.
Front suspension

This section is dedicated to operations that can be carried out on the suspensions.

Front

Removing the front wheel

- Support the vehicle in such a way that the front wheel is raised.
- Using two 18 mm hexagonal wrenches remove the front wheel axle.

Refitting the front wheel

- When refitting, pay attention in repositioning the odometer drive correctly.

Locking torques (N*m)
Wheel fixing nut 40 to 50 N.m

Handlebar
Removal

- Remove the front handlebar cover.
- Remove the rear handlebar cover.
- After removing the transmissions and disconnecting the electrical terminals, remove the bolt «A» and the handlebar.
- Check all components and replace faulty parts.

N.B.

IF THE HANDLEBAR IS BEING REMOVED TO REMOVE THE STEERING, TILT THE HANDLEBAR FORWARD TO AVOIDING DAMAGING THE TRANSMISSIONS.

Refitting

When refitting, tighten to the prescribed torque and apply the recommended grease to the threaded cone.

Recommended products
AGIP GREASE PV2 Grease for control levers on the engine
White anhydrous-calcium based grease to protect roller bearings; temperature range between -20 °C and +120 °C; NLGI 2; ISO-L-XBCIB2

Locking torques (N·m)
Locking torque: 65 to 70 N·m

Front fork

Removal

- Remove the front brake calliper.
- Remove the odometer cable from the reduction gear box.
- Remove the front mudguard.
- Remove the handlebar.

After removing the steering ring-nut using the special tool, lean the vehicle on one side and extract the steering tube.

Specific tooling
020055Y Wrench for steering tube ring nut
See also
Handlebar
Front
brake calliper

Overhaul

Stem removal

- Remove the dust guard (1) using a screwdriver to prise it out.
- Remove the seeger (2) and remove the power pipe.

N.B.
GREASE THE SPRINGS AND THE BUSHINGS BEFORE REFITTING, WITH A SMALL QUANTITY OF GREASE (AROUND 3 GR.)

Recommended products
AGIP GREASE MU3 Grease for odometer transmission gear case
Soap-based lithium grease with NLGI 3; ISO-L-XBCHA3, DIN K3K-20

Removing damper

- Remove screw 1 fixing the screw to the stem and remove the stanchion heating it if necessary with the specified heater, then remove sealing ring 2 and seeger 3.
- Using nut 4, remove the spring stem and bushing. The damper is an integral part of the stem and cannot therefore be overhauled, so if you need to work on the damper (loss of fork oil), carry out the operations mentioned above and replace the shock absorber-stem unit.

When refitting, tighten to the prescribed torque and apply the recommended grease to the threadlock nut.

Specific tooling
020150Y Air heater mounting
020151Y Air heater

Recommended products
Loctite 243 Medium strength threadlock
Medium Loctite 243 threadlock

Locking torques (N*m)
Stud-stanchion fixing screw 20 to 25 N•m
Nut tightening torque 20 to 25 N•m

Replacing sealing ring

- Remove the wheel axle.
- Remove the screw (4).
- Remove the stanchion (3).
- Remove the dust guard (1).
- Insert the new sealing ring after lubricating the inside parts of the ring and paying attention not to damage it.
- Insert the stanchion applying the recommended product to the clean surface.
- Lock the screw (4).

Recommended products
Loctite 243 Medium strength threadlock
Medium Loctite 243 threadlock

Refitting

Lubricate the seats and the balls with the grease recommended.
- Lock at the prescribed torque and turn the key anticlockwise by 90° to 100°.

Specific tooling
020055Y Wrench for steering tube ring nut

Recommended products
AGIP GREASE PV2 Grease for control levers on the engine
White anhydrous-calcium based grease to protect roller bearings; temperature range between -20 °C and +120 °C; NLGI 2; ISO-L-XBCIB2

Locking torques (N*m)
Locking torque: 50 to 60 Nm
Steering column

Removal

Removal of the upper and lower frame seat

- Only remove the seats if it is strictly necessary.
- Using the special tool remove the upper fifth wheel seat by putting the special tool into the lower part of the headstock as indicated in the figure.
- By inserting the punch into the top of the tube, remove the lower fifth wheel seat from the headstock.

Specific tooling

020004Y Punch for removing steering bearings from headstock

Refitting

Refitting the lower and upper seat on the frame

- Using the special tool, refit the upper and lower bearing seats on the headstock.

Specific tooling

001330Y Tool for fitting steering seats

Steering bearing

Removal

Removing steering lock nut
- Remove the handlebar.
- Remove the bearing of steering ring nut using the specific tool.

**Specific tooling**

020055Y Wrench for steering tube ring nut

See also

Handlebar

**Overhauling the fifth wheel seat on the fork**

Check the condition of the fifth wheel and the fifth wheel seat on the fork (steering tube). Replace if there are faults.
- Support the fork properly.
- Using the special tool, remove the fifth wheel seat on the steering tube as shown in the photograph by applying small mallet blows.

**Specific tooling**

020004Y Punch for removing steering bearings from headstock

Always use a new fifth wheel seat on refitting.
- Using the special tool, refit the fifth wheel seat with the aid of a few mallet blows and bring it as far as the stop shown in the photo.

**Specific tooling**

006029Y Punch for fitting fifth steering bearing on steering tube

**Refitting**

**Refitting steering lock ring nut**

- After locking the first ring nut in place, lock the second ring nut using a specific tool.

**Specific tooling**
020055Y Wrench for steering tube ring nut

**Locking torques (N*m)**

Locking torque: 30 to 40 Nm

## Rear

### Removing the rear wheel

- Use a screwdriver as a lever between the drum and the cover.
- Straighten the split pin and remove the cap.
- Remove the wheel acting on the central fixing point.

**WARNING**
- ALWAYS USE NEW SPLIT PINS FOR REFITTING.

### Removal

To replace the shock absorber you just need to remove the battery access flap to get and remove the shock absorber/frame anchorage nut. Then remove the shock absorber/engine anchorage nut.

### Refitting

When refitting, tighten the shock absorber/frame anchorage nut and the shock absorber/engine pin at the prescribed torque.
Locking torques (N*m)
Shock absorber/chassis nut torque 20 to 25 Nm  Shock absorber/engine pin torque 33 to 41 N·m

Centre-stand

Expulsion of stand fastening pin to the bracket

- Remove the stand support bracket from the engine.
- Drill a 5 mm hole in the bracket so that the pin «P» can come out.

Fitting and caulking the stand pin to the bracket

- Caulk the end of the pin «P» between the two punches shown in the figure.
- After caulking it must be possible for the stand to turn freely.

N.B.
UPON REFITTING USE NEW O-RING AND PIN, GREASE THE SPRING ATTACHMENTS AND THE PIN.

Replace complete stand

- Work on the screws shown in the figure.
- When refitting, secure to the prescribed torque.

Locking torques (N*m)
Stand screw torque 18.5 to 19 Nm
INDEX OF TOPICS

BRAKING SYSTEM  BRAK SYS
Front brake calliper

Removal

- Check that the brake piping, gasket and fitting are in good condition. If you see any oil on the brake calliper and/on the components of the system, it is necessary to replace them.
- Disconnect the oil line from the caliper, collecting the oil in a container.
- Remove the two clamps highlighted in the diagram.

Overhaul

- Disconnect the oil line from the calliper and collect the brake fluid in a suitable container.
- Remove the brake calliper from the fork.
- Exerting leverage on the floating body, remove the external brake pad, then the internal one, and lastly the retention spring.
- Remove the piston and make sure that there is no scoring or erosion. If there is, replace the pincer.

CAUTION
ALL THE INTERNAL COMPONENTS MUST BE REPLACED EVERY TIME THE CALLIPER IS SERVICED.
• Insert the sealing rings and the pistons in the calliper body
• Check the state of the floating body seats and grease them.
• Refit the pads
• - Position the calliper on the disc and lock to the mounting by tightening the bolts.
• Lock the piping fitting on the calliper at the prescribed torque and bleed the air from the system.

Before fitting, the parts must be perfectly clean and free of traces of oil, diesel fuel, grease, etc.. They should be washed thoroughly in denatured alcohol before proceeding.

The sealing rings must be immersed in the operating liquid; the use of the PRF1 protection is tolerated.

CAUTION
RUBBER PARTS SHOULD NEVER BE LEFT IN ALCOHOL FOR LONGER THAN 20 SECONDS. AFTER WASHING, THE PIECES MUST BE DRIED WITH A BLAST OF COMPRESSED AIR AND A CLEAN CLOTH.

Locking torques (N*m)
Calliper coupling screw 20 to 25 Nm Oil bleed screw 7 to 10 Nm

Refitting

• Refit the pincer on the support and tighten the screws at the prescribed torque.
• Refit the tube complete with fitting with new copper gaskets.
• Bleed the air from the system.

Locking torques (N*m)
Brake fluid tube calliper 20 to 25 Fastening screws calliper to the crankcase 20 to 25 Oil bleed screw 7 to 10 Nm
Front brake disc

Removal

Proceed as follows:
- Remove the front wheel
- Undo the three disc clamping screws.

Refitting

- When refitting, position the disc correctly making sure that it rotates in the right direction.

Locking torques (N*m)
Disc tightening screw 8 - 12

Disc Inspection

- Use the micrometer to check the thickness of the disc as shown in the photograph

Characteristic
Standard thickness:
4 +02-01mm

- Using the appropriate tool, measure how much the disc protrudes when the wheel is fitted properly. The protrusion, measured near the external edge of the disc, must be less than 0.1 mm.
- If a value is measured other than the specified value, remove the front wheel (Front/Rear Suspension chapter) and check the protrusion of the disc. Maximum permissible out of true is 0.1 mm.
If the value measured is greater, replace the disc and repeat the check.

- If the problem persists, check and replace the wheel hub if necessary.

**Specific tooling**

020335Y Magnetic mounting for dial gauge

**Front brake pads**

**Removal**

- Remove the brake calliper from the fork.
- Exert leverage on the floating body and remove the outer pad.
- Then remove the internal pad by exerting pressure on the retention spring.

The pads must be replaced if the friction material lining is less than 1.5 mm
Refitting

Follow the steps in the opposite order from the removal, making sure the retention spring is inserted properly.

Fill
Front

- Once the bleed valve is closed, fill the system with brake liquid to the maximum level.
- Undo the bleed screw.
- Apply the tube of the special tool to the bleed screws.
When bleeding it is necessary to fill the oil tank in continuation while working with a MITYVAC pump on the bleed screws until no more air comes out of the system.
The operation is finished when just oil comes out of the bleed screws.
- Do up the bleed screw.
- When the operation is over, tighten up the oil bleed screw to the prescribed torque.

N.B.
IF AIR CONTINUES TO COME OUT DURING PURGING, EXAMINE ALL THE FITTINGS:
IF SAID FITTINGS DO NOT SHOW SIGNS OF BEING FAULTY, LOOK FOR THE AIR INPUT AMONG THE VARIOUS SEALS ON THE PUMP AND CALLIPER PISTONS.

CAUTION
- DURING THE OPERATIONS, THE VEHICLE MUST BE ON THE STAND AND LEVEL.

N.B.
DURING PURGING FREQUENTLY CHECK THE LEVEL TO PREVENT AIR GETTING INTO THE SYSTEM THROUGH THE PUMP.

WARNING
- BRAKING CIRCUIT FLUID IS HYGROSCOPIC. IT ABSORBS HUMIDITY FROM THE SURROUNDING AIR.
- IF THE LEVEL OF HUMIDITY IN THE BRAKING FLUID EXCEEDS A GIVEN VALUE, BRAKING EFFICIENCY WILL BE REDUCED.
- THEREFORE, ALWAYS USE FLUID FROM SEALED CONTAINERS.
- UNDER NORMAL DRIVING AND CLIMATIC CONDITIONS YOU SHOULD CHANGE THIS LIQUID EVERY TWO YEARS.
- IF THE BRAKES ARE USED INTENSELY AND/OR IN HARSH CONDITIONS, CHANGE THE FLUID MORE FREQUENTLY.

CAUTION
WHEN CARRYING OUT THE OPERATION, BRAKE FLUID MAY LEAK FROM BETWEEN THE BLEED SCREW AND ITS SEAT ON THE CALLIPER.
CAREFULLY DRY THE CALLIPER AND DEGREASE THE DISC SHOULD THERE BE OIL ON IT.

Specific tooling
020329Y Mity-Vac vacuum-operated pump

Recommended products

BRAK SYS - 103
AGIP BRAKE 4 Brake fluid
FMVSS DOT 4 Synthetic fluid

Locking torques (N*m)
Oil bleed screw 8 - 12

Front brake pump

- After removing the front and rear handlebar covers, act on the two stand fixing points (see the figure).
- Disconnect the tube, collecting the brake oil in a container.

- On refitting, perform the operation in reverse.
- Tighten the hydraulic line to the prescribed torque and bleed the system.

Locking torques (N*m)
Brake fluid pump - hose fitting 20 ÷ 25 Nm

Rear drum brake

Drum brake adjustment
Regulate the point where the rear drum brake intervenes, using the adjustment indicated in the figure.
With the brake lever at rest, the wheel must turn freely.

Drum brake removal

After removing the muffler and the rear wheel do the following:
1. Remove the shoe spring with the special tool
2. Remove the shoe with the aid of a lever
3. Refit the new shoes giving a few taps with the mallet
4. Fasten the spring using the special tool.
<table>
<thead>
<tr>
<th>CHASSIS</th>
<th>CHAS</th>
</tr>
</thead>
</table>

INDEX OF TOPICS
Rear handlebar cover

- Rimuovere la copertura manubrio anteriore.
- Rimuovere le tre viti indicate in figura.
- Rimuovere la connessione al cavo tachimetro.
- Disconnettere i connettori degli interruttori e del quadro strumenti.

Per il montaggio seguire i passi in sequenza inversa.

Front handlebar cover

- Rimuovere gli specchietti.
- Rimuovere le due viti indicate in figura.
- Facendo leva verso l’alto e agendo sugli incastri laterali, distaccare la copertura anteriore da quella posteriore.
- Disconnettere i cablaggi degli indicatori di direzione.

Per il montaggio seguire i passi in sequenza inversa facendo attenzione al corretto inserimento degli incastri.

Headlight assy.

- Rimuovere le due viti indicate in figura.
- Spingere il gruppo ottico attraverso il foro per la regolazione dell’altezza del fascio luminoso come mostrato in figura.
- Rimuovere la connessione elettrica.
Frame central cover

- Remove the 3 fixing screws located under the saddle as shown in the figure.
- Remove the cover by pulling it off the lower fittings.

For installation, reverse the removal sequence.

Legshield

- Rimuovere il gruppo ottico anteriore.
- Rimuovere le 7 viti indicate in figura.
- Rimuovere le 2 viti nel vano ruota anteriore.
- Sfilare dagli incastri inferiori lo scudo anteriore.

Per il montaggio seguire i passi in sequenza inversa facendo attenzione al corretto inserimento degli incastri inferiori dello scudo.

Knee-guard

- Rimuovere le 2 viti di fissaggio del gruppo ottico anteriore.
- Rimuovere le 7 viti indicate in figura.
- Sfilare dagli incastri inferiori il contro-scudo anteriore.

Per il montaggio seguire i passi in sequenza inversa facendo attenzione al corretto inserimento degli incastri inferiori.
Taillight assy.

Per la sostituzione della lampada è sufficiente rimuovere le due viti indicate in figura, quindi sfilare il cristallo del fanalino.

Per lo smontaggio del gruppo ottico completo è necessario:

- Rimuovere le due placche centrali sopra e sotto il fanalino agendo sulle 4 viti di fissaggio.
- Rimuovere le fiancate laterali.
- Rimuovere il gruppo ottico completo agendo sulle due viti di fissaggio.

Footrest

- Rimuovere la copertura centrale telaio.
- Rimuovere il controscudo.
- Rimuovere le 4 viti indicate in figura e facendo leva sugli incastrì rimuovere la pedana.
Side fairings

- Rimuovere lo spoiler posteriore.
- Rimuovere le due placche centrali sopra e sotto il fanalino agendo sulle 4 viti di fissaggio.

- Rimuovere la copertura centrale telaio.
- Rimuovere le 8 viti di fissaggio (4 per lato) indicate in figura.
• Rimuovere la connessione elettrica degli indicatori di direzione.
Per il montaggio seguire i passi in sequenza inversa.

Rear mudguard

• Rimuovere le fiancate laterali.
• Rimuovere le 5 viti indicate in figura.
• Rimuovere la connessione elettrica del gruppo ottico posteriore, quindi sfilare il parafango.
Helmet bay

- Rimuovere la sella.
- Rimuovere la copertura centrale.
- Rimuovere le fiancate laterali.
- Rimuovere la batteria e sfilare dalla relativa sede il portafusibile.
- Rimuovere tappo serbatoio carburante, tappo serbatoio olio e relativa gomma di tenuta.
- Rimuovere le tre viti e sfilare il vano portacasco.

Per il montaggio seguire i passi in sequenza inversa

Fuel tank

- Rimuovere le fiancate laterali.
- Rimuovere il vano portacasco.
- Rimuovere il parafango posteriore.
- Disconnettere il tubo del carburante e il tubo di depressione per la valvola carburante.
- Disconnettere il cablaggio elettrico dell'indicatore di livello del carburante.
• Rimuovere le tre viti indicate in figura e sfilare da sotto il telaio il serbatoio

Mixture oil tank

• Rimuovere la fiancata laterale destra.
• Disconnettere il tubo olio facendo attenzione a raccogliere l'olio residuo nel serbatoio con un apposito recipiente.
• Disconnettere il cablaggio elettrico al sensore livello olio.
• Rimuovere le 2 viti di fissaggio del serbatoio olio.

Per il montaggio seguire i passi in sequenza inversa
| PRE-DELIVERY | PRE DE |
Aesthetic inspection

**Appearance check:**
- Paintwork
- Fitting of plastics
- Scratches
- Dirt

Tightening torques inspection

**Lock check**
- Safety fasteners
- Fixing screws

**Safety fasteners:**
- Rear shock absorber upper fixing
- Rear shock absorber lower fixing
- Front wheel axle nut
- Wheel hub nut
- Swinging arm - chassis pin
- Engine-swinging arm pin
- Engine arm pin - Chassis arm
- Handlebar lock nut
- Lower steering ring nut
- Upper steering ring nut

Electrical system

**Electrical system:**
- Main switch
- Headlamps: high beam, low beam, position and parking lights and the respective warning lights
- Adjusting the headlights according to the regulations currently in force
- Rear light, parking light, stop light
- Front and rear stop light switches
- Turn indicators and their warning lights
- Instrument panel lights
- Instrument panel: fuel and temperature indicator
- Instrument panel warning lights
- Horn
- Starter
CAUTION
TO ENSURE MAXIMUM PERFORMANCE, THE BATTERY MUST BE CHARGED BEFORE USE. INADEQUATE CHARGING OF THE BATTERY WITH A LOW LEVEL OF ELECTROLYTE BEFORE IT IS FIRST USED SHORTENS THE LIFE OF THE BATTERY.

WARNING
BEFORE RECHARGING THE BATTERY, REMOVE THE CAPS OF EACH CELL. KEEP THE BATTERY AWAY FROM NAKED FLAMES OR SPARKS WHILE IT IS CHARGED. REMOVE THE BATTERY FROM THE VEHICLE, DISCONNECTING THE NEGATIVE TERMINAL FIRST.

CAUTION
WHEN INSTALLING THE BATTERY, ATTACH THE POSITIVE LEAD FIRST AND THEN THE NEGATIVE ONE.

WARNING
BATTERY ELECTROLYTE IS TOXIC AND IT MAY CAUSE SERIOUS BURNS. IT CONTAINS SULPHURIC ACID. AVOID CONTACT WITH YOUR EYES, SKIN AND CLOTHING.
IN CASE OF CONTACT WITH YOUR EYES OR SKIN, RINSE WITH ABUNDANT WATER FOR ABOUT 15 MINUTES AND SEEK IMMEDIATE MEDICAL ATTENTION.
IF IT ACCIDENTALLY SWALLOWED, IMMEDIATELY DRINK LARGE QUANTITIES OF WATER OR VEGETABLE OIL. SEEK IMMEDIATE MEDICAL ATTENTION.
BATTERIES PRODUCE EXPLOSIVE GASES; KEEP THEM AWAY FROM NAKED FLAMES, SPARKS AND CIGARETTES. IF THE BATTERY IS CHARGED IN A CLOSED PLACE, TAKE CARE TO ENSURE ADEQUATE VENTILATION. ALWAYS PROTECT YOUR EYES WHEN WORKING CLOSE TO BATTERIES.
KEEP OUT OF THE REACH OF CHILDREN

CAUTION
NEVER USE FUSES WITH A CAPACITY HIGHER THAN THE RECOMMENDED CAPACITY. USING A FUSE OF UNSUITABLE RATING MAY SERIOUSLY DAMAGE THE VEHICLE OR EVEN CAUSE A FIRE.

Levels check

Level check:
- Hydraulic braking system fluid level.
- Rear hub oil level
- Engine oil level

Road test

Test ride
- Cold start
- Instrument operations
- Response to the throttle control
- Stability on acceleration and braking
- Rear and front brake efficiency
- Rear and front suspension efficiency
- Abnormal noise
Static test

Static control after the test ride:
- Starting when warm
- Starter operation
- Minimum hold (turning the handlebar)
- Uniform turning of the steering
- Possible leaks

CAUTION
CHECK AND ADJUST TYRE PRESSURE WITH TYRES AT AMBIENT TEMPERATURE.
CAUTION
NEVER EXCEED THE RECOMMENDED INFLATION PRESSURES OR TYRES MAY BURST.

Functional inspection

Functional Checks:
Braking system (hydraulic)
  - Lever travel
Braking system (mechanical)
  - Lever travel
Clutch
  - Proper functioning check
Engine
  - Throttle travel check
Others
  - Check documentation
  - Check the chassis and engine numbers
  - Tool kit
  - License plate fitting
  - Check locks
  - Check tyre pressures
  - Installation of mirrors and any accessories
INDEX OF TOPICS

TIME

TIME
This section is devoted to the time necessary to carry out repairs.

The description and code for each operation is indicated.

**Engine**

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Engine to chassis - Replacement</td>
<td>Tiphoon 50</td>
</tr>
</tbody>
</table>
Crankcase

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001133</td>
<td>Engine crankcase - Replacement</td>
</tr>
</tbody>
</table>
## Crankshaft

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crankshaft - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Main bearings - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Flywheel-side oil seal - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Clutch-side oil seal - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

Typhoon 50
Cylinder assy.

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cylinder / Piston - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cylinder / piston - Inspection / cleaning</td>
<td></td>
</tr>
</tbody>
</table>

Typhoon 50

TIME - 121
### Cylinder head assy.

- **1**
  - Code: 001013
  - Action: Intake manifold - Replacement

- **2**
  - Code: 001093
  - Action: Spark plug - Replacement

- **3**
  - Code: 001126
  - Action: Head - Replacement

- **4**
  - Code: 001097
  - Action: Cooling hood - Replacement

- **5**
  - Code: 001178
  - Action: Disc pack - Replacement

- **6**
  - Code: 001087
  - Action: Flywheel cover - Replacement

---

**CYLINDER HEAD ASSEMBLY**

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intake manifold - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Spark plug - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Head - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cooling hood - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Disc pack - Replacement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Flywheel cover - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Driven pulley

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001110 Driven pulley- Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001022 Clutch - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>001155 Clutch bell - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>001012 Driven pulley - overhaul</td>
<td></td>
</tr>
</tbody>
</table>
Oil pump

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001018 Mixer - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001019 Mixer belt - replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>001028 Mix movement gear socket - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Final gear assy.

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001010 Geared reduction unit - Service</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001156 Gear reduction unit cover - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>003065 Gear box oil - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>004125 Rear wheel axle - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
## Driving pulley

### Table: Driving Pulley

<table>
<thead>
<tr>
<th>Code</th>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001011</td>
<td>Driving belt - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001066</td>
<td>driving pulley - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>001017</td>
<td>Start-up pinion - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>001086</td>
<td>Driving half-pulley - replace</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>001177</td>
<td>CVT rollers / sliders - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Transmission cover

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transmission crankcase cover - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Transmission air intake - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Transmission cover bearing - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stand bumper - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Starter motor

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Starter motor - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Kick starter - Inspection</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Starter lever - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Starter spring pack - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Starter motor cable assembly - Re-</td>
<td></td>
</tr>
<tr>
<td></td>
<td>placement</td>
<td></td>
</tr>
</tbody>
</table>

Time - 128
Flywheel magneto

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001058</td>
<td>Flywheel - Replacement</td>
</tr>
<tr>
<td>2</td>
<td>001067</td>
<td>Stator - Replacement</td>
</tr>
<tr>
<td>3</td>
<td>001173</td>
<td>Rotor - Replacement</td>
</tr>
<tr>
<td>4</td>
<td>001109</td>
<td>Cooling fan - Replacement</td>
</tr>
</tbody>
</table>
Brake shoes

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rear brake shoe(s) - Replacement</td>
<td>TIME - 130</td>
</tr>
</tbody>
</table>
Carburettor

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Automatic choke - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Carburettor - Inspection</td>
<td></td>
</tr>
</tbody>
</table>

Typhoon 50

TIME - 131
### CARBURETTOR

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001063 Carburettor - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>003058 Carburettor - Adjustment</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>004177 Heating hood - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

### Exhaust pipe

---

### MUFFLER

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001009 Silencer - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001095 Silencer heatshield - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>001136 Exhaust emissions - Adjustment</td>
<td></td>
</tr>
</tbody>
</table>
Air cleaner

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air filter - Replacement / cleaning</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Air filter box - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Air cleaner carburettor fitting - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Frame

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001053 Stand pin - Replacement</td>
</tr>
<tr>
<td>2</td>
<td>004004 Stand - Replacement</td>
</tr>
<tr>
<td>3</td>
<td>004001 Chassis - Replacement</td>
</tr>
<tr>
<td>4</td>
<td>004015 Footrest - Replacement</td>
</tr>
<tr>
<td>5</td>
<td>004171 Stand support plate - Replacement</td>
</tr>
<tr>
<td>6</td>
<td>004143 Footrest support - Replacement</td>
</tr>
</tbody>
</table>
Legshield spoiler

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004064</td>
<td>Legshield - Replacement</td>
</tr>
<tr>
<td>2</td>
<td>004065</td>
<td>Front shield rear section - Replace-</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ment</td>
</tr>
<tr>
<td>3</td>
<td>004178</td>
<td>Footrest - Replacement</td>
</tr>
<tr>
<td>4</td>
<td>004053</td>
<td>Spoiler - Replacement</td>
</tr>
</tbody>
</table>
Side fairings

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Central chassis cover - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fairing (1) - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rear side panels (2) - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Lock series - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Underseat compartment

<table>
<thead>
<tr>
<th>Code</th>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004016</td>
<td>Helmet compartment - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>005046</td>
<td>Battery cover - change</td>
<td></td>
</tr>
</tbody>
</table>
Plate holder

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004136 License plate holder mounting - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>004056 Upper rear light cover - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>005048 number plate holder - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Typhoon 50

Mudguard

Fuel tank

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004009 Rear mudguard - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

TIME - 139
<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004005 Fuel tank - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>005010 Tank float - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>004072 Fuel filter - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>004139 Fuel no return valve - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>004112 Cock / carburettor hose - Replacement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>004109 Fuel tank breather - change</td>
<td></td>
</tr>
</tbody>
</table>

**Tank oil**

**OIL TANK**

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004017 Oil reservoir - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>005018 Oil reservoir float - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>004095 Oil reservoir cock - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>004091 Oil reservoir hose - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Rear shock-absorber

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>003007 Rear shock absorbers - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Steering column bearings

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Steering bearing - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Steering clearance - Adjustment</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Steering Bearing / upper steering fifth wheel - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
## Handlebar components

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left hand grip - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Brake or clutch lever - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Stop switch - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
### Handlebar Components

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>004066 Driving mirror - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>003001 Handlebar - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>005017 Stop switch - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>002037 Brake or clutch lever - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>002059 Right hand grip - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Swing-arm

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001072</td>
<td>Engine / frame swinging arm fitting - Replacement</td>
</tr>
</tbody>
</table>
Seat

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>004003</td>
<td>Saddle - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
**Instrument panel**

![Diagram of instrument panel and handlebar cover]

### Instrument Panel and Handlebar Cover

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>005014 Odometer - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>004018 Handlebar front section - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>004019 Handlebar rear section - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>005078 Odometer glass - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>005076 Clock / Cell - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
## Turn signal lights

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front turn indicator bulb - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Headlight bulbs - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Front headlamp - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Turn indicator glass - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front turn indicator - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
### REAR LIGHT

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>005022 Rear turning indicators - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>005068 Rear turning indicator bulb - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>005091 Turn indicator glass - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>005028 Rear light assembly glass - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>005066 Rear light bulbs - Replacement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>005005 Taillight - change</td>
<td></td>
</tr>
</tbody>
</table>
### Front wheel

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Front brake disc - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Front wheel bearings - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Front wheel rim - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Front tyre - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front wheel - Replacement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Front wheel axle - Replacement</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Odometer movement sensor - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

**Grease tone wheel or drive**

Please take note that the code has been introduced:

900001 - Tone wheel / drive greasing - 15’.

Never mistake the codes 002011 (movement sensor replacement) and 005089 (tone wheel replacement) in the event of noise of the indicated components. The grease recommended is TUTE-LA MRM 2 (soap-based lithium grease with Molybdenum disulphide).

In the following points we indicate with an arrow the area to be greased (1 - Drive, 2 - Tone wheel)
Rear wheel rim - Replacement

Rear wheel - Replacement

Rear wheel tyre - Replacement
Electric devices

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Battery - change</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Battery fuse - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fuse holder - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Starter relay - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

Typhoon 50

TIME - 152
**Electrical System**

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>001023 Control unit - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>001094 Spark plug cap - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>005001 Electrical system - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>005009 Voltage regulator - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Electronic controls

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>005041</td>
<td>Starter button - Replacement</td>
</tr>
<tr>
<td>2</td>
<td>005040</td>
<td>Horn button - Replacement</td>
</tr>
<tr>
<td>3</td>
<td>005016</td>
<td>Key switch - Replacement</td>
</tr>
<tr>
<td>4</td>
<td>004096</td>
<td>Lock series - Replacement</td>
</tr>
<tr>
<td>5</td>
<td>004010</td>
<td>Antitheft lock - replace</td>
</tr>
<tr>
<td>6</td>
<td>005003</td>
<td>Horn - Replacement</td>
</tr>
<tr>
<td>7</td>
<td>005006</td>
<td>Light or turning indicator switch - Replacement</td>
</tr>
<tr>
<td>8</td>
<td>005039</td>
<td>Lights switch - Replacement</td>
</tr>
<tr>
<td>9</td>
<td>005077</td>
<td>Emergency stop switch - Replacement</td>
</tr>
</tbody>
</table>

Typhoon 50

TIME - 154
Transmissions

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>002012 Splitter - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>002058 Mix / splitter transmission complete - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>002057 Carburettor / splitter transmission complete - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>002054 Throttle or splitter transmission complete - Replacement</td>
<td></td>
</tr>
</tbody>
</table>

Typhoon 50

Time

TIME - 155
## REAR BRAKE TRANSMISSION AND ODOMETER

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Odometer transmission assembly - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Rear brake transmission complete - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Front suspension

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>003010 Front suspension - Service</td>
<td>1-2</td>
</tr>
<tr>
<td>2</td>
<td>003051 Complete fork - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>003048 Fork oil seal - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>003041 Fork stanchion - Replacement</td>
<td></td>
</tr>
</tbody>
</table>
Braking system

<table>
<thead>
<tr>
<th>Code</th>
<th>Action</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brake fluid reservoir - Replacement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Front brake transmission - Replacement</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Brake piping - Replacement</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Front brake piping - Replacement</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front brake caliper - Replacement</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Front brake pump - replace</td>
<td></td>
</tr>
</tbody>
</table>
A
Air filter: 28

B
Battery: 36, 43, 51, 52
Brake: 91, 98, 100, 101, 104, 130

C
Carburettor: 9, 131
Checks: 46

E
Electric: 152
Engine stop:

F
Fuel: 35, 86, 111, 139
Fuses: 51

H
Headlight: 30, 106
Hub oil: 26

I
Identification: 7
Instrument panel: 147

M
Maintenance: 6, 23

O
Odometer:

R
Recommended products:

S
Saddle:
Spark plug: 26
Suspension: 37, 157

T
Tank: 111, 112, 139, 140
Transmission: 8, 35, 58, 127
Tyres: 9
Vehicle: 7, 56