This manual provides every service specialist with professional techniques of maintenance and repairing for G-MAX (ALLORO). It provides a detailed guide for those who may concern with how to maintain, repair, reassemble, and change parts of their scooters.

This manual includes 3 kinds of engine displacement:
- G-MAX 50 (ALLORO 50): abbreviated as “M2-50” is 2 stroke engine (2T), 50cc displacement.
- G-MAX 125 (ALLORO 125): abbreviated as “M2-125” is 4 stroke engine (4T), 125cc displacement.
- G-MAX 150 (ALLORO 150): abbreviated as “M2-150” is 4 stroke engine (4T), 150cc displacement.

At every section, we illustrate each important point by assembling procedures, explosive diagrams and photographs.

Although we have tried our best to make this manual as perfect as possible, please kindly inform us if any fault needs to be corrected in this manual.

Thank you for purchasing our PGO scooters.

FACTORY
Motive Power Industry Co., Ltd.
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### 1.1 G-MAX 50

#### SPECIFICATION

<table>
<thead>
<tr>
<th>BRAND</th>
<th>PGO</th>
<th>FRAME</th>
<th>STEEL PIPE</th>
</tr>
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<tbody>
<tr>
<td>MODEL</td>
<td>M2-50D</td>
<td>SUSP</td>
<td>ON</td>
</tr>
<tr>
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<td>1855 mm</td>
<td>ENSI</td>
<td>FRONT</td>
</tr>
<tr>
<td>WIDTH</td>
<td>730 mm</td>
<td>PRIMARY</td>
<td>REAR</td>
</tr>
<tr>
<td>HEIGHT</td>
<td>1170 mm</td>
<td>DIRECT</td>
<td>SWING</td>
</tr>
<tr>
<td>AXLE DISTANCE</td>
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<td>CLUTCH</td>
<td>CENTRIGUAL</td>
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#### DIMENSION

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<th>TRANSMISSI</th>
<th>V-BELT C.V.T</th>
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<tr>
<td></td>
<td></td>
<td>REAR</td>
<td>58 KG</td>
<td>PRIMARY</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>TOTAL</td>
<td>105 KG</td>
<td>2ND</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PASSENGER</td>
<td>2 (110KG)</td>
<td></td>
<td>52/13*44/13</td>
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</tr>
<tr>
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<td>TOTAL</td>
<td>FRONT</td>
<td>82 KG</td>
<td>REAR</td>
<td>DISK</td>
</tr>
<tr>
<td></td>
<td></td>
<td>REAR</td>
<td>133 KG</td>
<td></td>
<td>DRUM</td>
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<tr>
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<td></td>
<td>TOTAL</td>
<td>215 KG</td>
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#### WEIGTH

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<th>PERFORMANCE</th>
<th>TOP SPEED</th>
<th>60 km/hr</th>
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<th>45 km/l</th>
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<tbody>
<tr>
<td>GRADIENT</td>
<td>19°</td>
<td></td>
<td>SIGNAL</td>
<td>12V-10W*4</td>
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</table>

#### ENGINE

<table>
<thead>
<tr>
<th>ENGINE MODEL</th>
<th>P2</th>
<th>HORN</th>
<th>DC 12V</th>
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<tbody>
<tr>
<td>FUEL</td>
<td>92 UNLEADED</td>
<td>SILENCER</td>
<td>DIFFUSER</td>
</tr>
<tr>
<td>STROKE</td>
<td>2T AIR FORCED</td>
<td>PARTICLE</td>
<td>BELOW 15 %</td>
</tr>
<tr>
<td>BORE</td>
<td>φ40.0 mm</td>
<td>CO</td>
<td>BELOW 4.5%</td>
</tr>
<tr>
<td>STROKE</td>
<td>39.2 mm</td>
<td>HC</td>
<td>BELOW 7000 ppm</td>
</tr>
<tr>
<td>CYLINDER</td>
<td>SINGLE</td>
<td>EXHAUST LAYOUT</td>
<td>RIGHT</td>
</tr>
<tr>
<td>DISPLACEMENT</td>
<td>49 cc</td>
<td>LUBRICATE</td>
<td>SEPARATE PUMP</td>
</tr>
<tr>
<td>C.R.</td>
<td>6.8 l</td>
<td>FUEL TANK</td>
<td>7.5 L</td>
</tr>
<tr>
<td>MAX H.P.</td>
<td>3.5kw/7000rpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MAX TORQUE</td>
<td>5.0N-M/6500rpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAYOUT</td>
<td>HORIZONTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IGNITION</td>
<td>CDI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STARTING</td>
<td>ELECTRIC &amp; KICK</td>
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## 1.2 G-MAX 125

### SPECIFICATION

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<tr>
<td>MODEL</td>
<td>M2-50D</td>
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<td>FRONT TELESCOPE</td>
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<td>1170 mm</td>
<td>2ND</td>
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<td>CLUTCH</td>
<td>CENTRIGUAL</td>
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<td>WEIGHT</td>
<td></td>
<td>TRANSMISSI</td>
<td>SHIFTING</td>
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<tr>
<td></td>
<td>FRONT</td>
<td>DISK</td>
<td></td>
</tr>
<tr>
<td></td>
<td>REAR</td>
<td>DISK</td>
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<td>12V-5W</td>
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<td>HORN</td>
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<td>DIFFUSER</td>
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<td>STROKE</td>
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<td>BELOW 15 %</td>
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<td>Bore 51.5 mm</td>
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<td>CO</td>
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<tr>
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<td></td>
<td>BELOW 4.5%</td>
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<tr>
<td></td>
<td>CYLINDER SINGLE</td>
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<td>HC</td>
</tr>
<tr>
<td></td>
<td>EXHAUST LAYOUT RIGHT</td>
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<tr>
<td>MAX H.P.</td>
<td>6.5kw/7500rpm</td>
<td>FUEL TANK</td>
<td>7.5 L</td>
</tr>
<tr>
<td>MAX TORQUE</td>
<td>9.1N-M/6250rpm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LAYOUT</td>
<td>HORIZONTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IGNITION</td>
<td>CDI</td>
<td></td>
<td></td>
</tr>
<tr>
<td>STARTING</td>
<td>ELECTRIC &amp; KICK</td>
<td></td>
<td></td>
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<td>SPECIFICATION</td>
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<td></td>
</tr>
<tr>
<td><strong>WIDTH</strong></td>
<td>730 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>HEIGHT</strong></td>
<td>1170 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>AXLE DISTANCE</strong></td>
<td>1365 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GROSS</strong></td>
<td>132 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>WEIGHT</strong></td>
<td>242 kg</td>
<td></td>
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<tr>
<td><strong>TOP SPEED</strong></td>
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<td>40 km/l</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ENGINE</strong></td>
<td>4T AIR FORCED</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>BORE</strong></td>
<td>φ57.0 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STROKE</strong></td>
<td>57.8 mm</td>
<td></td>
<td></td>
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<tr>
<td><strong>CYLINDER</strong></td>
<td>SINGLE</td>
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<td></td>
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<tr>
<td><strong>DISPLACEMENT</strong></td>
<td>147.5 cc</td>
<td></td>
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<td><strong>C.R.</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>LAYOUT</strong></td>
<td>HORIZONTAL</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IGNITION</strong></td>
<td>CDI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>STARTING</strong></td>
<td>ELECTRIC &amp; KICK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **FRAME** | TELESCOPE |
| **SUSPENSION** | FRONT REAR |
| **LENGTH** | SWING |
| **WIDTH** | PRIMARY |
| **HEIGHT** | DIRECT |
| **AXLE DISTANCE** | 2ND 42/15*42/13 |
| **TRANSMISSION** | CLUTCH |
| **SHIFTING** | CENTRIGUAL |
| **GROSS** | FRONT 120/70-13 |
| **TIRE** | REAR 130/70-13 |
| **BRAKE** | FRONT DISK |
| **PEDAL** | REAR DISK |
| **GROSS** | TOTAL 132 kg |
| **WEIGHT** | TOTAL 242 kg |
| **PERFORMANCE** | HEAD(HI-LO) 12V-35W/35W |
| **LIGHTS** | REAR 12V-5W |
| **SIGNAL** | BRAKE 12V-21W |
| **ENGINE** | 12V |
| **PARTICLE** | BELOW 15 % |
| **EXHAUST** | CO BELOW 4.5% |
| **HC** | BELOW 7000 ppm |
| **LAYOUT** | RIGHT |
| **SILICER** | DIFFUSER |
| **FUEL TANK** | 7.5 L |
Service information

(1) Operation notice
(2) Locking torque value
  1. For engine
  2. For chassis
  3. Others
(3) Lubrication instruction
  a. For engine
  b. For chassis
  c. Wheel bearing
(4) Wiring diagram
(5) Troubleshooting
  1. Difficult starting or starting
  2. Weak acceleration
  3. Engine running not smoothly (low speed)
  4. Engine running not smoothly (high speed)
  5. Clutch, drive & driven pulley
  6. Handlebar steering was astray when running
  7. Front and rear damper not balanced
  8. Brake disorder
  9. Oil indicator malfunction
  10. Fuel indicator malfunction
  11. Starting motor malfunction
  12. No sparking
  13. Charging abnormal
(1) **The operation notice**

1. For parts like the gasket, o-ring, clips and circlets, please change a new part whenever re-assembled.

2. When trying to tighten screws or nuts, please lock tightly according to each recommended locking torque and in the sequence of the ”X” pattern.

3. Please use PGO or PGO recommended parts.

4. After dismantling, please clean all parts involved or used for checking and grease all contact surfaces when reassembling.

5. Use grease recommended by P.GO.

6. When removing the battery, please disconnect the negative pole(-) first. However, please connect the positive pole(+) first when assembling.

7. Before installing a new fuse, please be sure that the specification is correct.

8. After reassembling, please re-confirm that all connecting point, locking parts, circuits, polar characteristics are functioning well before selling out.
(2) Locking Torque Value:

1. 2T Engine (50CC)

<table>
<thead>
<tr>
<th>No</th>
<th>Locking location</th>
<th>Thread Dia (mm)</th>
<th>Locking torque kg-m</th>
<th>Remarks</th>
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<tbody>
<tr>
<td>1</td>
<td>Cylinder head</td>
<td>7</td>
<td>1.0~1.4</td>
<td>When the engine is cold</td>
</tr>
<tr>
<td>2</td>
<td>Flywheel outer</td>
<td>10</td>
<td>3.2~4.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rear brake lever</td>
<td>6</td>
<td>1.0~1.2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Driving pulley</td>
<td>10</td>
<td>3.2~4.0</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Clutch outer</td>
<td>10</td>
<td>3.5~4.0</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Right crankcase</td>
<td>6</td>
<td>1.0~1.2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Drive gear box cover</td>
<td>6</td>
<td>1.0~1.2</td>
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<tr>
<td>8</td>
<td>Left crankcase</td>
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<td>1.0~1.2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Draining and filler bolt</td>
<td>8</td>
<td>1.8</td>
<td>When the engine is cold</td>
</tr>
<tr>
<td>10</td>
<td>Inlet pipe</td>
<td>6</td>
<td>1.0~1.2</td>
<td></td>
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<tr>
<td>11</td>
<td>Flywheel magneto stator</td>
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<td>1.0~1.2</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Cooling fan</td>
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<td>1.0~1.2</td>
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<td>13</td>
<td>Muffler nut on cylinder head</td>
<td>6</td>
<td>1.0~1.2</td>
<td>When the engine is cold</td>
</tr>
<tr>
<td>14</td>
<td>Starting motor</td>
<td>6</td>
<td>1.0~1.4</td>
<td>When the engine is cold</td>
</tr>
<tr>
<td>15</td>
<td>Bracket between eng. and Rubber pad of central stand</td>
<td>6</td>
<td>1.0~1.2</td>
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</tr>
<tr>
<td>16</td>
<td>Spark plug</td>
<td>14</td>
<td>2.5~3.0</td>
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<tr>
<td>17</td>
<td>Fan cover</td>
<td>6</td>
<td>1.0~1.2</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Fixed plate, drive clutch</td>
<td>6</td>
<td>1.0~1.4</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Nut of rear wheel axle</td>
<td>14</td>
<td>11~13</td>
<td>U TYPE NUT</td>
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<td>20</td>
<td>Kick starter</td>
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<td>1.0~1.2</td>
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2. 4T Engine (125/150 CC)

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<thead>
<tr>
<th>NO</th>
<th>Locking location</th>
<th>Q’ty</th>
<th>Thread dia. (mm)</th>
<th>Locking torque (kg-m)</th>
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<tr>
<td>1</td>
<td>Fixing nut (Tappet screw nut)</td>
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<td>5</td>
<td>0.7~0.8</td>
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<td>Nut of oil pump sprocket</td>
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<td>0.7~1.0</td>
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<td>3</td>
<td>Cylinder head bolt A (intake)</td>
<td>2</td>
<td>6</td>
<td>0.9~1.1</td>
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<tr>
<td>4</td>
<td>Guiding pin bolt, chain extensioner</td>
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<td>6</td>
<td>0.4~0.6</td>
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<tr>
<td>5</td>
<td>Screw, chain extensioner</td>
<td>2</td>
<td>6</td>
<td>0.9~1.1</td>
</tr>
<tr>
<td>6</td>
<td>Cylinder head bolt B (Exhaust)</td>
<td>2</td>
<td>8</td>
<td>2.0~2.3</td>
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<tr>
<td>7</td>
<td>Flange nut, cam shaft holder</td>
<td>4</td>
<td>8</td>
<td>2.0~2.3</td>
</tr>
<tr>
<td>8</td>
<td>Gear oil drain bolt</td>
<td>1</td>
<td>8</td>
<td>1.7~2.0</td>
</tr>
<tr>
<td>9</td>
<td>Spark plug</td>
<td>1</td>
<td>10</td>
<td>1.2~1.3</td>
</tr>
<tr>
<td>10</td>
<td>Nut of fly wheel</td>
<td>1</td>
<td>12</td>
<td>5.0~6.0</td>
</tr>
<tr>
<td>11</td>
<td>Fixing nut, clutch outer</td>
<td>1</td>
<td>12</td>
<td>5.0~6.0</td>
</tr>
<tr>
<td>12</td>
<td>Nut, driving plate</td>
<td>1</td>
<td>12</td>
<td>5.0~6.0</td>
</tr>
<tr>
<td>13</td>
<td>Bolt of engine oil drain</td>
<td>1</td>
<td>12</td>
<td>2.5~3.0</td>
</tr>
<tr>
<td>14</td>
<td>Bolt of 2nd oil filter</td>
<td>1</td>
<td>12</td>
<td>0.8</td>
</tr>
<tr>
<td>15</td>
<td>Nut (LH thread), one-way clutch</td>
<td>1</td>
<td>22</td>
<td>9.0~10.0</td>
</tr>
<tr>
<td>16</td>
<td>Cap, coarse oil filter</td>
<td>1</td>
<td>30</td>
<td>1.5~2.0</td>
</tr>
</tbody>
</table>
3. Chassis

<table>
<thead>
<tr>
<th>NO</th>
<th>Locking location</th>
<th>Q’TY</th>
<th>Thread dia. (mm)</th>
<th>Locking torque (kg-m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air bleed bolt of caliper</td>
<td>1</td>
<td>6</td>
<td>0.6</td>
</tr>
<tr>
<td>2</td>
<td>Brake arm bolt, front drum</td>
<td>1</td>
<td>6</td>
<td>0.8~1.0</td>
</tr>
<tr>
<td>3</td>
<td>Brake arm bolt, rear drum</td>
<td>1</td>
<td>6</td>
<td>0.8~1.0</td>
</tr>
<tr>
<td>4</td>
<td>Nut of starter relay</td>
<td>2</td>
<td>6</td>
<td>0.5~0.6</td>
</tr>
<tr>
<td>5</td>
<td>Front brake caliper bolt</td>
<td>2</td>
<td>8</td>
<td>2.0 ~ 3.0</td>
</tr>
<tr>
<td>6</td>
<td>Bolt of disk</td>
<td>3</td>
<td>8</td>
<td>2.5~3.0</td>
</tr>
<tr>
<td>7</td>
<td>Locking nut, steering stem</td>
<td>1</td>
<td>10</td>
<td>3.5~4.5</td>
</tr>
<tr>
<td>8</td>
<td>Rear shock absorber bolt(lower)</td>
<td>1</td>
<td>10</td>
<td>3.5 ~ 4.5</td>
</tr>
<tr>
<td>9</td>
<td>Rear shock absorber bolt(upper)</td>
<td>1</td>
<td>10</td>
<td>3.5 ~ 4.5</td>
</tr>
<tr>
<td>10</td>
<td>Chassis bolt, engine hanger bracket</td>
<td>2</td>
<td>10</td>
<td>4.5 ~ 5.0</td>
</tr>
<tr>
<td>11</td>
<td>Engine bolt, engine hanger bracket</td>
<td>1</td>
<td>10</td>
<td>3.0 ~ 4.0</td>
</tr>
<tr>
<td>12</td>
<td>Hose bolt, master cyl. &amp; caliper</td>
<td>2</td>
<td>10</td>
<td>2.5 ~ 3.0</td>
</tr>
<tr>
<td>13</td>
<td>Front axle nut</td>
<td>1</td>
<td>12</td>
<td>4.5 ~ 5.5</td>
</tr>
<tr>
<td>14</td>
<td>Nut, swing arm &amp; connecting rod</td>
<td>1</td>
<td>14</td>
<td>4.5 ~ 5.5</td>
</tr>
<tr>
<td>14</td>
<td>Rear axle nut</td>
<td>1</td>
<td>16</td>
<td>10.0~11.0</td>
</tr>
</tbody>
</table>

4. Other parts standard torque values:

<table>
<thead>
<tr>
<th>No</th>
<th>Item</th>
<th>Torque kg-m</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5mm bolt and nut</td>
<td>0.45-0.6</td>
</tr>
<tr>
<td>2</td>
<td>6mm bolt and nut</td>
<td>0.8-1.2</td>
</tr>
<tr>
<td>3</td>
<td>8mm bolt and nut</td>
<td>1.8-2.5</td>
</tr>
<tr>
<td>4</td>
<td>10mm bolt and nut</td>
<td>3.0-4.0</td>
</tr>
<tr>
<td>5</td>
<td>12mm bolt and nut</td>
<td>5.0-6.0</td>
</tr>
<tr>
<td>6</td>
<td>5mm screw</td>
<td>0.35-0.5</td>
</tr>
<tr>
<td>7</td>
<td>6mm screw</td>
<td>0.7-1.4</td>
</tr>
<tr>
<td>8</td>
<td>6mm flange bolt and screw</td>
<td>1.0-1.4</td>
</tr>
<tr>
<td>9</td>
<td>7mm flange bolt and screw</td>
<td>1.0-1.4</td>
</tr>
<tr>
<td>10</td>
<td>8mm flange bolt and screw</td>
<td>2.0-3.0</td>
</tr>
<tr>
<td>11</td>
<td>10mm flange bolt and screw</td>
<td>3.0-4.0</td>
</tr>
</tbody>
</table>
(3) Lubrication instruction

A. 2T Engine (50 cc)

<table>
<thead>
<tr>
<th>NO</th>
<th>Lubrication location</th>
<th>Oil type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crankcase: rotating part, Sliding part</td>
<td>Premium 2 stroke Motorcycle oil</td>
<td>Separated-pump Lubrication</td>
</tr>
<tr>
<td>2</td>
<td>Cylinder: rotating part, Sliding part</td>
<td>Or SAE#30</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Drive gear box</td>
<td>SAE85-140</td>
<td>Total 110 c.c. Replacement 90c.c</td>
</tr>
<tr>
<td>4</td>
<td>Gasket of starter shaft</td>
<td>Clean grease</td>
<td>(#3)</td>
</tr>
<tr>
<td>5</td>
<td>Start idle gear sliding parts</td>
<td>Clean grease</td>
<td>(#3)</td>
</tr>
</tbody>
</table>

B. 4T Engine (125/150 cc)

<table>
<thead>
<tr>
<th>NO</th>
<th>Lubrication location</th>
<th>Oil type</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crankcase: rotating part, Sliding part</td>
<td>premium 4 stroke motorcycle oil</td>
<td>Auto-Separated Lubrication</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or SAE15W40</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Cylinder: rotating part, Sliding part</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Drive gear box</td>
<td>SAE85-140</td>
<td>Total 110 c.c. Replacement 90c.c</td>
</tr>
<tr>
<td>4</td>
<td>Gasket of starter shaft</td>
<td>Clean grease</td>
<td>(#3)</td>
</tr>
<tr>
<td>5</td>
<td>Start idle gear sliding parts</td>
<td>Clean grease</td>
<td>(#3)</td>
</tr>
</tbody>
</table>
C. Chassis appearance

1. Apply oil: #1, #2

2. Apply grease (#3, #4, #5, #6, #7, #8)
D. Wheel bearing

- Final transmission mechanism gear oil

- Speedometer gear: clean grease

(4) PERIODICAL MAINTENANCE TABLE

<table>
<thead>
<tr>
<th>Model</th>
<th>MONTHS/DISTANCE (IN KM) FOR CHECKING</th>
</tr>
</thead>
</table>

![Image of final transmission mechanism gear oil](image1.jpg)

![Image of speedometer gear: clean grease](image2.jpg)
<table>
<thead>
<tr>
<th>Item</th>
<th>2T or 4T</th>
<th>Checking Content</th>
<th>1 or 300 km</th>
<th>3 or 3000 km</th>
<th>6 or 5000k</th>
<th>9 or 8000k</th>
<th>12 or 10000k</th>
<th>15 or 13000k</th>
<th>18 or 15000k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine oil</td>
<td>2T</td>
<td>Add</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine oil*</td>
<td>4T</td>
<td>Replace (800cc, total 900cc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Filter</td>
<td>ALL</td>
<td>Replace</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coarse oil filter* (on oil draining bolt)</td>
<td>4T</td>
<td>Clean or replace it if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air cleaner</td>
<td>ALL</td>
<td>Clean or replace it if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air filter</td>
<td>ALL</td>
<td>Clean or replace it if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gear oil*</td>
<td>ALL</td>
<td>Replace (90cc, total 110 cc)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disk &amp; drum brake</td>
<td>ALL</td>
<td>Leaking and function check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutch shoes*</td>
<td>ALL</td>
<td>Check or replace it if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear brake arm</td>
<td>ALL</td>
<td>Function check and adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tires</td>
<td>ALL</td>
<td>Worn-out check or replace it if necessary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wheel bearing*</td>
<td>ALL</td>
<td>Fasten tightly if loosen</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front fork*</td>
<td>ALL</td>
<td>Leaking and function check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steering head bearing*</td>
<td>ALL</td>
<td>Check looseness. Adjust it if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear absorber*</td>
<td>ALL</td>
<td>Leaking and function check</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main/Side Stand</td>
<td>ALL</td>
<td>Function check or replace it if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nuts, bolts, fasteners</td>
<td>ALL</td>
<td>Tighten it if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery</td>
<td>ALL</td>
<td>Make sure that the voltage stayed over 12.8V. Recharge the battery it required.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve gap*</td>
<td>4T</td>
<td>Check and adjust when engine is cool (0.08mm for IN &amp; EX)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carbon cleaning *</td>
<td>2T</td>
<td>Clean combustion carbon when engine output reduced</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spark plug*</td>
<td>ALL</td>
<td>Clear or replace if required</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V belt*</td>
<td>ALL</td>
<td>Worn out check or replace if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel feeding system*</td>
<td>ALL</td>
<td>Crack and blockage check. Replace it if necessary.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine idle speed*</td>
<td>ALL</td>
<td>2T engine: 1900±100 rpm 4T engine: 1700±100 rpm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carburetor idle A/F Adjustment*</td>
<td>ALL</td>
<td>Check and adjust referring to CO/HC Percentage.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE**
1. Items with “*” mark indicate our recommendation to have it done by PGO dealer.
2. “A” denotes that function check or replace it when the engine performance reduces significantly.
3. For 4T engine, the engine oil shall be changed completely after run-in period 300km or one month later. This can make sure the engine runs smoothly.

(5) Trouble shooting:
1. difficult starting or can’t start:

<table>
<thead>
<tr>
<th>Check and adjust</th>
<th>Trouble condition</th>
<th>The reason</th>
</tr>
</thead>
</table>
2. Weak acceleration:

Check and Adjust

Trouble condition

The reason

Start engine and open throttle
Gradually, check and inspect

Engine can rotate up

Engine can't rotate up completely

Check ignition timing, check
With ignition timing lamp

Timing is correct

Timing is not correct

Check cylinder
Compression pressure
(use cylinder compression pressure gauge)

Pressure is normal

Pressure is not normal

Check carburetor
Is blocked or not

No blocked

blocked

Clean the carburetor

Remove spark plug and Check it

No dirty and no color change

Dirty, color change

CDI unit is out of order

alternator flywheel magneto out of order

air cleaner blocked
fuel supply system abnormal
fuel tank cover blocked
muffler blocked
fuel pump is malfunctioned
auto chock is malfunctioned

cylinder, piston ring worn out
cylinder gasket leakage
cylinder body has sand hole
Reed valve malfunction (2T engine)
For 4T engine only:

Check the oil level in crankcase
Is too much or dirty

Oil level is normal

Check the lubrication of cylinder head

Normal

Check engine overheat Or not

Not overheat

Running accelerately or High speed continuously

No knocking

overheat

Oil level is too high

Oil level is too low

Oil does not interchange

Insufficient oil pumping from oil pump

Piston and cylinder worn out

Mixture is too lean

Bad quality of the fuel

Too much carbon in the combustion room

Ignition timing is too early

Knocking

Too much carbon in the combustion room

Bad quality of the fuel

Clutch slip

Mixture is too lean

Ignition timing is too early
3. Engine running unsmoothly (low speed and idling)

- **Check and adjust**
  - **Trouble condition**
    - **The reason**
      - Check ignition timing
        - **Correct**
          - CDI faulty
          - AC generator faulty
        - **Not correct**
          - Mixture too thick
            - (loosen the screw)
          - Mixture too lean
            - (tight the screw)
          - Heat protector gasket broke
          - Carburetor locking nut loosen
          - Gasket crack
          - Hose leakage
          - Intake manifold gasket broken
          - Carburetor O ring distorted
          - Spark plug dirty
          - CDI out of order
          - AC magnet abnormal
          - Ignition coil faulty
          - H.V. coil disconnect or short circuit
          - Main switch is abnormal
          - AC generator malfunction
          - Hose is damaged
          - Air pipe is blocked or damaged

- Adjust carburetor air screw
  - **Good adjustment**
    - **Faulty**
      - No leakage
        - Leakage
          - Check if there is air leakage on carburetor gasket
            - Remove spark plug, insert to spark plug cover and connect with ground
            - Start engine, then check the sparking
        - **Good sparking**
          - **Sparking abnormal or no sparking**
            - Check generator
              - **Fault**
                - **Good**
4. Engine running unsmoothly (high speed)

- **Check and adjust**
  - **Trouble condition**
    - **The reason**
      - Check ignition timing
        - correct
        - Not correct
          ① CDI sets faulty
          ② AC generator faulty
      - Check fuel pump, Fuel supply system
        - good
        - unsmoothly
          ① fuel level is too low
          ② fuel pipe, fuel filter is blocked
          ③ fuel pump faulty
      - Check carburetor Is blocked or not
        - No blocked
        - blocked
          ① clean and wash it
5. Clutch, drive and driven pulley

<table>
<thead>
<tr>
<th>Trouble condition</th>
<th>The reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine can start but can’t Move the vehicle</td>
<td>① driving belt worn out, distortion</td>
</tr>
<tr>
<td></td>
<td>② driven plate worn out</td>
</tr>
<tr>
<td></td>
<td>③ driven plate spring distorted</td>
</tr>
<tr>
<td></td>
<td>④ driven lining worn-out</td>
</tr>
<tr>
<td></td>
<td>⑤ driving pulley shaft gear teeth cracked</td>
</tr>
<tr>
<td></td>
<td>⑥ final gear damage</td>
</tr>
<tr>
<td>Engine runs, but it stops Suddenly and seems to rush out (rear wheel rotates while idling)</td>
<td>① driven lining spring cracked or worn out</td>
</tr>
<tr>
<td></td>
<td>② weight rollers melt and stick to driving face</td>
</tr>
<tr>
<td></td>
<td>③ shaft worn-out</td>
</tr>
<tr>
<td>Climbing is not smoothly</td>
<td>① driving belt worn-out, distorted, or slipping</td>
</tr>
<tr>
<td></td>
<td>② weight roller worn-out</td>
</tr>
<tr>
<td></td>
<td>③ driving plate worn-out</td>
</tr>
<tr>
<td></td>
<td>④ driving plate spring distorted</td>
</tr>
<tr>
<td></td>
<td>⑤ driving pulley shaft worn-out</td>
</tr>
<tr>
<td>Can’t reach high speed</td>
<td>① driving belt worn-out or slipping</td>
</tr>
<tr>
<td></td>
<td>② weight roller worn-out</td>
</tr>
<tr>
<td></td>
<td>③ driving pulley shaft worn-out</td>
</tr>
<tr>
<td>Noise, or bad smell when running</td>
<td>① adherent grease on driving belt, pulley</td>
</tr>
<tr>
<td></td>
<td>② driving belt worn-out</td>
</tr>
<tr>
<td></td>
<td>③ driven plate spring distorted</td>
</tr>
<tr>
<td></td>
<td>④ driven pulley shaft worn-out</td>
</tr>
</tbody>
</table>
6. Handlebar steering astrayed when running.

**Trouble condition**
- Handlebar operates heavily
- Front and rear wheel swings
- Handlebar astrayed to one direction

**The reason**
- (front and rear wheel pressure are normal)
- 1. Steering column lock screw locked too tightly
- 2. Steel ball cracked
- 3. Rear, front wheel bearing swings
- 4. Front, rear wheel rim distorted
- 5. Loosen front axle nut
- 6. Front and rear wheel center not well-digined
- 7. Front fork crooked

7. Front, rear damper not in balanced

**Trouble condition**
- Damper is too soft
- Damper is too hard
- Damper has abnormal noise

**The reason**
- (front and rear wheel pressure is normal)
- 1. Damper spring is too soft
- 2. Carrying weight is too large
- 3. Damper oil leakage
- 4. Front fork guide rod crooked
- 5. Damper and damper cover cracked
- 6. Damper and damper cover cracked
- 7. Problems in damper tube and spring
- 8. Damper and damper cover cracked

8. Brake disorder.

**Trouble condition**
- Brake plate “□” mark points to “□” mark
- Noise when brake
- Faulty performance

**The reason**
- (adjustment according to standard procedure)
- 1. Brake lining worn-out
- 2. Brake lining cam worn-out
- 3. Brake cam worn-out
- 4. Brake hub worn-out
- 5. Brake lining worn-out
- 6. Unknown materials attached on brake lining
- 7. Contact surface of the wheel hub becomes rough
- 8. Brake cable over stretching or moving unsmoothly
- 9. Brake contacting surface with brake lining does not contact 100%
- 10. Water or sand drop into brake mechanism
- 11. Some grease on brake lining surface
9. Oil indicator malfunction (Only available for 2T engine)
(a) The oil lamp doesn’t light up, (when the main switch is at “ON” position)

Check and adjust

Trouble condition

The reason

Turn the signal lamp On. Check wiring Of battey

Normal

Lamp dims, light does Not flash, no light

Remove the oil lamp, And connect with Battery directly

Lamp lights

Lamp does not light up

Check electric plug

Good condition

No good

Remove oil gauge, Check the lamp light Up or not by moving The float

Float upward: lamp Extinguishes

Check all electric plug

Disorder

Good

No good

Remove oil gauge, Check the lamp by Moving the floating

Float downward: lamp turn on

The reason

Check electric plug is loose or disconnected

(b) Oil is enough but the indicator turns on all the time (when the main switch is “ON”)

Check and adjust

Trouble condition

The reason

Check all electric plug

Disorder

Good

No good

Remove oil gauge, Check the lamp by Moving the floating

Float upward: lamp Extinguishes

Float downward: lamp Turns on

Check oil tank distorted

1. fuse burn-out

2. main switch abnormal

3. main wiring disconnected

4. electric plug dropped off

5. main wiring disconnected

6. wrong wiring connection

7. bulb burn out

8. electric plug is loose or disconnected

9. main wiring disconnected

10. wrong wiring connection

11. float faulty

12. oil gauge switch disconnected or short circuit

13. oil tank distorted

14. some impure material dropping in
10. Fuel indication malfunction
(a) Wrong fuel level indication (when the main switch is “ON”)

Check and adjust

Trouble condition

The reason

Turn the signal lamp on; check wiring of battery

Lamp dims, light Not flash, not light

- fuel burn-out
- battery has no power
- main switch abnormal
- circuit plug dropped off
- main wiring disconnected

Remove the fuel gauge Moving float up and Down to check The needle movement

Indicator moves

Indicator no motion

- Float abnormal

Do the short and opening Circuit test on the fuel Gauge plug which connect To wire harness. Check the indicator movement

Indicator moves

Indicator on motion

Fuel gauge abnormal

Check electric plug

- good
- abnormal

- electric plug dropped off
- wrong connection
- wire broken or short circuit
(b) Fuel gauge needle is not steady and sometimes moves up and down (when the main switch is “ON”)

Check and adjust

Turn signal lamp on, Check wiring of battery

Remove the float Inside the tank, Move up and down to Check the needle’s movement

Move needle up and Down quickly(1 move/ Second), check the Needle’s movement

Check electric plug Connecting condition

Trouble condition

The reason

normal

fuse burn-out

No motion

battery has no power

Main switch abnormal

Oil inside the fuel gauge

Indicator moves good

Immediate plug dropped off or broken

main wiring disconnected

Indicator moves【No movement】

Insufficient or no damping

Oil inside the fuel gauge

Move needle up and down quickly(1 move/Second), check the Needle’s movement

Indicator moves【No movement】

electric plug drop-off or loose

wire broken or short circuit

Check electric plug Connecting condition

good

abnormal
11. The starting motor abnormal
(a) Starting motor can not rotate

Check and adjust

Trouble condition

The reason

Check brake switch

Brake lamp
Lights up

Brake lamp
no light

Turn signal lamp
No to check wiring
Of battery

Lamp does not
Flashing no light

normal

normal

normal

Push starting switch
And check the function
Of start relay

No function

No function

Connect starting motor
To battery directly

Starting Motor runs up

Starting motor
Has no motion

- fuse burn-out
- battery has no power
- main switch abnormal
- circuit plug dropped off
- main wiring disconnected

- battery has no power

- start switch bad connection
- relay wire broken or short circuit
- circuit plug is loose

- carbon brush worn out
- coil broken or short circuit
- starting motor wire broken
- circuit plug is loose, drop-off
- main wiring broken
(b) Starting motor running slowly or no pick-up

Check and adjust

Trouble condition

The reason

Turn signal lamp On, to check wiring of battery

- normal
  - Lamp dims, no Flasing, no light
    - battery has no power

Starting Connect motor to the starting motor to Battery directly

Running normal

Running slowly

- electric: plug is loose or drop off
- start relay bad connection

Kick the kickstarter lever

Easy to kick

- cylinder burn out
- wire broken or shout circuit

Difficult to kick

© Starting motor can not stop after starting

Check and adjust

Trouble condition

The reason

Main switch, Turn off

Motor can’t stop

Motor stops

- start gear can’t return
- start relay capacitor melted or short circuit
12. No sparking

- Replace new spark plug, then check again

Good sparking
- Check spark plug, cap and H.V. cable is loose or not
  - Good
  - Loosen

Weak sparking (Or no sparking)
- Spark plug cap is loose
- Plug is poor connection

- Check the CDI plug is loose or not
  - Good
  - Loosen

- Check the connection between CDI plug and each terminals, check The resistivity of each terminals
  - Good
  - Abnormal

- Check relative parts
  - Good
  - Abnormal

- Check ignition coil by the CDI tester
  - Abnormal

The reason:
- Check and adjust

Trouble condition:
- Replace new spark plug, then check again

Good sparking
- Check spark plug, cap and H.V. cable is loose or not
  - Good
  - Loosen

Weak sparking (Or no sparking)
- Spark plug cap is loose
- Plug is poor connection

- Check the CDI plug is loose or not
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  - Loosen

- Check the connection between CDI plug and each terminals, check The resistivity of each terminals
  - Good
  - Abnormal

- Check relative parts
  - Good
  - Abnormal

- Check ignition coil by the CDI tester
  - Abnormal

Defective ignition coil
13. Charging abnormal (battery over charging or over discharging)

Check and adjust

Measure battery’s Voltage then start engine

Trouble condition

The reason

malfunction

Check voltage rectifier Plug is loose or not

rectifier

disconnect

Check the voltage Between chassis and The red cable of Voltage rectifier

good

loosen

poor

red cable

volt remaining

The same

Voltage goes up To normal value, But after engine Stop, the voltage Goes down again

Battery is dead

Check voltage rectifier

Plug is loose or not

good

loosen

poor

red cable

volt remaining

The same

Voltage goes up To normal value, But after engine Stop, the voltage Goes down again

Battery is dead

Check voltage rectifier

Plug is loose or not

connection

dis

Check the voltage Between chassis and The red cable of Voltage rectifier

good

No voltage

malfunction

white cable

volt goes up

To normal value, But after engine Stop, the voltage Goes down again

poor

check voltage rectifier

Plug is loose or not

good

No voltage

malfunction

white cable

volt goes up

To normal value, But after engine Stop, the voltage Goes down again

poor

check voltage rectifier

Plug is loose or not

good

No voltage

malfunction

white cable

volt goes up

To normal value, But after engine Stop, the voltage Goes down again

poor

check voltage rectifier

Plug is loose or not

good

No voltage

malfunction

white cable

volt goes up

To normal value, But after engine Stop, the voltage Goes down again

poor

check voltage rectifier

Plug is loose or not

normal

abnormal

Check the resistivity Of A.C. generator coil

generator’s charging abnormal (over charging) white
Start engine, connect green cable to Chassis, then measure the voltage between chassis and red cable of voltage of

Voltage higher
Than specification

Voltage normal

Check the connection
Of the cable of Voltage rectifier

good

Poor connection

Check the resistivity
Of the body of Voltage rectifier

Out of spec

Voltage faulty
3. Checking and Adjustment:

(1) Regular checking table
(2) Battery
(3) Clean air cleaner
(4) The final reduction mechanism oil
(5) Spark plug
(6) Compression pressure measurement
(7) Ignition timing
(8) Throttle cables adjustment
(9) Idle adjustment
(10) Front brake adjustment
(11) Rear brake adjustment
(12) Tire
(1) **Regular checking table:**

1. ○ mark indicates periodical checking
2. □□□ indicates changing the parts

<table>
<thead>
<tr>
<th>Item</th>
<th>Checking period</th>
<th>Judgement standard</th>
<th>Remark</th>
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<td>b. brake shoe and brake lining worn-out</td>
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<td>c. wheel hub worn and damaged</td>
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<td><strong>Judgement standard</strong></td>
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</table>
|          | gen-er-a-l 
|          | che-cki-ng | every 300km | home | office | every12 
months | every6 
months | every3 
months | every12 
months | every12 
months | every6 
months |
<p>| Performance, Noise | | | | | | | | | | | |
| Low speed, Acceleration | | | | | | | | | | | Iling: 1900±100rpm |
| Exhaustion | | | | | | | | | | Check the color of exhausting-air |
| Air cleaner | | | | | | | | | | |
| Cylinder, cylinder head, inlet pipe, locking condition | | | | | | | | | | Locking torque Cylinder head: (cold) 1.0-1.2KG-m inlet pipe: cold) 1.0-1.2kg-m |
| Compression Pressure (G-MAX 50) | | | | | | | | | |
| Compression Pressure G-MAX 125 | | | | | | | | |
| Compression Pressure G-MAX 150 | | | | | | | | |
| Oil leakage | | | | | | | | |
| Oil quantity, Dirty | | | | | | | | |
| Oil filter blocked | | | | | | | |
| Fuel quantity | | | | | | | |
| Fuel leakage | | | | | | | |
| Clean Carburetor | | | | | | | |
| Carburetor’s Throttle and Choke function | | | | | | |
| Carburetor | | | | | | |
| Float height | | | | | | |
| Carburetor Adjustment | | | | | | |
| Change fuel pipe | | | | | | every 4 years |</p>
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<thead>
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<th>Item</th>
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<th>Judgement standard</th>
<th>Remark</th>
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<tr>
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<td>gen-era\n  check-\n    king</td>
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<td>office</td>
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<td>first month or Initial 300km</td>
<td>every6 months or 5000km</td>
<td>every12 months or 10000km</td>
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<td>Decarbonate on Combustion room And muffler</td>
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</table>
(2) Battery: Recharge when power is out
1. Remove the rear luggage cover by hand.
2. Screwing out the two screws on the battery cover. Remove the battery cover. (G-MAX125/150)
3. Remove the negative cable and then the positive cable, take out the battery to recharge.
4. To re-assemble the battery, please follow the opposite procedure of disassembling after recharging.

Note:
A. The battery is totally sealed, do not remove seal bolts when recharging
B. It’s no need to add any electrolyte for this re-filling free battery
   Please recharging (12V) by the following currency
   G-MAX50: Standard recharging: 0.4A* 5-10 hr or rapid recharging: 3A* 30min.
   G-MAX125/150: Standard recharging: 0.7A* 5-10 hr or rapid recharging: 3A* 30min.
(3) Cleaning air cleaner

1. Remove air cleaner cover
2. Take out the air cleaner filter

3. Clean the filter by the compressor air.

4. Assemble the air cleaner by the opposite procedure.

Note: Do not start the engine when the air cleaner is not installed
(4) The final reduction mechanism oil
1. Change the oil in the gear box:
   a. Turn off the engine after warm up.
   b. Put a bowl under the engine.
   c. Remove the draining bolt and Filler bolt to drain the gear oil off.
   d. Lock the draining bolt before refill 90c.c gear oil and then lock the filling bolt.
   e. Locking torque: 1.8kg-m

Note: Be sure the crankcase, tire or wheel are cleaned if there is grease/oil on it

(5) Spark plug
1. Remove spark plug
2. Check the spark plug electrode and check if it is Burnt out or not and carbonized or not
3. Clean the electrode, whether it is dirty
4. Spark plug specification
   
   **G-MAX50:** BP7HS (NGK) or equivalent spec.
   **G-MAX125/150:** C7HSA (NGK) or equivalent spec.

Gap of spark plug: 0.6~0.7mm

- Electrode burn out/
  Carbon piled up
- Washer is
  Distorted or not
- Procelain is
  Cracked or not
(6) Compression pressure measurement:

1. Measure it when the engine is warm.

2. Remove the cover.

3. Remove spark plug then place compression pressure gauge.

4. Fully open the throttle, and using starting motor 5 seconds continuously, measure the compression pressure.

5. Compression pressure:
   - 50cc: 6 kg/c @600rpm
   - 125cc: 12 kg/c @750rpm
   - 150cc: 11 kg/c @650rpm

6. When the compression pressure is too low, check the following:
   a. Cylinder head gasket cracked.
   b. Piston cylinder worn out.
   c. Piston ring worn out.

7. If the compression pressure is too high it may be due to the carbon piled up on combustion chamber and piston tip.
(7) **Ignition timing:**

This scooter is using CDI set, it is no need to adjust ignition timing.
If ignition timing is not correct, check the CDI sets AC magneto, change it if it is abnormal.

Checking ignition timing:
1. Remove seat the luggage compartment
2. Remove right body cover
3. Remove the fan case.
4. Check with ignition timing lamp.
   - keep the engine running at 1,900 ± 100 r.p.m the checking mark should lay in ±3° apart from “F”, mark.
5. Ignition timing: B.T.D.C.
   - 17° ±3° / 1900rpm

(8) **Throttle cables adjustment:**

1. Check the clearance of throttle.
2. Normal clearance: 1.5-3.5mm
3. Adjust it by rotating the adjust nut; change it if the throttle cables can’t be adjusted.
(9) Idle adjustment:

Note: adjust it when the engine is warm.
1. remove left body cover
2. start the engine and connect the tachometer
3. adjust the throttle valve screw to the specified revolution 1900±100rpm.
4. if the idling rpm is still unsteady or fuel up is not smooth, please adjust it by followings.
   a. Screw in the air adjust screw clockwise, then screw out counterclockwise.
      Recommended loop: 1 3/8×1/2
   b. Rotate air adjust screw clockwise and counterclockwise to find out the highest revolution location.
   c. Rotate the throttle valve screw to idling condition.
   d. Fuel up gradually until the idling running rpm is steady.
   e. If the rpm is still not steady please repeat above procedure.

(10) front brake adjustment:

1. check the clearance of front brake lever.
   Clearance: 10-20mm
2. if the clearance is beyond, standard check whether:
   a. The air mix into the pipe/caliper.
   b. The oil brake system is leaking.

Note:
Try brake lever to see if it’s loose.
Check the brake fluid. Once air mixed in The fluid pipe, which will reduce or Damage the brake efficiency or even its Function.

3. check the fluid level:
   a. Refill the brake fluid when the level is under the LOWER line.

Note:
   a. To prevent the fluid splitting onto the parts or clothes, put a piece of cloth on the bottom when refilling.
   b. Be caution not to mix water or particles into the master cylinder when refilling.
   c. Never use the fluid not complied with spec.
   d. In case the fluid stains on the eyes, wash with water at once and then ask for medical care immediately.
(11) Rear brake adjustment (drum brake only)
1. Check the clearance of rear brake lever.
   Clearance: 10-20mm
2. If the clearance is beyond the above standard, adjust it by rotating the screw.
   a. Left-handed rotation-enlarge the clearance.
   b. Right-handed rotation-reduce the clearance.

Note:
When the arrow of rear brake indicator align with the arrow of left crankcase, change the brake lining.

(12) Tire:
1. Check the tire air pressure (when it’s cold)
2. Tire pressure:
   Front tire: 2.0 kg/c
   Rear tire: 2.0 kg/c
3. Tire dimension:
   G-MAX 50:
   Front tire: 120/70-12
   Rear tire: 130/70-12
   G-MAX 125/150:
   Front tire: 120/60-13
   Rear tire: 130/60-13
Note:

a. Check and adjust the tire pressure when it is too low.
   The pressure is according to the carrier, Driver, passenger, accessories and cruise Speed.

b. Proper loading is very important for steering, riding, braking, performance and safety.

c. Never carry any parcel unfastened.

d. Load the heaviest parcel on the center of vehicle, balancing the weight on both sides.

e. Beware of the weight loaded properly and check the tire pressure. The total weight
   of carrier, driver, passenger, and accessories cannot exceed the approved
   limit, An overload vehicle is easy to cause tire damage and accident for rider.

4. Check is there any sharp Object pierce the tire.

5. Check the depth of tire Thread.
   a. Depth(front & rear):
      According to mark of tire “▲” to change a new tire
(1) Lubrication system
(2) Engine dismantling
(3) Drive pulley, starter, clutch, driven pulley
(4) Cylinder head and valve
(5) Cylinder and piston
(6) AC generator
(7) Final transmission mechanism
(8) Crankcase, crank shaft
(9) Carburetor
1) Lubrication System

1. Cylinder Head
2. Cylinder
3. Con-Rod
4. Crankshaft
5. Gear Box
6. Carburetor
7. Piston
8. Oil Cooler
Oil Pump Dismantling

1. Remove the rear section of muffler.
2. Remove the AC flywheel magneto.
3. Remove the AC generator coil.
4. Take off the locking bolts of the right crankcase cover.
5. Remove the crankcase cover.
6. Remove the washer, lock pin.
7. Remove starter reduction gear and the starting clutch.
8. Remove oil pump separate plate by taking off the 2 bolts.
9. Remove the bolts from oil pump driving gear
10. Take off the driving gear and chain.
11. Remove the oil pump by taking off the locking bolt of the oil pump.

- Oil pump Assembly

1. Install the inner and outer of the oil pump.
2. Install the oil pump shaft.

**Note:**
The notch of the oil pump shaft should comply with the notch of the inner gear.

3. Install the lock pin.
4. Match the lock pin hole to the pump cover and install the oil pump cover.
5. Put on the screws and tighten them.
6. After installing, turn the shaft lightly to assure installation.
7. Place the oil pump into the crankcase.

**Note:**
When installing, the arrow on the oil pump body should be pointed upwards. Then fill in the recommended oil before the installation.

8. Tighten the oil pump after installation.
## Measurement data

<table>
<thead>
<tr>
<th>item</th>
<th>Standard Value (mm)</th>
<th>Limit of use (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearance between the inner gear and outer gear</td>
<td>_</td>
<td>0.12</td>
</tr>
<tr>
<td>Clearance between the outer gear and oil pump body</td>
<td>0.045-0.10</td>
<td>0.12</td>
</tr>
<tr>
<td>Clearance between gear end and Oil pump body</td>
<td>0.045-0.10</td>
<td>0.12</td>
</tr>
</tbody>
</table>

## Troubleshooting

**Reduction in fuel oil volume**
- a. Natural consumption
- b. Leakage of fuel
- c. Piston loop seizes, or improperly installation
- d. Worn out of valve's oil seal

**Engine burning-out**
- a. Zero or too low oil pressure
- b. Blockage in oil route
- c. Did not use the fuel oil recommended
A. Dismantling engine
1. Take off the luggage compartment.
2. Take off the left and right body covers.
3. Take off the air cleaner fixing screws.
4. Loosen 2 nuts of intake manifold, withdraw intake system assembly.
5. Remove vacuum pipe, fuel pipe, auto choke, cap of spark plug, rear brake cable carburetor pipe, starter motor cable.
6. Remove the rear section of muffler, dismantle the 2 bolts of rear brake caliper, then remove the rear brake system assembly away from rear fork.
7. Loosen bolts of upper & lower engine hanger.
8. Remove the engine.

B. Installing Engine
1. To install engine, please reverse the above procedures.
2. Locking torque:
   - M8: 2.0-3.0kgf.m
   - M10: 3.0-4.0kgf.m
   - M12: 5.0-6.0kgf.m
3. After installing, please do the following checking and adjustment:
   a. Wiring for each circuit.
   b. Throttle cable
   c. Rear brake check.
   d. Fuel and oil route
(2) Drive pulley, starter clutch, driven pulley

A. Troubleshooting
B. Measurement data
C. Driving pulley
D. Starter
E. Clutch driven pulley
A. Troubleshooting:
   a. Engine starts, but vehicle don’t move.
      1. Driving belt worn out
      2. Driving plate worn out
      3. Clutch lining worn out
      4. Driving plate’s spring broken
   b. The vehicle stops or tremble when running.
      1. Clutch lining spring cracked or broken.
   c. Can’t reach high speed, no pick-up
      1. Driving belt worn out.
      2. Driving plate spring distortion.
      3. Weight roller worn out
      4. Driving plate dirty.

Note:
No grease and oil should be distributed over
  driving belt and driving plate.

B. Measurement data

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value (mm)</th>
<th>Limit of use (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The inner dia. Of slide driving plate</td>
<td>24.011~24.052</td>
<td>24.10</td>
</tr>
<tr>
<td>The outer dia. Of boss, movable Driving plate</td>
<td>23.960.~23.974</td>
<td>23.940</td>
</tr>
<tr>
<td>Belt width</td>
<td>20.0~21.0</td>
<td>19.0</td>
</tr>
<tr>
<td>Clutch lining thickness</td>
<td>3</td>
<td>1.5</td>
</tr>
<tr>
<td>Clutch outer inner diameter</td>
<td>125.0~125.2</td>
<td>125.5</td>
</tr>
<tr>
<td>Driven plate spring, free length</td>
<td>151</td>
<td>127</td>
</tr>
<tr>
<td>The outer diameter of driven Plate sets</td>
<td>33.965~34.025</td>
<td>33.95</td>
</tr>
<tr>
<td>The inner diameter of slide Driven plate</td>
<td>34.000~34.025</td>
<td>34.06</td>
</tr>
<tr>
<td>The outer diameter of weight Roller set</td>
<td>17.920~18.080</td>
<td>17.40</td>
</tr>
</tbody>
</table>
(C) Driving Pulley
1. Take off the screws of left cover, remove the left cover.

2. Remove the lock nuts of driving Plate and the nuts of Starter gear And clutch.

3. Take off the ramp plate, Belt and clutch.
4. Take off the boss and driving plate.

5. Continuous Various Transmission engagement speed inspection
   - Connect an electric tachometer.
   - Seated on the motorcycle with on level ground, increase the engine’s speed slowly and notice the RPM at which the motorcycle begins to move forward.

   Specified Engagement RPM : 3100 ± 300 rpm

6. Clutch “LOCK-UP” inspection
   - Apply the rear brake as firm as possible
   - Briefly open the throttle fully and notice the maximum engine RPM sustained during the test cycle.

   Specified Clutch “LOCK-UP” RPM : 5200 ± 400 rpm
5. To assemble the driving pulley, reverse the whole procedure.

<table>
<thead>
<tr>
<th>Locking torque:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Nut of driving pulley M12: 4.0-5.5kg/m.</td>
</tr>
<tr>
<td>2. Locking nut of clutch M12: 4.0-5.5kg/m</td>
</tr>
</tbody>
</table>

6. Checking driving belt
   (1) Check driving belt is cracked or not, rubber and fiber is loosened or not, also check if they are extraordinary worn out.
   (2) Driving belt width:
       limit of use: change it below 19mm

7. Disassemble slide driving plate set.
   (1) Remove bush of slide driving plate.
   (2) Remove screw, and disassemble the cover of slide driving plate.
   (3) Remove ramp plate.
   (4) Remove weight roller.

8. Checking
   (1) Check the wearing condition of weight roller.
       Limit of use: change it below 17.4mm

   (2) Check gasket inner dia of
slide driving plate: limit of use : change it over 24.1mm.

(3) Check the driving pulley surface wearing condition.
(4) Check the outer diameter of the contact surface of the movable driving plate.
limit of use : change it below 23.94mm.

9. Assemble the slide driving plate.
   (1) Clean up the inside surface of slide driving plate, then assemble the roller.
   (2) Assemble the ramp plate.

(3) Other procedure refers to the opposite procedure of disassembling.
D. Starter dismantle

1. Dismantle left crankcase cover

2. Remove hexagon nut, then remove the starter lever.

3. Remove five screw of separated plate.

4. Remove start spring from start returning position.

5. Remove driven gear comp. of kick starter.

6. Remove the retaining C-type Ring.

7. Remove spindle comp. of kick starter.

8. Checking starter
   a. Check the wearing condition of the outer diameter of spindle comp and the inner diameter of bush and gear.
   b. Check the wearing condition of shaft of driven gear comp. Gear sets and ratchet.

9. Assembling the starter
   Assemble the starter follows the opposite procedure of dismantling.
   Locking torque : M6: 1.0~1.2kg/m.

Note:

① Make sure one end of the torsion spring is hooked on the groove of driven gear, and another end of torsion spring is hooked on the pole of inside of left crankcase.
② Put some grease in every shaft and gear sets before assembly.
E. Clutch driven pulley

1. Dismantling the clutch
   a. Remove left crankcase cover.
   b. Remove driving plate.
   c. Remove driving belt.
   d. Remove locking nut, then remove clutch.

2. Assemble the clutch: follows the opposite procedure of dismantling.

   Locking torque:
   M12: 4.0~5.5kg.m

3. Checking clutch:
   dismantling tool

   a. Check clutch driving face.
      Check clutch cover about its wearing condition
      And inner diameter measurement.
      • limit of use: change it above 125.5mm

   b. Check clutch lining wearing condition and
      Measure the lining thickness.
      • limit of use: change it below 1.5mm.
c. Check driving spring free length.
   Standard: 151 mm
   Limit of usage:
   Change it below 127 mm
d. Check wearing condition of driving plate sets. And measure outer diameter.
   • limit of use: change it above 33.95 mm.
e. Check wearing condition of slide driven plate.
   And measure its Inner diameter.
   • limit of use: change it above 34.00 mm.
f. Check is there any wearing occur to the ditch
g. Check wearing condition of oil seal, if necessary, change a new one.

(5) Cylinder head and valve

A. Trouble shooting
B. The operation data information
C. Dismantling and installing

A. Troubleshooting.
If the cylinder head is malfunctioned, usually it can tell from the measurement of the Compression pressure or from the noise that comes from the upper part of the engine.
1. Unsmooth idle speed
   - Compression pressure is too low.
2. Insufficient compression pressure.
   - Poor adjustment of valve clearance
   - Valve being burned out or bent
   - Valve timing is not correct
   - Valve spring is damaged.
   - Poor sealing of valve base.
   - Leakage in Cylinder head gasket.
   - Cylinder head twisted or cracked.
   - Spark plug is not properly installed.
3. Compression pressure is too high.
   - There is too much carbon accumulated in the combustion chamber.
4. There is white fume coming out from the exhaust pipe.
- The valve stem or valve guide pipe is worn out.
- Valve stem’s oil seal is damaged.

## B. The operation data information

<table>
<thead>
<tr>
<th>Description</th>
<th>IN/EX</th>
<th>Standard Value (mm)</th>
<th>Limit of use (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearance between adjuster tapped</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Screw and valve stem (Before warm up)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>0.08</td>
<td></td>
</tr>
<tr>
<td>Compression pressure (throttle open full)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>12kg/750rpm</td>
<td>(125CC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11kg/700rpm</td>
<td>(150CC)</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>26.3(125CC)</td>
<td>25.9(125CC)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>26.625(150CC)</td>
<td>26.23(150CC)</td>
</tr>
<tr>
<td>Height of the cam’s convex part</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>26.3(125CC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26.53(150CC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>26.3(125CC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>26.53(150CC)</td>
<td></td>
</tr>
<tr>
<td>Inner diameter of rocker arm shaft</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>10.00~10.015</td>
<td>10.10</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>10.00~10.015</td>
<td>10.10</td>
</tr>
<tr>
<td>Outer diameter of rocker arm shaft</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>9.972~9.987</td>
<td>9.91</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>9.972~9.987</td>
<td>9.91</td>
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<tr>
<td>Valve base angle</td>
<td>IN&amp;EX</td>
<td>1.0</td>
<td>1.8</td>
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<tr>
<td>Outer diameter of valve stem</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>4.975~4.900</td>
<td>4.90</td>
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<tr>
<td></td>
<td>EX</td>
<td>4.955~4.970</td>
<td>4.90</td>
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<tr>
<td>Inner diameter of valve guide</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>5.000~5.012</td>
<td>5.30</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>5.000~5.012</td>
<td>5.30</td>
</tr>
<tr>
<td>Clearance between valve stem and Valve guide</td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>0.010~0.037</td>
<td>0.08</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>0.030~0.057</td>
<td>0.10</td>
</tr>
</tbody>
</table>
C. Dismantling and installing the Cam shaft

1. Take off the left cover.
2. Remove the intake pipe from the Cylinder head cover.
3. Take off the 4 bolts of the cylinder head cover and take off the cylinder head cover.

4. Turn the flywheel counterclockwise and let the "T" mark on the flywheel point to the crankcase mark and make the round hole on the cam chain gear point upwards.
   This is the upper dead point of compression.
5. Take off the cam shaft holder, the nut and the locking pin.
6. Remove the cam gear from the cam chain.
7. Remove the cam shaft.
Check cam shaft
Check the convex surface and the height and see whether it has been damaged.

Limit of Use:
IN: replace it below 25.90(125CC), 26.23mm(150CC)
EX: replace it below 25.90(125CC), 26.13mm(150CC)

Check camshaft. If the bearing is loosen or worn out, change the whole set if necessary.

**Check cam shaft holder**

1. Check the cam shaft holder, cam rocker arm, and cam rocker arm shaft and see whether it is loosen or worn out.

   **NOTICE:**
   Do check if there is any damage on the cam rocker arm sliding surface.

2. Cam shaft holder and cam rocker arm outer dia measurement:

   Limit of use: replace it above 10.10mm.

3. Cam rocker arm inner dia measurement:

   Limit of use: replace it above 10.10mm.

4. Cam rocker arm shaft and rocker arm outer dia measurement:

   Limit of use: replace it below 9.91mm.

5. Clearance between the Cam rocker arm and rocker arm shaft.

   Limit of use: replace it above 0.10mm.

**WHEN INSTALLING:**

1. The mark “EX” on the cam shaft holder is the exhaust rocker arm, one-way stopper.

   Install the exhaust rocker arm, the inlet rocker arm, and the rocket arm shaft.

   **NOTICE:**
   a. The tangent angle of the heat side of intake valve’s rocker arm shaft is to match with the bolt of the cam holder.
   b. The tangent angle of the exhaust valve’s rocker arm shaft is to match with the bolt of the cam holder.

2. Turn the flywheel to make the T mark pin correctly. The hole on the cam chain gear should point upwards. Both the left and right concave points and the cylinder head are at parallel position (convex part of cam shaft points upwards), then install the cam shaft on the cylinder head.

3. Install the cam chain onto the cam shaft gear.

4. Install the locking pin.

5. Install the camshaft holder, washer and nuts on the cylinder head.

6. Lock tightly the cylinder head nuts.

   Locking torque: Cam shaft holder nuts: 2.0kg-m

   **NOTICE:**
   a. Put some grease on the bolt thread of cam shaft holder.
   b. Lock the nuts of the cam shaft bracket in “cross” sequence for 2-3 times.

7. Adjust the valves clearance.
Dismantling the cylinder head:
1. Remove the carburetor.
2. Remove the muffler.
3. Remove the fan cover.
4. Remove the bolts on the engine cover.
5. Remove the camshaft.

6. Remove the cylinder head
7. Remove the lock pin, cylinder head gasket.
8. Remove cam chain guide

Notice:
- Not to injure the contact surface of the cylinder.
- Avoid any object dropping into the engine.

Further dismantling
- Use the valve contracting tool to remove valve pin, supporter, the valve spring collar, valve spring and valve stem oil seal.

Notice:
- Valve Spring has to be operated by the valve spring contractor.
- To assemble the cylinder head, please follow the opposite procedure as above.
(6) **Cylinder and piston**

A. Trouble shooting
B. The Operation notice
C. Data
D. Dismaniling cylinder, piston
E. Installing cylinder, piston

### C. Data (150CC)

<table>
<thead>
<tr>
<th>Part name /description</th>
<th>Standard value (mm)</th>
<th>Limit of use (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cylinder</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bore</td>
<td>56.990~57.010</td>
<td>57.100</td>
</tr>
<tr>
<td>Curve</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td>Cylindrility</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td>Roundness</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td><strong>Piston/ Piston ring</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clearance b/w Piston and Piston ring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st ring</td>
<td>0.03~0.07</td>
<td>0.10</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.02~0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>Clearance of cutting section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st ring</td>
<td>0.10~0.25</td>
<td>0.50</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.10~0.25</td>
<td>0.50</td>
</tr>
<tr>
<td>side ring</td>
<td>0.2~0.7</td>
<td>---</td>
</tr>
<tr>
<td>Piston outer diameter</td>
<td>56.975~56.990</td>
<td>56.90</td>
</tr>
<tr>
<td>Measuring location of piston outer dia.</td>
<td>Down to 5 mm from the piston skirt</td>
<td>---</td>
</tr>
<tr>
<td>Clearance b/w piston and cylinder</td>
<td>0.025~0.035</td>
<td>0.10</td>
</tr>
<tr>
<td>Piston pin hole inner dia</td>
<td>15.006~15.012</td>
<td>15.030</td>
</tr>
<tr>
<td>Piston pin outer diameter</td>
<td>14.990~14.992</td>
<td>14.96</td>
</tr>
<tr>
<td>Clearance between piston and piston pin</td>
<td>0.020~0.017</td>
<td>0.025</td>
</tr>
<tr>
<td>Connecting rod small end inner dia</td>
<td>15.010~15.028</td>
<td>15.060</td>
</tr>
</tbody>
</table>
A. Troubleshooting.
   a. Compression pressure is too low, difficult to start engine and engine running unsmothly.
      1. Cylinder head gasket cracked
      2. Spark plug is not well locked
      3. Piston ring worn out or cracked
      5. Reed valve is out of order.
   b. Compression pressure is too high; Engine overheating; abnormal noise.
      1. Piston tip has too much carbon accumulated.
   c. Abnormal piston noise
      1. Cylinder and piston worn out.
      2. Piston pin hole or Piston pin worn out.
      3. Connecting rod small end or bearing worn out.
   d. Abnormal piston or cylinder noise
      1. Piston ring worn out or cracked
      2. Cylinder worn out or cracked

B. The operation notice
   1. Clean before operation to avoid particles dropping into the engine.
   2. The contact surface of gasket must be clean.
   3. Dismantle cylinder and cylinder head by screw driver. Do not injure the contact surface.
   4. Cylinder inner surface and piston outer face can’t be injured. Contact Surface should lubricate by specified oil.

C. Data (125CC)

<table>
<thead>
<tr>
<th>Part name /description</th>
<th>Standard value ( mm )</th>
<th>Limit of use ( mm )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bore</td>
<td>51.490~51.510</td>
<td>51.60</td>
</tr>
<tr>
<td>Curve</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td>Cylindrility</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td>Roundness</td>
<td>-</td>
<td>0.005</td>
</tr>
<tr>
<td>Clearance b/w Piston and Piston ring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st ring</td>
<td>0.03~0.07</td>
<td>0.10</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.02~0.06</td>
<td>0.10</td>
</tr>
<tr>
<td>Clearance of cutting section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st ring</td>
<td>0.15~0.35</td>
<td>0.50</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.15~0.35</td>
<td>0.50</td>
</tr>
<tr>
<td>side ring</td>
<td>0.2~0.8</td>
<td>-</td>
</tr>
<tr>
<td>Piston outer diameter</td>
<td>51.460~51.480</td>
<td>51.40</td>
</tr>
<tr>
<td>Measuring location of piston outer dia.</td>
<td>Down to 7mm from the piston skirt</td>
<td>-</td>
</tr>
<tr>
<td>Clearance b/w piston and cylinder</td>
<td>0.025~0.035</td>
<td>0.10</td>
</tr>
<tr>
<td>Piston pin hole inner dia</td>
<td>13.022~13.013</td>
<td>13.045</td>
</tr>
<tr>
<td>Piston pin outer diameter</td>
<td>12.996~13.00</td>
<td>12.96</td>
</tr>
<tr>
<td>Clearance between piston and piston pin</td>
<td>0.02~0.017</td>
<td>0.025</td>
</tr>
<tr>
<td>Connecting rod small end inner dia</td>
<td>13.015~13.028</td>
<td>13.060</td>
</tr>
</tbody>
</table>

D. Dismantling
   a. Dismantling Cylinder
1. Remove the cylinder head.
2. Remove 2 bolts, then the camshaft chain adjuster
4. Remove cylinder.
5. Remove the cylinder gasket, lock pin and clean the gasket on the cylinder.

b. Dismantling piston
1. Remove the piston pin clip.
   NOTICE: Don’t drop the clip into the crankcase.
2. Remove the piston pin and take off the piston.
3. Check piston, piston pin, piston ring.
4. Remove the piston ring
   NOTICE: Don’t make piston ring worn out or damaged.
5. Clean the carbon in the groove of the piston ring.

c. PISTON OUTER DIA MEASUREMENT:
1. Measuring location:
   Perpendicular to the piston pin hole, down to 7mm(125CC), or 5mm(150CC) form the piston skirt.
   Limit of use : change it when less than 51.4mm.( 125CC)
   Limit of use : change it when less than 56.9mm.( 150CC)
2. The clearance between the piston and piston pin:
   Limit of use : change it when above 0.005m.
3. Checking any wearing, damage inside the cylinder.
   Vertical to piston pin, and in X-Y direction to measure cylinder bore from the upper, middle and lower location.
   Limit of use : Change it when above 51.6mm.( 125CC)
   Limit of use : Change it when above 57.1mm(150CC)
4. The maximum clearance between the cylinder and piston pin.
   Limit of use : Change it when above 0.1mm.
5. The difference between the X and y is the roundness.
6. The cylindrility is the max value of the difference between the upper, Middle and lower position of the inner dia in X or Y direction.

Limit of use: Roundness: change it when above 0.005mm.
Cylindrility: change it when above 0.005mm.

d. Checking the flatness of cylinder contact surface.

Limit of use: change it when above 0.05mm.

e. Connecting rod small end inner diameter measurement.

Limit of use: change a new one when above 13.06mm. (125CC)
15.06mm. (150CC)
E. Installing Cylinder and piston
   a. Installing piston and piston rings
      1. Lubricate the piston rings by motor oil.

   NOTICE:
   a. Be careful not to scratch the piston and not to break the piston ring.
   b. The mark (on the ring) should be upward when installing.
   c. After installing, the ring should be smoothly rotated.

   2. Clean up the residual gasket on the crankcase.
      NOTICE:
      Do not drop other objects into the crankcase.

   3. Assembly the piston, piston pin and piston pin clip.
      NOTICE:
      a. The mark “IN” on the piston tip should face to the INLET side.
      b. Do not drop the piston pin clip into the crankcase and to clog the crankcase with rags.

b. Installing piston
   1. Fix the lock pin and gasket on the crankcase.
   2. Lubricate the Cylinder inner surface, piston and piston rings by Motor Oil.
   3. Install the piston ring into the cylinder carefully.

   NOTICE:
   a. The piston ring cannot be damaged or cracked.
   b. The cutting section of three rings must be arranged at intervals of 120°
(7) A.C. Generator

A. Dismantling AC generator
B. Installing AC generator

Dismantling AC generator

1. Dismantle the rear section of muffler.
2. Remove fan cowl.
3. Remove the M6 screws
4. Remove screws of flywheel magneto.
5. Remove the AC flywheel magneto by special tool.

6. Remove the flywheel.
7. Remove the electric plug of AC flywheel magneto.
B. Installing AC generator

To install, please reverse the dismantling procedure.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Locking torque:</td>
<td></td>
</tr>
<tr>
<td>M6:</td>
<td>1.0~1.2kg/m</td>
</tr>
<tr>
<td>M12:</td>
<td>3.2~4.0kg/m</td>
</tr>
</tbody>
</table>
(8) Final transmission mechanism

A. Troubleshooting.

B. Dismantle the final transmission mechanism.

C. Check the final transmission mechanism.

D. Assemble the final transmission mechanism.

A. Troubleshooting

- Engine can be started, but the vehicle doesn’t move.
  1. Gear worn-out or cracked.
  2. Gear burnt out.
- Noise occur when running.
  1. Gear worn out, burnt or gear surface.
  2. Bearing worn out of loosen.
- Oil leakage
  1. Too much oil
  2. Seal worn out or damaged.
B. Disassemble the final transmission mechanism:

1. Remove the rear wheel.

2. Drain the oil in the gear box.

3. Remove the bolt in the gear box cover.
   Take off the gear box.
3. Remove the final reduction gear
   And idle gear.

5. Clean up the gear box.

C. Check the final transmission mechanism
   1. Check the wearing condition of driving shaft and gears.
      Gear teeth number: 14 T (125CC) ; 15 T (150CC)
2. Check the wearing condition of idle gear shaft and idle gears.

Gear teeth number

- 43 T (125CC)
- 42 T (150CC)

3. Check the wearing condition of the final reduction gear.

4. Check the wearing condition of the oil seal and bearing.

D. Assemble the final transmission mechanism, please follow the opposite procedure of disassembling. After locking the drain bolt, refill 90cc of gear oil SAE90.

| Locking torque: | M6: 1.0~1.2kg/M |
| M10: 3.5~4.0kg/M |
| Drain bolt:      | M8: 1.8kg/M      |
(9) Crankcase, Crankshaft:

A. Disassembling diagram.

B. Troubleshooting.

C. Data

D. Remove crankcase and crankshaft.

E. Check crankshaft.

F. Assemble the crankcase.
A. Disassembling diagram
Torque: 1.0~1.2kg-m

B. Troubleshooting
Engine noise:
1. The bearing of final transmission mechanism is loosen.
2. Crank pin of bearing is slack.
3. The bearing of gear box is loosen.
### C. Data

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value (mm)</th>
<th>Limit of use (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clearance of connecting rod big end axle direction</td>
<td>0.10–0.35</td>
<td>0.55</td>
</tr>
<tr>
<td>Clearance of connecting rod big end vertical direction</td>
<td>-</td>
<td>0.04</td>
</tr>
<tr>
<td>Swingness of the crank shaft journal</td>
<td>0.03</td>
<td>0.10</td>
</tr>
</tbody>
</table>

### D. Remove the crankcase and crankshaft by the following procedures:

1. Remove the engine.
2. Remove the muffler.
3. The carburetor.
4. Engine corer.
5. Cylinder head.
7. The driving plate.
8. AC flywheel magneto.
9. The starter clutch.
10. Oil pump.
11. Bolts of left/right crankcase.
E. Check crankshaft

1. Measure the difference of the connecting rod big end between the X and Y

   Limit of use: replace it when above 0.04mm.

2. Measure the swing ness of the crankshaft journal.

   Limit of use

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
</tr>
<tr>
<td>Change it when above 0.1mm</td>
<td>Change it when above 0.1mm</td>
</tr>
</tbody>
</table>

3. Check the looseness of crankshaft bearing.
   If it is loosen, replace to a new one.

F. Assemble crankcase:

1. Assemble crankcase according to the opposite procedure of disassembling.
2. The locking torque of bolts and nuts are described in previous chapter please refer.
Carburetor:

A. Troubleshooting.
B. Dismantling the carburetor.
C. Dismantling the float and nozzle.

Carburetor Specifications:

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>M2-125</td>
<td>M2-150</td>
</tr>
<tr>
<td>Carburetor type</td>
<td>KEIHIN CVK24</td>
<td>KEIHIN CVK24</td>
</tr>
<tr>
<td>Bore size</td>
<td>24mm</td>
<td>24 mm</td>
</tr>
<tr>
<td>I.D. NO</td>
<td>013</td>
<td>046</td>
</tr>
<tr>
<td>Idle r/min</td>
<td>1700 ± 100</td>
<td>1700 ± 100</td>
</tr>
<tr>
<td>Float height</td>
<td>18.0 ± 0.5 mm</td>
<td>18.0 ± 0.5 mm</td>
</tr>
<tr>
<td>Main jet</td>
<td>#102</td>
<td>#102</td>
</tr>
<tr>
<td>Jet needle</td>
<td>4HGGN</td>
<td>4HLGL</td>
</tr>
<tr>
<td>Needle jet</td>
<td>P-O</td>
<td>P-O</td>
</tr>
<tr>
<td>Pilot jet</td>
<td>#35</td>
<td>#35</td>
</tr>
<tr>
<td>Pilot screw (PRE-OPENING)</td>
<td>2 1/4 turns out</td>
<td>1 1/2 turns out</td>
</tr>
</tbody>
</table>
(A) Troubleshooting

- **Difficult to start**
  1. No sparking in spark plug.
  2. Compression pressure too low.
  3. No fuel in the carburetor
     - air cleaner blocked
     - oil pipe blocked
     - bad adjustment of the fuel level
  4. Float valve is jell

- **Mixed air too dilute**
  1. Main jet blocked
  2. Float valve blocked
  3. Fuel level too low
  4. Fuel system blocked
  5. Second air sucked into intake system
  6. Bat vacuums during piston movement
  7. Throttle valve malfunction
● Too much fuel in the engine
  1. Air cleaner blocked
  2. Mixed air is too dilute in the idle system

● Sparking unsteady while increasing speed
  1. Ignition system malfunction.
  2. Air mixture is too dilute

● Difficult to start, Ignition off, Unstable idling
  1. Fuel system blocked
  2. Ignition system malfunction
  3. Air mixture is too dilute or too thick
  4. Fuel deterioration
  5. Second air sucked into intake system.
  6. Bad idle adjustment
  7. Bad fuel volume adjustment
  8. Idle system or fueling system blocked
  9. Bad adjustment of fuel level

● Mixture air too thick
  1. Auto chock system malfunction
  2. Float valve malfunction
  3. Fuel level is too high
  4. Air route blocked
  5. Dirty air cleaner
  6. Fuel overwhelming in carburetor
(B) Dismantling the carburetor
1. Remove the auto starter connector.
2. Remove the throttle cable, then the fuel pipe from the carburetor.
3. Remove the screws on the intake manifold.
4. Unscrew the fixing belt on the connecting pipe.
5. Remove the carburetor.

Assembling the carburetor
To assemble the carburetor, please follow the reversed procedures of the dismantling and do the following adjustment after installation is finished:
- Adjust the throttle cable
- Idle adjustment

Adjustment of fuel volume adjusting screws
Note: Fuel volume adjusting screws have been set up properly before sale thus there is no need for self-adjustment. However, when dismantling, a record of the turning loop has to be kept for future assembling purpose. Put up the center stand while adjustment.

1. After the engine is warm up, adjust the stopping screw throttle of throttle valve to the standard rpm.
   Idle rpm 1,700±100rpm
2. Adjust the fuel volume adjusting screws to the highest stable rotation.
   This rotation value is the optimum setting of throttle
3. Fuel up for several times, make sure that the idle rpm is within the standard rpm.
   Repeat the above procedure if the idle rpm is unstable.
(C) The float nozzle

1. Dismantling
   - Remove the screws to take off the float chamber.
   - Remove the float, the float pin, and float valve.

2. Checking
   - Check the float valve, valve base to see whether it is blocked or damaged.
   - Check the float valve, valve base surface if sectional worn out or dirty.

   □ Note:
   When the valve is too dirty or severely worn-not, the Valve base will not close completely thus will result in increasing of fuel level and fuel leakage problem. A new replacement is needed.

   - Remove the main jet, needle jet base, needle jet, slow jet and fuel adjusting screws.

   □ Note:
   - Avoid any damage on the jets and the fuel adjusting screws.
   - Before dismantling, record the number of turning loops.
   - No screwing-in movement by force to avoid any damages.

   - Use the detergent solution to clean the jets. Fuel adjusting
   After cleaning off the blockage and the dirt, screw
   blow dry by compressed air.

   Note:
   Remove the vacuum and air-interrupt valve for Cleaning.

3. Assembling
   - Assemble the slow jet, needle jet, main jet and fuel adjusting screws.

   □ Notice
   Record the number of turning loops before dismantling

   - Assemble the float valve, float and float pin.

4. Checking fuel level

   □ Notice
   - Check after the checking on the float valve and the float is done.
   - Put the float gauge on the float chamber perpendicularly to the main jet for measurement.
(12) Fuel tank

A. Troubleshooting.

1. Engine can’t start:
   a. No fuel in fuel tank.
   b. Fuel pipe is blocked.
   c. Auto cock and filter is blocked.
   d. The membrane of auto cock is over swell.

2. The membrane of auto cock is over-extended.
   a. Fuel tank cover’s ventilation hole is blocked.
   b. Fuel pipe is crooked, squeezed, or blocked.
   c. Auto cock and fuel filter is dirty.

B. Fuel supply system diagram:
B. Dismantling and assembling

**Fuel Tank**

1. Remove the front luggage box.
   Open the fuel tank cover cap.
2. Remove the fuel tank cover.

3. Remove the fuel pipe.
4. Remove the connecting terminal of the fuel gauge.

5. Remove the fuel gauge.
6. Remove the fixing blot of the fuel tank.
7. Take off the fuel tank.
8. When re-assembling, please follow the opposite procedure of disassembling.
   Locking torque: M6: 1.0-1.2kgf-m
D. Oil tank disassembling diagram: (only available for M2-50)

E.Dismantling and assembling oil tank: (only available for M2-50)

1. Drain off the oil.

2. Disconnect plug of oil gauge.

3. Remove the oil tank.

4. Clean the oil tank.

5. To assemble the oil tank, please follow the opposite procedures of dismantling.
V. Electric equipment:

(1) Troubleshooting

(2) Battery
   1. Check the cells of battery
   2. Recharging
   3. Test the recharging performance

(3) Recharge system
   1. The wiring diagram of recharge system
   2. Check A.C. flywheel magneto.
   3. Check regulator/rectifier.

(4) Ignition system
   1. The wiring of ignition
   2. Check spark plug
   3. Check H.T. cable and H.V. coil
   4. Check C.D.I. set

(5) Starting system
   1. The wiring of starting
   2. Checking the starter
   3. Dismantling the starting motor
   4. Checking the starting motor
(1) Troubleshooting:

A. Recharge system:

• No power:
  1. Battery over discharging
     ① No electrolyte in battery.
     ② Battery is bleached
     ③ Short circuit in the Battery.
     ④ Regulator malfunction
  2. The battery wires are disconnected.
  3. Fuse is broken.
  4. Ignition switch is abnormal.

• Voltage is too low:
  1. Battery recharges insufficiently.
  2. The bad connection on wiring system.
  3. Recharge system is abnormal.
  4. Regulator malfunction.

B. Ignition system:

• The sparking of spark plug is abnormal:
  1. Spark plug is dead.
  2. Wire connection is broken or short Circuits.
     ① between A.C. generator and CDI sets
     ② between CDI sets and High Voltage coil.
     ③ between CDI sets and main switch.
     ④ between main switch and spark plug.
  3. Main switch is out of order.
  4. H.V. coil is not in good function.
  5. CDI sets is out of order.
  6. A.C. generator is not in good function.

C. Starting system:

• Starting motor can’t rotated:
  1. The fuse is broken.
  2. Battery recharges in sufficiently.
  3. Main switch is out of order.
  4. Starting motor switch is out of order.
  5. Front/rear brake switch is out of order.
  6. Starter relay is out of order.
  7. Wire disconnects or broken.
  8. Starting motor is out of order.

• Currency is unstable.
  1. The wiring of batter connection is not good.
  2. Ignition system connection is not good.
  3. Ignition system is short circuit.
  4. Lamp system connection is not good or short circuit.

• Abnormal recharge system:
  1. The plug connection is not good.
     wire broken or short circuit.
  2. Rectifier is out of order.
  3. A.C. flywheel magneto is abnormal.

D. Engine running unsmoothly:

  1. Ignition primary circuit.
     ① the wire or plug of wiring connection is not good.
     ② main switch disconnects.
  2. Ignition secondary circuit.
     ① Ignition coil is not in good function
     ② Spark plug is dead.
     ③ H.V. coil is not in good function.
     ④ The spark plug cap is not in good function.
  3. Ignition timing
     ① A.C. generator is out of order.
     ② A.C. coil is not in good function.
     ③ C.D.I. sets is out of order.

• Starting motor runs weakly.
  1. Battery recharges insufficiently.
  2. Wiring system disconnects.
  3. The alien objects drop in the motor or gear.

• Starting motor can rotate, but engine can’t start up.
  1. Starting gear is abnormal.
  2. Starting motor is reversedly rotating.
  3. Battery is out of order.
(2) **Battery:**

1. Check the cells of battery.
   Always remove the battery negative Cable(-) first, then positive cable (+). But connect the positive cable (+) first, then connect the Negative cable(-) when assembling.
2. Recharge

- Connection procedure:
  connect the positive cable(+) of the negative cable(+) of the battery, and the negative cable(-) of the recharge to the negative cable(-) of the battery.

- Recharging currency:
  Please recharge (12V) according to the following current and time.
  Standard: 0.4A * 4-10Hr or Rapid: 3A * 60min(50cc)
  Standard: 0.7A * 5-10Hr or Rapid: 3A * 60min(125/150cc)

**NOTICE:**
This battery is totally sealed. Do not remove seal bolt when recharging.

**Notice:**
- Keep away from fire when recharging.
- The “ON” or “OFF” of recharging currency must be operated by the switch of recharge. It will cause spark or explosive if plug or unplug the cable directly.
3. Testing the recharging performance

- This test needs to be done when the battery is fully recharged.
- This test needs to be done after engine is warm-up.

a. Disconnect the orange cable of regulator.
b. Open the fuse box, to remove the white cable.
c. Connect currency meter between red/white cable and fuse.

While testing, the red wire cable must not touch the frame.

d. Set the head lamp switch at “OFF”, engine revolution is at 2000 rpm while testing.

Then increase the rpm slowly. (Assume the battery is fully charged. situation)

<table>
<thead>
<tr>
<th>Head Lamp Switch</th>
<th>Recharging rpm</th>
<th>2,500rpm</th>
<th>6,000rpm</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF(DAY)</td>
<td>Under2,000rpm</td>
<td>0.6A(MIN)</td>
<td>1.5A(MIN)</td>
</tr>
<tr>
<td>ON(NIGHT)</td>
<td>Under2,000rpm</td>
<td>0.6A(MIN)</td>
<td>1.5A(MIN)</td>
</tr>
</tbody>
</table>

e. If the testing result does not match the standard value, check the regulator.
(3) Recharge system:

A. Recharge system diagram for M2-50
B. Recharge system diagram for M2-125/150
2. Check A.C. Generator
a. Open the seat cover and remove the luggage box.
b. Measure the resistance value of terminals.

<table>
<thead>
<tr>
<th>Terminal Comparison</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yellow V.S. black</td>
<td>0.1-1.0</td>
</tr>
<tr>
<td>White V.S. black</td>
<td>0.2-2.0</td>
</tr>
</tbody>
</table>

3. Check regulator
Measure the resistance value between each terminal,
It should be in the specified range, otherwise change a new one.
(4) Ignition system:

1. the wiring or ignition

2. Check spark plug.
3. Check the H.V. cable and H.V. coil by using the CDI tester.
4. CDI sets checking.
   Check with the CDI tester and please follow the instruction manual.
   If the CDI test failed, please change a new one.
(5) The starting system:

1. The wiring of starting

2. Make sure the Engine RUN/OFF switch is in “Run” position.

3. Check the safety switch by operating the brake lever, and the brake lamps shall light on.
4. Check the starting relay
   a. Find the control coil by measuring the resistance.
   b. Connect green/white cable to positive pole of negative pole of battery. It means starter is and both Red Black cable of staring motor have currency passing through.

3. Dismantling the starting motor
   (a) Remove 2 screws on starting motor.
   (b) Remove starting motor cables.
4. Checking the starting motor
   • Check the function by connecting the starting motor to battery.
     (Check if it is rotating counter clockwise)

Note: Do not operate starting motor for a long time.
Wiring diagram for M2-50
Wiring diagram for M2-125/150