Contents

Preface ........................................................................................................................................ - 7 -

Preparing documents .............................................................................................................. - 8 -

Inspection/Adjustment ........................................................................................................... - 38 -

Inspection and maintenance of electrical system ................................................................. - 53 -

1. Battery/charging system ................................................................................................. - 55 -
   1.1 Preparing documents ................................................................................................. - 55 -
   1.2 Failure diagnosis ........................................................................................................ - 56 -
   1.3 Battery ....................................................................................................................... - 57 -
   1.4 Charging system ......................................................................................................... - 58 -
   1.5 Rectifier .................................................................................................................... - 59 -
   1.6 Magnetor charging coil ............................................................................................ - 60 -
   1.7 Replacement of magnetor ....................................................................................... - 61 -

2. Ignition system .................................................................................................................. - 64 -
   2.1 Preparing documents ................................................................................................. - 64 -
   2.2 Failure diagnosis ........................................................................................................ - 65 -
   2.3 Checking the ignition system .................................................................................... - 66 -
   2.4 CDI Group ................................................................................................................ - 68 -
   2.5 Ignition coil ............................................................................................................... - 69 -
   2.6 Trigger ....................................................................................................................... - 70 -
3. Activation system

3.1 Preparing documents

3.2 Failure diagnosis

3.3 Starting motor

3.4 Starting relay

4. Bulbs/Switches/Meters

4.1 Preparing documents

4.2 Failure diagnosis

4.3 Headlight bulb replacement

4.4 Front turn signal lamp bulb replacement

4.5 Taillight/Rear turn signal lamp replacement

4.6 Meters

4.7 Main switches

4.8 Speakers

4.9 Combined switch

Examination and maintenance of chassis

5. Brake

5.1 Maintenance instruction

5.2 Failure Diagnosis

5.3 Front fluid brake

5.4 Rear drum brake

6. Body panel
7. Front wheel/front suspension .............................................................................................................. - 97 -

7.1 Preparation documents ................................................................................................................. - 97 -

7.2 Failure diagnosis .......................................................................................................................... - 98 -

7.3 Front wheel .................................................................................................................................. - 98 -

7.4 Steering handle ............................................................................................................................ - 100 -

7.5 Front fork .................................................................................................................................... - 101 -

8. Rear wheel/rear suspension .............................................................................................................. - 106 -

8.1 Preparing documents .................................................................................................................... - 106 -

8.2 Failure diagnosis .......................................................................................................................... - 106 -

8.3 Rear wheel ................................................................................................................................... - 107 -

8.4 Rear shock absorber .................................................................................................................... - 108 -

9. Fuel tank/seat ................................................................................................................................... - 114 -

9.1 Preparation documents ................................................................................................................ - 114 -

9.2 Failure diagnosis .......................................................................................................................... - 114 -

9.3 Fuel tank/seat ............................................................................................................................... - 115 -

10. Removal/installation of motor ...................................................................................................... - 117 -

10.1 Preparation documents .............................................................................................................. - 117 -

10.2 Failure diagnosis ........................................................................................................................ - 117 -

10.3 Removal of motor ....................................................................................................................... - 118 -

10.4 Installation of motor .................................................................................................................... - 119 -

Inspection and maintenance of motor ................................................................................................. - 120 -

11. Lubrication system ........................................................................................................................ - 122 -
11.1 Preparation documents ................................................................. - 122 -

11.2 Failure diagnosis ........................................................................ - 122 -

11.3 Machine oil pump ................................................................. - 123 -

12. Carburetor .................................................................................. - 127 -

12.1 Preparation documents ................................................................. - 127 -

12.2 Failure diagnosis ........................................................................ - 128 -

12.3 Removal of carburetor ................................................................. - 128 -

12.4 Installation and adjustment ........................................................... - 130 -

13. Cylinder cap .................................................................................. - 133 -

13.1 Preparation documents ................................................................. - 133 -

13.2 Failure diagnosis ........................................................................ - 133 -

13.3 Cylinder cap ................................................................................ - 133 -

13.4 Cylinder cap inspection ................................................................. - 134 -

13.5 Installation of cylinder cap ................................................................. - 134 -

14. Cylinder body and piston ................................................................. - 137 -

14.1 Preparation documents ................................................................. - 137 -

14.2 Failure diagnosis ........................................................................ - 138 -

14.3 Cylinder body ................................................................................ - 138 -

14.4 Piston .............................................................................................. - 139 -

14.5 Installation of piston ................................................................. - 142 -

15. Driving/clutch/driven wheel/foot driving device ..................................... - 146 -

15.1 Preparation documents ................................................................. - 146 -
15.2 Failure diagnosis ............................................................................................................. - 146 -

15.3 Left crankcase cover ..................................................................................................... - 147 -

15.4 Driving disc .................................................................................................................. - 147 -

15.5 Clutch/driven wheel ...................................................................................................... - 149 -

15.6 Detach clutch and driven wheel .................................................................................... - 151 -

15.7 Install ............................................................................................................................ - 155 -

15.8 Foot starting device ....................................................................................................... - 155 -

16.1 Preparation documents ................................................................................................. - 158 -

16.2 Failure diagnosis ........................................................................................................... - 158 -

16.3 Gear box ....................................................................................................................... - 158 -

16.4 Installation ..................................................................................................................... - 159 -

17. Crankcase ....................................................................................................................... - 161 -

17.1 Preparation documents ................................................................................................. - 161 -

17.2 Failure diagnosis ........................................................................................................... - 161 -

17.3 Crankcase ..................................................................................................................... - 162 -

17.4 Installation ..................................................................................................................... - 164 -

Inspection and maintenance of exhaust gas discharge control system ................................ - 164 -

18. Exhaust gas discharge control system ......................................................................... - 166 -

18.1 Exhaust gas discharge control system reconizance ...................................................... - 166 -

18.2 Regular maintenance notes .......................................................................................... - 166 -

18.3 Mechanic function of exhaust gas discharge control system ....................................... - 167 -

18.4 Catalytic transfer system .............................................................................................. - 167 -
18.5 Solution for idle discharge value exceeding defined value (two-stroke) ........................................... - 169 -
Preface

This is maintenance manual for QJ50QT-22D.

Preparing Documents include all necessary instructions and statements. Please carefully read this manual before operation.

Inspection & Adjustment states how to check and adjust your motorcycle. All safety rules and maintenance regulations shall be carried out from the beginning of periodic inspection.

Except for chapter one, the rest chapters explain the disassembly/assembly/inspection of engine, entire motorcycle and electrical parts.

Breakdown drawing, systematic drawing, failure analysis and statement are contained at the first part of each chapter.

Please note that photos, pictures or instructions are for your reference only. The actual object may differ from these mentioned here. We will not make notification for any discrepancy.

Generic Motor GmbH
Preparing documents

General safety       Maintenance rules

Specification table   Failure diagnosis

General Safety

Carbon monoxide

Engine shall be started in a ventilated place, not in a closed area.

Note

Exhaust gas contains poisonous carbon monoxide, which may cause unconsciousness or even death of human being.

Start engine in an open place. The exhaust cleaning system shall be adopted if engine is started in a closed area.

Petrol

Ventilated place is required for working. Fire is strictly forbidden in work place or where petroleum is stored.
Maintenance Rules

Metric tools are preferable for the maintenance of this motorcycle. Improper tools may cause damage.

Clean up the surface of parts or assembly parts before removing or opening the shield for maintenance, which can prevent dirt from falling into the engine, chassis or braking system.

Wash parts and dry with compressed air machine after disassembly and before measurement of attrition value.

Solvent or oil can easily damage aging rubber articles. Check rubber before reassembly and replace rubber if necessary.

When releasing assembly parts, please start from outside to inside. Small assembly parts shall be loosened first.

Complex assembly parts, such as gear box, shall be stored in proper order for facilitating installation in the future.

Please specially note the important connections before disassembly. Replace parts which will not be in use before disassembly.
Bolts and screws with different length will be separately used for assembly parts and shields, and they shall be correctly mounted. Insert a bolt into a hole to check whether it is proper if you are confused.

Fill the groove with grease before mounting an oil seal. Check whether the oil seal is smooth or damaged during assembly.

When installing a hosepipe (fuel, vacuum or cooling agent), insert its end into the bottom of the connector so that the hose clip can properly fix the connector. Rubber or plastic dirt-proof boot shall be mounted according to the original design.

During dismantling ball bearing, one or two (inside & outside) bearing rollers shall be supported by tools. Ball bearings may be damaged and have to be replaced if only one roller (either inside or outside) is imposed with force.
Loose cables threaten electrical safety. Check each cable after they are all clamped to ensure the electrical safety;

Wire clamps are not allowed to bend towards welding point;

Bind cables at the designated place;

Do not deploy cables at the end of frame or at sharp point;

Do not deploy cables at the end of bolts or screws;

Cable deployment shall be far from heat source and where cables may be clamped during moving;

Cables along the handlebar shall be neither too tight nor too loose, and do not interface with any neighboring parts at steering positions;

Cables shall be properly deployed without twist or knot;

Check whether the connector jacket is damaged and whether the connector is over-stretched before mounting connectors;

Adopt adhesive tape or hosepipe to protect cables if they are positioned at sharp point or corner;

Bind cables with tape after repairing;

Control cables shall not be bent or twisted. Clumsy operation may be caused in light of damaged control cables.
Identification of Motorcycle

1. The identification number of motorcycle frame is marked at : *LBBB4900?8B?????*. The 9th, 10th and 11th digital respectively indicate inspection code, year and supplier code. There are 17-digital in total. The frame sign is nailed at . See Fig. 1-1.

Fig. 1-1

2. The serial number of engine is printed on the shell of crankcase of engine and shall be in the format of KW1E40QMB-4*□□□□□□□□*. Please see fig. 1-2.

Fig. 1-2

Significant Notes

1. Please apply valid Generic parts and accessories. Any part or accessory not in accordance with the design specification of Generic Company may cause damage to engine.
2. Only metric tools are valid for maintenance and repair. Metric screws, bolts and nuts can not be exchanged with imperial fasteners.
3. New gaskets, O-rings, cotter pins and locking pieces shall be applied for re-assembly.
4. Bolts with large diameter or positioned inside shall be fastened first and then diagonally screw down until reaching required torque, otherwise there is special instruction.
5. Wash disassembled parts with cleanser. Lubricate all sliding surface before assembly.
6. Check whether all the parts and accessories are correctly mounted and operated after assembly.
7. Clean and remove oil before measurement. Add recommended lubricant to the lubricating areas during assembly.
8. Apply lubricant to the surface of engine and driving system if they are dismantled for long-term storage, which can prevent rust and dirt.
Special Tools

Special tools refer to tools which are specially designed for assembling or disassembling some motorcycle parts on special positions. Applicable special tools are necessary for precise adjustment and installation. With them, parts and accessories can be mounted safely, reliably and rapidly, which improves efficiency and saves energy.

1. Tools for repairing engine

Special tools are required for properly disassembling/assembling some engine parts.
List and drawing (1-1, 1-2) of special tools for disassembling/assembling engine parts are as follows:

Table 1-1

<table>
<thead>
<tr>
<th>Name</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Special socket spanner</td>
<td>Used for assembling/disassembling bolts for flywheels, Fig. 1-3</td>
</tr>
<tr>
<td>Clutch clamp holder</td>
<td>Fig. 1-4</td>
</tr>
<tr>
<td>Flywheel puller</td>
<td>Fig. 1-5</td>
</tr>
<tr>
<td>Feeler gauge</td>
<td>Fig. 1-6</td>
</tr>
<tr>
<td>Bearing disassembly tools</td>
<td>Fig. 1-7</td>
</tr>
<tr>
<td>Bearing assembly tools</td>
<td>Fig. 1-8</td>
</tr>
<tr>
<td>Oil seal remover</td>
<td>Fig. 1-9</td>
</tr>
<tr>
<td>Handle for dismantling tools</td>
<td>Fig. 1-10</td>
</tr>
<tr>
<td>Piston pin pulling device</td>
<td>Fig. 1-11</td>
</tr>
<tr>
<td>Piston pin pliers</td>
<td>Fig. 1-12</td>
</tr>
<tr>
<td>Socket spanner for spark plug</td>
<td>Fig. 1-13</td>
</tr>
<tr>
<td>Clutch thickness measuring device</td>
<td>Fig. 1-14</td>
</tr>
<tr>
<td>Cylinder diameter measuring device</td>
<td>Fig. 1-15</td>
</tr>
<tr>
<td>Dial indicato</td>
<td>Measuring the inner diameter of piston pin, Fig. 1-16</td>
</tr>
</tbody>
</table>

Table 1-2 (continued)
Fig. 1-5

Fig. 1-6

Thickness gauge
(feeler gauge)

Fig. 1-7

Fig. 1-8

Fig. 1-9

Fig. 1-10

handle

Fig. 1-11

Fig. 1-12
2. Tools for repairing chassis

List and drawing (1-17, 1-18) of ordinary tools and special tools for disassembling/assembling chassis parts are as follows:

**Table 1-17**

<table>
<thead>
<tr>
<th>Name</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque spanner</td>
<td>Fig. 1-19</td>
</tr>
<tr>
<td>Inner hexagon spanner</td>
<td>Fig. 1-20</td>
</tr>
<tr>
<td>Socket spanner</td>
<td>Fig. 1-21</td>
</tr>
<tr>
<td>Dial indicator</td>
<td>Fig. 1-22</td>
</tr>
<tr>
<td>Magnetic rack, V-block</td>
<td>Fig. 1-23</td>
</tr>
<tr>
<td>Micrometer</td>
<td>Fig. 1-24</td>
</tr>
<tr>
<td>Vernier calipers</td>
<td>Fig. 1-25</td>
</tr>
<tr>
<td>Circlip pliers</td>
<td>Fig. 1-26</td>
</tr>
<tr>
<td>Screwdriver with striking cap</td>
<td>Fig. 1-27</td>
</tr>
<tr>
<td>Tool for assembling oil seal of front fork</td>
<td>Fig. 1-28</td>
</tr>
<tr>
<td>Tool for hammering seal of front fork</td>
<td>Fig. 1-29</td>
</tr>
<tr>
<td>Steering nut spanner</td>
<td>Fig. 1-30</td>
</tr>
</tbody>
</table>

(1) Ordinary tools for repairing chassis

**Table 1-18 (continued)**
(2) Special tools for repairing chassis: tool for hammering seal of front fork
3. Tools for electric parts

List and drawings (1-31, 1-32) of special tools for testing electric parts are as follows:

<table>
<thead>
<tr>
<th>Table 1-31</th>
<th>Name</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Multimeter</td>
<td>Fig. 1-33</td>
</tr>
<tr>
<td></td>
<td>Ignition tester</td>
<td>Fig. 1-34</td>
</tr>
</tbody>
</table>

Table 1-32 (continued)
### Specification (QJ50QT-22D)

<table>
<thead>
<tr>
<th>Model</th>
<th>QJ50QT-22D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length mm</td>
<td>1940</td>
</tr>
<tr>
<td>Width mm</td>
<td>730</td>
</tr>
<tr>
<td>Height mm</td>
<td>1110</td>
</tr>
<tr>
<td>Wheelbase mm</td>
<td>1305</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight kg (Curb weight)</th>
<th>Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward shaft</td>
<td>39</td>
</tr>
<tr>
<td>Backshaft</td>
<td>62</td>
</tr>
<tr>
<td>Total</td>
<td>102</td>
</tr>
<tr>
<td>Front outer tyre</td>
<td>80/80-16</td>
</tr>
<tr>
<td>Front rim</td>
<td>16X1.6</td>
</tr>
<tr>
<td>Rear outer tyre</td>
<td>90/80-16</td>
</tr>
<tr>
<td>Rear rim</td>
<td>16X1.85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tyre Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front outer tyre</td>
</tr>
<tr>
<td>Front rim</td>
</tr>
<tr>
<td>Rear outer tyre</td>
</tr>
<tr>
<td>Rear rim</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Transmission gear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch</td>
</tr>
<tr>
<td>Variable speed gear</td>
</tr>
<tr>
<td>Transmission</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Electric devices</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery capacity</td>
</tr>
<tr>
<td>Electromagnetic motor capacity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine</td>
</tr>
<tr>
<td>Carburetor type</td>
</tr>
<tr>
<td>Fuel type</td>
</tr>
<tr>
<td>No. of cylinder</td>
</tr>
<tr>
<td>ID × stroke</td>
</tr>
<tr>
<td>Total displacement</td>
</tr>
<tr>
<td>Startup</td>
</tr>
<tr>
<td>Cooling</td>
</tr>
<tr>
<td>Lubrication</td>
</tr>
<tr>
<td>Capacity of gasoline tank</td>
</tr>
<tr>
<td>Idle speed</td>
</tr>
<tr>
<td>Max. torque</td>
</tr>
<tr>
<td>Max. Hp</td>
</tr>
<tr>
<td>Compression ratio</td>
</tr>
<tr>
<td>Max. speed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Braking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dia. of fluid brake disc, front wheel</td>
</tr>
</tbody>
</table>
QJ50QT-22D
Failure Diagnosis

Diagnosis on failure or difficulty in starting engine

Failure or difficulty in starting engine

Check ignition system

Remove the spark plug and check whether there is carbon fouling between electrode.

N

Sparkover test for spark plug

Y

Eliminate carbon fouling

Weak spark or no spark between electrode

Large blue or bluish purple spark between electrode

Screw off spark plug cap and conduct sparkover test for high tension line

Check whether ignition is timely conducted with an ignition timing light

1. Check whether CDI ignition device is in good condition
2. Check whether flywheels and trigger coil are loosened

Screw off the bolt of carburetor and check whether there is gasoline in the overflow tube

Weak spark or no spark

Large blue spark

Check whether spark plug and cap are in good condition

Check power supply for ignition

Non-contact ignition system for electromagnetic motor

1. Check whether short circuit or open circuit occurs to ignition coil
2. Check whether short circuit or open circuit occurs to trigger coil

Normal compression pressure

Insufficient compression pressure

Check the compression pressure of cylinder with pressure gauge

Check whether there is gasoline in the fuel tank

Add gasoline
1. Check whether the float needle valve and the valve seat are firmly closed
2. Check whether the conical surface of float needle valve is abrasive as steps
3. Check whether the float needle valve is broken
4. Check whether the float needle valve is too low

Check whether there is oil spillover in the carburetor

Moist electrode of spark plug

Check whether the float needle valve and the valve seat are firmly closed

Check whether air filter is blocked

Dry electrode of spark plug

Drop a little gasoline into the cylinder for trial startup

Continue to work after startup

Startup device of carburetor (startup & enrichment system) is at fault

The carburetor is blocked inside or the float is too high

Flameout shortly after startup

Remove spark plug and check it
Diagnosis on engine overheating

Engine overheating

Check whether operation is correct

Y

1. Check whether gasoline grade is improper or stored for a long time
2. Check whether the engine works at high speed for a long time or with overload during driving

N

Check cooling system

Air-cooled engine

Check whether heat sink is spotted or there is too much oil stain

Y

Clean

N

Check whether cooling fan or air director is damaged (forcedly air-cooled engine)

Y

Inspection & solution

N

Check whether ignition is timely conducted with an ignition timing light

Y

1. Check whether CDI ignition device is in good condition
2. Check whether flywheels and trigger coil are loosened

N

Check whether clutch is slipping

Slipping clutch

Solution to slipping clutch

N

Y
Remove the spark plug; check the colors of spark plug insulators and judge the proportion of mixed combustible gas based on abnormality.

- The spark plug insulators are black; the exhaust muffler emits black smoke or causes backfire if the engine works at low speed; bad acceleration property; instable idle speed; flameout probability; it works normally at high speed.
- The spark plug insulators are brown; normal combustible gas mixture.
- The spark plug insulators are white; the engine may intermit during acceleration; the carburetor generates backfire; insufficient power of engine.

Mixed combustible gas is too dense.

1. Check whether the air filter is blocked.
2. Check whether the startup device for carburetor (startup & enrichment system) works normally.
3. Check whether the float needle valve is too low.

Check whether the cylinder outlet or the exhaust muffler is blocked due to accumulated carbon fouling.

Check the lubrication system.

Mixed combustible gas is diluted.

1. Check whether fuel cock works normally.
2. Check whether the float needle valve is too high.
3. Check whether the measuring jets and drill ways in the carburetor are blocked.
Diagnosis on power shortage of engine

Power shortage of engine

- Raise the main kickstand and lift wheels; rotate wheels with hands

Flexible rotating of wheels
- Check tyre pressure
  - Low pressure
    - Check whether air leakage occurs to tyre valve and whether tyre is pierced or broken
  - Normal pressure
    - Touch with your fingers and you can feel fierce air rushing out with puffing sound.

Inflexible rotating of wheels
- Check whether there is braking drag.
- Check whether wheel bearing is excessively abraded or damaged.
- Check whether the spacer sleeve of hub is missed or too short.

Firmly rotate wheels with hands
- Check whether there is braking drag.
- Check whether wheel bearing is excessively abraded or damaged.
- Check whether the spacer sleeve of hub is missed or too short.

Flexible rotating of wheels
- Check tyre pressure
  - Low pressure
    - Check for air leakage to the tyre valve and whether the tyre is pierced or broken.
  - Normal pressure
    - Touch your fingers and feel the fierce air rushing out with puffing sound.

Inflexible rotating of wheels
- Check whether there is braking drag.
- Check whether wheel bearing is excessively damaged or worn.
- Check whether the spacer sleeve of the hub is missing or too short.

Check tyre pressure
- Low pressure
  - Remove the spark plug and block the threaded hole with your fingers; press the startup button or step on the kick-start lever.
- Normal pressure
  - Touch your fingers and feel the fierce air rushing out.

Normal compression pressure of cylinder
- The rotation speed of the engine rises as it slowly accelerates.
  - Check whether the clutch is slipping.
  - Check whether the driving belt is excessively abraded.
  - Check whether the centrifugal roller of the driving pulley is excessively abraded.
  - Check whether the conical surface of the driving wheels and friction wheels is excessively abraded or abraded as a groove.
  - Check whether the conical surface of the driven wheels and moving driven wheels is excessively abraded or abraded as a groove.
  - Check whether the roll-away nest on the inner surface of the friction wheels is excessively abraded or pressed into a concave.

Insufficient compression pressure of cylinder
- The rotation speed of the engine does not rise as it slowly accelerates.
  - Check whether the fuel supply system works normally.
  - Check whether the carburetor, air filter, and exhaust muffler are blocked.
  - Check whether the vacuum diaphragm of the plunger valve of the carburetor is cracked or broken.
  - Check whether the height of the carburetor float is proper.

Start the engine and slow accelerate; observe the rotation speed change of engine.

The rotation speed of engine rises as it slowly accelerates.
- Check whether the fuel supply system works normally.
  - Check whether the carburetor, air filter, and exhaust muffler are blocked.
  - Check whether the vacuum diaphragm of the plunger valve of the carburetor is cracked or broken.
  - Check whether the height of the carburetor float is proper.

The rotation speed of engine does not rise as it slowly accelerates.
- Check whether the clutch is slipping.
  - Check whether the driving belt is excessively abraded.
  - Check whether the centrifugal roller of the driving pulley is excessively abraded.
  - Check whether the conical surface of the driving wheels and friction wheels is excessively abraded or abraded as a groove.
  - Check whether the conical surface of the driven wheels and moving driven wheels is excessively abraded or abraded as a groove.
  - Check whether the roll-away nest on the inner surface of the friction wheels is excessively abraded or pressed into a concave.

Insufficient compression pressure of cylinder
- The rotation speed of engine does not rise as it slowly accelerates.
  - Check whether the fuel supply system works normally.
  - Check whether the carburetor, air filter, and exhaust muffler are blocked.
  - Check whether the vacuum diaphragm of the plunger valve of the carburetor is cracked or broken.
  - Check whether the height of the carburetor float is proper.

Check whether ignition is timely conducted with an ignition timing light

Y

N

1. Check whether the clutch is slipping.
2. Check whether the driving belt is excessively abraded.
3. Check whether the centrifugal roller of the driving pulley is excessively abraded.
4. Check whether the conical surface of the driving wheels and friction wheels is excessively abraded or abraded as a groove.
5. Check whether the conical surface of the driven wheels and moving driven wheels is excessively abraded or abraded as a groove.
6. Check whether the roll-away nest on the inner surface of the friction wheels is excessively abraded or pressed into a concave.

1. Check whether CDI ignition device is in good condition.
2. Check whether flywheels and trigger coil are loosened.
Diagnosis on abnormal idle speed of engine

Abnormal idle speed of engine

No idle speed
- Check compression pressure of cylinder
  - Insufficient compression pressure
    1. Check whether there is air leakage in all outer joints of engine.
    2. Check whether air supply is timely conducted.
    3. Check whether clearance between valves is too small.
    4. Check whether valve and valve seat are well sealed.
    5. Check whether piston ring is ruptured, blocked in the groove or lacks elasticity.
    6. Check the abrasion of piston ring and cylinder.
  - Normal compression pressure
    Adjust the idle speed of carburetor.

High idle speed
- Check whether the carburetor valve is completely closed with your hand.
  - Y
    - No idle speed after adjustment
      - The air adjusting screws or the adjusting screws for throttle valve are improperly adjusted.
      - Check whether carburetor float is placed at high position.
        - Y
          - Adjust the float height to standard value.
        - N
          - Clean and clear

  - N
    - Y
      - No idle speed after adjustment
        - Check whether the carburetor idle jet, idle fuel way and air path is blocked.
        - Adjust the electrode clearing.
        - Check the proportion of mixed combustible gas.
      - N
        - Y
          - Check whether the carburetor float is placed at high position.
          - N
            - N
              - N

Unstable idle speed
- Check whether ignition is timely conducted with an ignition timing light.
  - Y
    - 1. Check whether CDI Ignition device is in good condition
    - 2. Check whether flywheels and trigger coil are loosened

  - N
    - Y
      - Check whether the steel wire rope of accelerator control cable is flexible when pulling and whether the throttle valve spring is too soft.
      - Check whether the mixture jet is too big.
      - Adjust the idle speed of carburetor.

Idle speed after adjustment
- No idle speed after adjustment
  - Y
    - Check whether idle jet is too big.
    - Check whether compression pressure is normal.
  - N
    - Y
      - Adjust the idle speed of carburetor.
      - Y
        - Check whether the carburetor idle jet, idle fuel way and air path is blocked.
        - Adjust the electrode clearing.
        - Check the proportion of mixed combustible gas.
      - N
        - Y
          - Check whether carburetor float is placed at high position.
          - N
            - N
              - N

Diagnosis on excessive fuel consumption of engine

Excessive fuel consumption of engine

Check whether operation is correct

Y

Raise the main kickstand and rotate wheels with hands

N

1. Check whether motorcycle runs with overload or not at economical speed or with low gear.
2. Check whether petrol grade is proper.

Inflexible rotating of wheels

Flexible rotating of wheels

1. Check whether braking drag.
2. Check whether wheel bearing is seriously abraded or damaged.
3. Check whether the spacer sleeve of hub is missed or too short.

Check the proportion of mixed combustible gas.

Normal combustible gas mixture

Check whether the idle speed of engine is too high.

Y

Check and adjust the carburetor.

N

Mixed combustible gas is too dense.

1. Check whether the air filter is blocked.
2. Check whether the carburetor float is too low.
3. Check whether the main measuring jet of carburetor is too big.

Y

Check whether ignition is timely conducted with an ignition timing light

N

Check the ignition system.

Mixed combustible gas is diluted.

1. Check whether the carburetor is blocked inside.
2. Check whether the carburetor float is too high.
Diagnosis on clutch slipping

Clutch slipping

Automatic shoe-type centrifugal & dry clutch is slipping.

Check whether the shoe-type friction plate is spotted with oil stain.

N

Y

Check whether the shoe-type friction plate is excessively abraded.

N

Y

Check whether the contact surface between shoe-type friction plate and friction disc is beyond 70%.

Replace the whole set of clutch shoe blocks

Check whether the contact surface between shoe-type friction plate and friction disc is excessively abraded.

Repair or replace clutch shoe blocks.

Diagnosis on transmission gear skip shift

Transmission gear skip shift

Check whether the spring of positioning wheels is ruptured or lacks elasticity.

Y

N

Replacement

Disassemble crankcase and check whether the depth in engaging for each gear is in accordance with requirements.

Proper depth in engaging

Insufficient depth in engaging

Check whether the engaging end of the cam claw on the engaged gear face is abraded to be conical or largely circular, and whether the groove on the corresponding gear face is abraded to be trumpet-shaped.

Y

N

Replace gear

Check whether the spline teeth of main shaft/countershaft and the spline groove in the clash gear is excessively abraded.

1. Check whether shift fork hole and shaft are abraded.
2. Check whether the clearing between shift fork pin/gear shift shaft and cam groove is too big.
3. Check whether the installation of transmission is correct.

Replace shift fork
Diagnosis on malfunction of hydraulic disc brake

Malfunction of hydraulic disc brake

Check the level of brake fluid inside the brake fluid reservoir.

The level of brake fluid is below the lower limit of the reservoir.

Add brake fluid until it is beyond the lower limit; check whether there is oil leakage in brake caliper, brake hose and hose coupling.

The level of brake fluid is beyond the lower limit of the reservoir.

Do you have "sponge" feeling when operating brake lever?

N

Check whether the abrasion of brake friction plate reaches limit mark and whether the brake disc is excessively abraded.

Y

There is air left in the oil passage of brake system.

N

Replace brake friction plate and brake disc.

Y

1. Check whether the piston surface of master brake pump and the wall of oil tank are excessively abraded or damaged.
2. Check whether the piston cup of master brake pump is damaged, cracked or aged.
3. Check whether the seal of brake caliper is damaged, cracked or aged.
4. Check whether the piston surface of brake caliper and the wall of oil tank are excessively abraded or damaged.

Diagnosis on malfunction of drum brake

Malfunction of drum brake

Check whether the free stroke of brake lever is within 10mm ~ 20mm or whether the free stroke of brake pedal is within 20mm ~ 30mm.

N

Readjustment

Y

Separate the brake arm and the steel wire rope of brake control cable; check the brake arm with hands.

The brake arm works flexibly but you can feel resistance when gripping the lever.

The brake arm works inflexibly.

The moving part of brake cam is rusted or blocked by something.

The steel wire rope of brake control cable is inflexible when pulling.

The indication arrow on the brake cam points to or beyond the sign “▽” on the brake hub cover.

The indication arrow on the brake cam does not align with the sign “▽” on the brake hub cover.

1. Check whether the curved surface of brake cam is excessively abraded.
2. Check whether the friction plate of brake shoe is excessively abraded.
3. Check whether the inner diameter of brake hub is excessively abraded.
4. Check whether the friction surface of brake shoe is spotted with oil stain.
5. Check whether the contact surface of the friction plate of brake shoe and the brake hub is less than 70%.
Diagnosis on starter motor failure in rotation

**Starter motor failure in rotation**

- Turn the ignition switch; press the horn; press or turn the steering lamp switch.

**The electric horn does not make sound or makes weak sound; the steering lamp emits weak light.**

- Battery power shortage or bad contact of conductor joint

- Press the startup button and there is no joint sound from starting relay.
  - Disassemble the connector of starting relay from the cable assembly; use two lead wires to connect the battery with two down-leads of the starting relay coil.

  **The starter motor does not work after connection, and there is no sound from starting relay.**

  - Open circuit or short circuit of starting relay coil.

  **Open circuit or short circuit of starting relay coil.**

  - 1. Check whether the contact of starting button is in good condition.
  - 2. Check whether the commutation diode is damaged.
  - 3. Check whether the neutral gear switch works normally.
  - 4. Check whether open circuit or short circuit occurs to the inner lines of electric starting control system.

- Grip the brake lever (motor scooter), or make the transmission at neutral gear, or grip the clutch lever; press the startup button.

**The electric horn makes loud sound and the steering lamp emits bright light.**

- Grip the brake lever (motor scooter), or make the transmission at neutral gear, or grip the clutch lever; press the startup button.

- The starting relay works normally after connection.
  - Check the inner circuit of the electric starting control system

  **Contacts of starting relay are burnt or damaged.**

  - Disassemble the starter motor and check:
    1. whether the carbon brush is excessively abraded;
    2. whether the carbon brush spring is ruptured or lacks elasticity;
    3. whether the armature commutator is excessively abraded;
    4. whether open circuit or short circuit occurs to the armature coil.

- The starter motor works normally after short circuit.
  - Contacts of starting relay are burnt or damaged.

- The starter motor works normally after connection.
  - Check the inner circuit of the electric starting control system

**Check whether the contact of starting button is bad.**

- Repair or replace starting button

**Check whether the brake lamp is light.**

- Grip the brake lever and check whether the brake lamp is light

**Bad contact inside the brake lamp switch or open circuit of its auxiliary lines.**

- Open circuit or short circuit inside the electric starting control system
Diagnosis on starter motor running weak

**Starter motor running weak**

Turn the ignition switch; press the horn; press or turn the steering lamp switch.

- The electric horn does not make sound or makes weak sound; the steering lamp emits weak light.
- The electric horn makes loud sound and the steering lamp emits bright light.

Battery power shortage or bad contact of conductor joint

Check whether the contact of conductor joint between starting relay and starter motor is bad.

N

Disassemble the lead wires connecting to starter motor and battery from the starting relay and press the starting button. Check whether the resistance between the battery terminal and the starter motor terminal is normal with ohm meter when the starting relay makes connection sound.

Y

Disassemble the starter motor and check:
1. whether the carbon brush is excessively abraded;
2. whether the carbon brush spring is ruptured or lacks elasticity;
3. whether the surface of armature commutator is stained, burnt or damaged.
4. whether the armature commutator is excessively abraded;

Y

Contacts of starting relay are burnt or damaged.

N

Inspection & elimination
Diagnosis on motorcycle lamp failure in illumination

Motorcycle lamp failure in illumination

AC power supply system for illumination

Remove the connector between the conductor bundle of electromagnetic motor and the cable assembly; check whether there is power supply via the output conductors of the lighting coil with a test lamp.

The test lamp is not light.

Open circuit or short circuit of lighting coil or output wires

Start the engine and remove the connector between the rectifier regulator and the cable assembly.

The test lamp is light.

Normal battery power supply

The horn can make loud sound and the steering lamp is light.

The horn can not make loud sound and the steering lamp is not light.

Press the horn button or turn the steering lamp switch.

Rapidly strike a lead wire on the negative/positive poles of battery and check spark.

The horn can make loud sound and the steering lamp is light.

The lamp is light.

Three circuits in the rectifier regulator.

The lamp is not light.

Dismantle the headlamp assembly and check whether the bulb is burnt.

Y

Replace the headlamp bulb and check all the other lamp bulbs.

N

Check whether there is power output via input wires of illumination switch with a test lamp.

Y

Use a lead wire to short circuit the power wire and the output wire of the illumination switch.

The lamp is light.

Bad contact inside the illumination switch.

N

Open circuit or short circuit between the electromagnetic motor/ignition switch and the illumination switch.

The lamp is not light.

Open circuit or short circuit between the illumination switch and the lamp.

N

1. Check whether the fuse is burnt out.
2. Check whether open circuit or short circuit occurs between the battery and ignition switch.
3. Check whether open circuit or short circuit occurs to the ignition switch.

Power shortage of battery

No spark

Spark
Diagnosis on burnt-out bulbs

Burnt-out bulbs

Turn the ignition switch; press the horn; turn the steering lamp switch.

The horn works abnormally or does not make sound; the steering lamp emits weak light.

1. Check whether the conductor joint connecting battery is in good condition.
2. Check whether the electrolyte is deficient inside the battery.
3. Check whether the electrolyte density inside the battery is too low.
4. Check whether the battery plate is sulfurized or short-cut.

The horn makes loud sound and the steering lamp emits bright light.

Remove the connector between the rectifier regulator and the cable assembly; check whether there is open circuit between the lighting/charging coil of electromagnetic motor and the rectifier regulator with an ohm meter.

N

Set the multimeter to DC voltage 0V~20V; measure the voltage between the conductor terminal (connector to battery) (normally red wire or red/white wire) and the negative pole.

Y

Connection

No voltage

Open circuit between the connector and the battery

Voltage available

Check whether the rectifier regulator works normally.
Diagnosis on weak light from lamps

Weak light from lamps

AC power supply system for illumination

Remove the connector between the conductor bundle of electromagnetic motor and the cable assembly; check whether the resistance between the output cable terminals of lighting coil of electromagnetic motor is lower than the standard value with an ohm meter.

DC power supply system for illumination

Turn the ignition switch; press the horn; turn the steering lamp switch.

Y

Short circuit of lighting coil.

N

Start the engine and limit the rotation speed; remove the connector between the rectifier regulator and the cable assembly; check the brightness of lamps.

The horn makes loud sound and the steering lamp emits bright light.

The horn makes coarse sound; the steering lamp emits weak light.

Power shortage of battery or bad connection between battery and the ignition switch.

Y

The lamp works normally.

N

Still weak light from the lamp.

Low stable voltage of rectifier regulator.

Y

Check whether there is short circuit in the charging coil of electromagnetic coil and the charging system.

N

Inspection & elimination

Dismantle the headlamp assembly and check whether the bulb glass is black or yellowish green.

N

Check whether the bulb power for the illumination system is in accordance with requirements.

Y

Replace headlamp bulb.

N

Replace lamp bulb.

1. Check whether the contact inside the illumination switch and dimmer switch is in good condition.
2. Check whether the contact of connector and earth wire is in good condition.
Diagnosis on steering lamp failure in illumination

Steering lamp failure in illumination

- Steering lamps at one side are partly not light.
  - Remove the lamp covers and check whether the bulbs are burnt.
    - Y: Replace bulbs
    - N: Measure the voltage between the contact of the power cord of lamp holder and the negative pole with a voltage meter.
      - Voltage available: Open circuit of power cord or bad earth of lamp holder.
      - No voltage: Open circuit of output power cord or bad earth of lamp holder at the breakdown side.

- Steering lamps at one side are wholly not light.
  - Remove the lamp covers and check whether the bulbs are burnt.
    - Y: Replace bulbs
    - N: Remove the connector of steering lamp switch and check whether the switch works normally at the breakdown side with an ohm meter.
      - The horn makes loud sound: Good earth of lamp holder.
      - The horn can not make or makes coarse sound: Open circuit of output power cord or bad earth of lamp holder at the breakdown side.

- All the steering lamps are not light.
  - Press the horn button and check whether the horn works normally.
    - Y: The horn makes loud sound
    - N: The horn can not make or makes coarse sound.

- The horn makes loud sound
  - Normal battery power supply
  - Battery power supply shortage

- The horn can not make or makes coarse sound
  - Good earth of lamp holder
  - Open circuit between the ignition switch and the flasher or between the flasher and the steering lamp switch.

- The steering lamp is not light.
  - Remove the connector of steering lamp switch and use a lead wire to short-circuit the output power cord of the switch and the input power cord connecting left/right steering lamp.
    - The flasher is broken.

- The steering lamp is light.
  - Remove the connector of steering lamp switch and use a lead wire or a screwdriver to short-circuit two lugs of flasher.
    - The test lamp is light:
      - Open circuit or short circuit of power cord of steering lamp.
    - The test lamp is not light:
      - Open circuit or short circuit between the ignition switch and the flasher or between the flasher and the steering lamp switch.

- The steering lamp is not light.
  - Check whether there is power supply via the input power cord of steering lamp switch with a test lamp.
    - The test lamp is light:
      - Open circuit or short circuit of power cord of steering lamp.
    - The test lamp is not light:
      - Open circuit or short circuit between the ignition switch and the flasher or between the flasher and the steering lamp switch.

- The steering lamp is light.
  - Bad contact inside the steering lamp switch.

- The steering lamp is not light.
  - Check whether there is power supply via the input power cord of steering lamp switch with a test lamp.
    - The test lamp is light:
      - Open circuit or short circuit of power cord of steering lamp.
    - The test lamp is not light:
      - Open circuit or short circuit between the ignition switch and the flasher or between the flasher and the steering lamp switch.
Diagnosis on electric horn failure in making sound

Turn the ignition switch and steering lamp switch; check the work condition of steering lamp.

- The steering lamp is not light or emits weak light.
  - Battery power supply shortage or open circuit/short circuit between battery and ignition switch.

- The steering lamp emits bright light.
  - Normal battery power supply
  - Remove the power cord from the power-line terminal of the electric horn and strike the power cord with the earth; check the spark
    - Spark available
      - Connect to the power cord of electric horn; use a screwdriver to contact the non-power cord terminal (to button) with the earth.
        - The electric horn makes sound.
          - Bad contact inside the horn button or open circuit between the electric horn and the button.
    - No spark
      - Short circuit between the ignition switch and electric horn
        - The electric horn does not make sound.

- The electric horn makes sound.
  - Adjust the volume and tune of the electric horn.
    - The electric horn does not make sound.
      - The electric horn is broken.
    - The electric horn works normally.
      - Improper adjustment
Diagnosis on brake lamp failure in illumination

**Brake lamp failure in illumination**

Disassemble the cover of brake lamp and check whether the circuit board is burnt.

- **Y**
  - Replace the circuit board of brake lamp

- **N**
  - Use a lead wire to short-circuit two terminals or two terminal pins of brake lamp switch.

- **Y**
  - The brake lamp is not light.
  - Use a screwdriver or a lead wire to strike the power lead of brake lamp with the earth; check the spark.

- **N**
  - The brake lamp is light.
  - Improper adjustment of brake lamp switch or bad contact inside.

- **Y**
  - Spark available
  - Short circuit or open circuit between the brake lamp switch and the brake lamp.

- **N**
  - No spark
  - Short circuit or open circuit between the ignition switch or brake lamp switch.

Diagnosis on power shortage of battery

**Power shortage of battery**

Check whether the brake lamp is always light.

- **Y**
  - Adjust or replace the brake lamp switch.

- **N**
  - Turn the ignition switch to “OFF” position; disassemble the negative cable from the battery and connect the negative/positive pen of ampere meter to the negative/positive terminal of battery; check current leakage.

- **Y**
  - Leakage current is lower than the required value.
  - Check whether short circuit occurs to the charging coil of electromagnetic motor.

- **N**
  - Leakage current is higher than the required value. (Normally, the leakage current is required to be no more than 1mA.)
  - Short circuit between the rectifier and the rectifier regulator or between the battery and the ignition switch.

- **Y**
  - Replace charging coil
  - 1. Check whether the electrolyte inside the battery is sufficient.
  - 2. Check whether the electrolyte density inside the battery is too low.
  - 3. Check whether the battery plate is sulfurized or short-cut.
Diagnosis on battery charging failure

Battery charging failure

Remove the connector between the conductor bundle of electromagnetic motor and the cable assembly; measure the resistance between the output conductor terminals of charging coil and check whether it is in accordance with the standard.

Resistance value lower than standard value.

Short circuit of charging coil

Resistance value in accordance with standard value.

Connect power to the connector between the conductor bundle of electromagnetic motor and the cable assembly; cut off the connector between the rectifier or rectifier regulator and the cable assembly.

Infinite resistance value.

Open circuit of charging coil or output conductor.

Resistance value in accordance with standard value.

Remove the connector between the conductor bundle of electromagnetic motor and the cable assembly; measure the resistance between the output conductor terminals of charging coil and check whether it is in accordance with the standard.

Set the multimeter to DC voltage 0V~20V; measure the voltage between the conductor terminal (connector to battery) (normally red wire or red/white wire) and the negative pole.

No voltage

Open circuit between the connector and the battery.

No voltage available

Check whether the rectifier or the rectifier regulator is broken down with an ohm meter.

Bad connection or open circuit between the electromagnetic motor and the rectifier or inside the circuit of rectifier regulator

Voltage available
**Inspection/Adjustment**

<table>
<thead>
<tr>
<th>Preparing information</th>
<th>Cylinder pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Periodic Maintenance &amp; Inspection List</td>
<td>Gear oil</td>
</tr>
<tr>
<td>Engine oil/ Oil filter</td>
<td>Replacement of gear oil</td>
</tr>
<tr>
<td>Fixing steering stem bearing &amp; handlebar</td>
<td>Driving belt</td>
</tr>
<tr>
<td>Inspection &amp; adjustment of throttle cable</td>
<td>Free stroke of front/rear brake</td>
</tr>
<tr>
<td>Air filter</td>
<td>Inspection of brake fluid</td>
</tr>
<tr>
<td>Spark plug</td>
<td>Headlight</td>
</tr>
<tr>
<td>Battery</td>
<td>Clutch</td>
</tr>
<tr>
<td>Carburetor</td>
<td>Front/rear suspension system</td>
</tr>
<tr>
<td>Ignition timing</td>
<td>Bolt/nut/fastener</td>
</tr>
<tr>
<td>Rim/tyre</td>
<td>Tyre specification</td>
</tr>
</tbody>
</table>

**Preparing principles**

**General**

**Warning 1**

- Make sure that it is well ventilated before starting the engine. It is forbidden to start it in a closed area. Exhaust gas, which contains monoxide, may cause unconsciousness or even death of human being.
- The petrol is liable to volatile or explode under certain condition. The working area or the oil storage area shall be kept ventilated and fire is strictly forbidden.
## Specification

### Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idle speed</td>
<td>1900±100rpm/min</td>
</tr>
<tr>
<td>Clearance of spark plug</td>
<td>0.6-0.7mm</td>
</tr>
<tr>
<td>Spec. of spark plug</td>
<td>BR8HS A (NGK)</td>
</tr>
<tr>
<td>Max. power (KW/r)</td>
<td>2.60kW/6500rpm</td>
</tr>
<tr>
<td>Max. torque (N.m/r)</td>
<td>4.36N.m/5250rpm</td>
</tr>
</tbody>
</table>

### Frame

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free stroke of front brake lever</td>
<td>10-20mm</td>
</tr>
<tr>
<td>Free stroke of rear brake lever</td>
<td>10-20mm</td>
</tr>
<tr>
<td>Tyre pressure unit: Kpa</td>
<td></td>
</tr>
<tr>
<td>Front wheel</td>
<td>80/80-16</td>
</tr>
<tr>
<td>Rear wheel</td>
<td>90/80-16</td>
</tr>
<tr>
<td>Torque value</td>
<td></td>
</tr>
<tr>
<td>Front wheel spindle</td>
<td>55-62 N·m</td>
</tr>
<tr>
<td>Fixing nut for rear wheel</td>
<td>100-113 N·m</td>
</tr>
</tbody>
</table>

### Certification for Related Parts

<table>
<thead>
<tr>
<th>Type</th>
<th>Name</th>
<th>Certificate No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tyre</td>
<td>Front outer tyre</td>
<td>E11 75R-001062</td>
</tr>
<tr>
<td></td>
<td>Rear outer tyre</td>
<td>E11 75R-001063</td>
</tr>
<tr>
<td>Lamps</td>
<td>Front lamp</td>
<td>E9-00 1555</td>
</tr>
<tr>
<td></td>
<td>Position lamp</td>
<td>E9 50R-001555</td>
</tr>
<tr>
<td></td>
<td>Tail lamp</td>
<td>E9 50R-001556</td>
</tr>
<tr>
<td></td>
<td>Front steering lamp</td>
<td>E9 50R-001557</td>
</tr>
<tr>
<td></td>
<td>Rear steering lamp</td>
<td>E9 50R-001558</td>
</tr>
<tr>
<td></td>
<td>Rear registration plate lamp</td>
<td>E11 50R-000066</td>
</tr>
<tr>
<td>Rear-view mirror</td>
<td>Rear-view mirror</td>
<td>E3 001002</td>
</tr>
<tr>
<td>Horn</td>
<td>Horn</td>
<td>e9 1026</td>
</tr>
<tr>
<td>Reflector</td>
<td>Reflector installed at two side of rear mudguard</td>
<td>E11 020614</td>
</tr>
<tr>
<td></td>
<td>The rear reflector is combined with the rear registration plate lamp</td>
<td>E11 023584</td>
</tr>
</tbody>
</table>
## Periodic Maintenance & Inspection List

<table>
<thead>
<tr>
<th>Inspection item</th>
<th>Mileage between services and time</th>
<th>Applicable tools</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Per 300 KM</td>
<td>Per 1000 KM</td>
</tr>
<tr>
<td>* Air filter</td>
<td>I</td>
<td>C</td>
</tr>
<tr>
<td>* Petrol filter</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>* Oil filter</td>
<td>C</td>
<td>C</td>
</tr>
<tr>
<td>Replacement of engine oil</td>
<td>R</td>
<td></td>
</tr>
<tr>
<td>Tyre pressure</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Battery inspection</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Actuation gap inspection</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Inspection of steering handle fastening</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Absorber working inspection</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Screw fastening inspection</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>Oil leakage inspection for gearbox</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>* Inspection or replacement of spark plug</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>* Replacement of gearbox oil</td>
<td>I</td>
<td></td>
</tr>
<tr>
<td>Lubrication of each part</td>
<td></td>
<td>L</td>
</tr>
<tr>
<td>Muffler</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>* Ignition timing</td>
<td>I</td>
<td>I</td>
</tr>
<tr>
<td>* Carburetor</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
<td>* Exhaust gas inspection at idle speed</td>
<td>A</td>
<td>I</td>
</tr>
<tr>
<td>* Accelerator inspection</td>
<td>I</td>
<td>I</td>
</tr>
</tbody>
</table>
Fuel pipeline inspection | I | I | I | I | I | Ordinary tools
Lighting/metering/electric devices | I | I | I | I | I | Visual multimeter
Main stand bracket | I | I | I | Ordinary tools
Absorber | I | I | I | Ordinary tools
* Torque force of engine bolt | I | I | I | I | Torque spanner

Anticipated inspection

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ignition system—obviously continuous ignition abnormality, engine fire or overheating, which requires inspection and maintenance.</td>
</tr>
<tr>
<td>2</td>
<td>Carbon fouling elimination—obviously insufficient horsepower, which requires carbon fouling removal from cylinder cover, piston head and exhaust system.</td>
</tr>
<tr>
<td>3</td>
<td>Piston &amp; cylinder—excessive abrasion; replace cylinder if it is blocked.</td>
</tr>
</tbody>
</table>

Please have your motorcycle inspected and adjusted periodically at Generic distributors for being in best condition.

The above table is established under the presupposition of 1000 km/month.

I—Inspection  A—Adjustment  R—Replacement  C—Cleaning  L—Lubrication

Note: 1. “*” Regulations on exhaust emission made by the State Environmental Protection Agency shall be complied with. Maintenance must be carried out in accordance with the instruction manual supplied by the company. We are not responsible for any loss rising from private adjustment or maintenance.
2. Increase frequency of washing air filter if your motorcycle runs on the sandy/gravel road or under heavily polluted environment so as to extend its service life.
3. Motorcycles which often run at high speed or with high mileage shall be maintained frequently.
Engine oil/filter

Oil level

*Note
• The motorcycle should be parked on a flat ground when checking its oil level
• 2-3 minutes after the engine running, stop for about 2-3 minutes and then check the oil level.

Check the oil level.
Add oil to the upper limit when alarm is made by sensor at the oil level.
1. Sump 2. Oil Sensor 3. Rubber mat at the sump mouth
7. Fixing plate of sump

Oil replacement

*Note
It will be easier to change the oil when the engine is warming up.

Turn off the engine.
Remove the bolt at the bottom of the crankcase and release oil.
When the oil leaks completely, you can install the bolt and packing washer after they are cleaned.
Add oil to proper level.

Check the oil leakage when the engine operates at its idling speed.
Check the oil capacity again.

Cable accelerator inspection/adjustment

Check whether the cable accelerator is smooth or not.
Check the free travel of accelerator

Free travel: 5-10mm

Adjustment shall be made when improperness exist.
Adjust the free travel of accelerator. First loosen the locked nut ①,

Fix or loosen the adjusting device ②,

Until the free travel meet the standard value,

Then fix the locking nut ③.

**Air filter**

Filter replacement
Remove the body shield,
Remove the set bolt (13) on the air filter,
Remove the fixing component,
Remove the air filter

Remove the set bolt (12) on the upper cover of air filter,

Remove the filter element (4) on the filter.

Check whether the filter element is polluted or damaged.
And replace it with a new element if necessary
Remove the pipe clip.
Remove the filter.
Check whether the filter is polluted or damaged.
And replace it with a new one if necessary.

**Replacement time**

Replace at an early time if the motorcycle is always running on rainy days.

*Note
• Make sure the air filter cap is well installed before installing the filter

**Spark plug**

Disconnect the connecting wire of plug cap
① Lateral electrode ② Central electrode ③ Insulator

*Note:
Clean the spark plug by compressed air, thus to guarantee that no shatter is exist in the firebox. Remove the spark plug by special spanner or other tools.

(1) Inspection:

Carry out the following inspection, and make replacement when necessary:

- whether the insulator is damaged
- whether the electrode is worn
- Burning condition and color
  - Light grey indicates a good burning condition.
  - Paleness indicates any error in ignition system, or any diluted air mixture.
  - Humidity or black indicates carbon distribution or over rich air mixture.

Visual inspection of spark plug

Replace the spark plug if and crack or wearing is detected.

The following spark plug is recommended:

<table>
<thead>
<tr>
<th>Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard</td>
<td>C5HSA(NGK)</td>
</tr>
<tr>
<td>Heat Type</td>
<td>C6HSA(NGK)</td>
</tr>
<tr>
<td>Cold Type</td>
<td>C7HSA(NGK)</td>
</tr>
</tbody>
</table>

(2) Reuse of spark plug:

Clean the electrode of spark plug by scratch brush or special tools.
Check the distance between the central electrode and lateral electrode of spark plug by steel feeler gauge.
If necessary, carefully bend the lateral electrode to adjust the distance.

**Distance of spark plugs : 0.60 ~ 0.70mm**

Installed the spark plug onto the cylinder, and fix it to specified torque.
**Torque: 18 N·m**

Note: Fix the spark plug by hand, and then by special spanner, thus to protect the cylinder cover.

(3) Replacement of spark plug

Adjust the spark plug distance by steel feeler gauge, until it meets the specified value.
Note: Do not fix the spark plug too light.
Install the new spark and sealing cushion, and fix them by hand.
After contact the spark plug hole, continue fixing by 1/2 circle.

Battery
Battery removal

Remove the rubber pad (1) of pedal.
Remove the clamp bolt and clamp of battery.
First remove the negative wire and then remove the positive wire.
Take the battery (5) from the battery container.

Warning!
The tools for removing the positive electrode should not contact the flame, otherwise it will be very dangerous that the damaged battery will cause fire.
Install the battery following the opposite sequence.
Do not disconnect the battery during the adjustment of motorcycle, otherwise inner component of the motorcycle may be damaged.

Warning!
First positive and then negative to prevent short circuit

Charging state (closed circuit voltage) inspection
Open the cushion
Remove the cover of battery container.
First remove the negative wire and then remove the positive wire.
Take out the battery.

Measure the voltage between battery terminals.

Full charge: 13.1V

Under charge: 12.3V (Keep the battery idle for 1 hour)

* Note
Charge state examination must use a voltmeter operation.

电瓶架：battery bracket  伏特表：voltmeter

Charge

Connection method:
Connect the battery charger positive pole and battery positive pole together.
Connect the battery charger negative pole and battery
negative pole together.

Warning:
- Battery should be far away from fire source
- Turn off the charger switches when starting or completing charging in order to prevent spark of the connections resulting in explosion.
- You must follow the required current time when charging.

*Note
- Except emergencies, you should not use emergency charge.
- Measure the voltage for every other 30 minutes.

Charging current: standard: 0.4A

- Rapid: 4.0A

Charging time: standard: 10-15 hours

- Rapid: 30 minutes

Charging complete: closed circuit voltage: Above 12.8V

Do not disconnect the battery during the adjustment of motorcycle, otherwise inner component of the motorcycle may be damaged.

**Carburetor**

Idle speed adjustment

*Note
Idle adjustment was made in the implementation of the engine warm-up state.

① and ② refer to adjusting bolts.

Implement after warm-up of the engine.
Connect the engine rotation meter after running the engine.
Adjust the screw of the cable accelerator to rotating velocity.

Idle speed: 1900±100rpm/min

Adjust the idling adjusting screw when idle speed is unstable or unsmooth after oiling lightly.
Ignition timing inspection

Warm up the engine for 3-5 minutes.
Connect the timing light to the lead of spark plug after the engine is off.
*Note: carefully read the instruction of timing light before carry out any operation.
Remove the body shield.
Start the engine and it idle running.
Inspect the ignite timing.
In case the "F" mark and the mark on the right cover of crank case is in a line, the ignition time is correct.
Speed up the engine, and check out if the "F" mark start to move.

Idle Speed : 1900±100rpm/min

Cylinder pressure

Operate when the engine warm up.
Remove the cushion and body shield.
Remove the spark plug.
Install the cylinder pressure gauge.
At full throttle, measure the cylinder pressure by starting the engine.
The following items shall be check in case of a low pressure:
—Whether the gasket of cylinder cover is damaged;
—whether piston ring is damaged;
—whether the air inlet and piston ring is worn;
—whether the piston and cylinder is worn
When compression pressure is too high, please check the combustion chamber and carbon distribution at piston head.

Gear oil

Inspection

*Note
Set the middle kickstand on a smooth surface, and keep the motorcycle upright.
Remove the oil level gauge (1) after the engine stopped.
The oil level between the upper limit and lower limit of oil level gauge is all right.
Add gear oil when the oil level is below the lower limit.
Install the oil level gauge.

**Gear oil replacement**

Warm-up the engine
A lacquer tray shall be placed under the engine to hold the oil.
Remove the release bolt (2) and oil level gauge (1).
Recoil starting the engine for several times, and discharge the engine oil completely.
Check the oil level gauge when the engine oil is discharged.
Ensure the oil level gauge and O-shape ring is all right, and then carry out the installation.

Tighten the release bolt.
Fill the crank case with recommended engine oil.
Install the oil level gauge, start the engine, and keep it idle running for 2-3 minutes.
Stop the engine, and check out whether the oil level is at the upper limit of oil level gauge after several minutes.
The engine shall be kept upright during inspection.
Guarantee that there's no leakage exist.

*Note:
Confirm whether the bolts wear or not.

**Drive belt**

Remove the cover of left crank case.
Check whether the drive belt is work or damaged.
Periodically maintenance shall be guaranteed, and replace the drive belt with a new one if necessary.

**Free path of front/rear brake**

Free path of front brake
Measure the free path of front brake at the point of the brake lever.

**Free path: 10-20mm**

Free path of rear brake

Measure the free path of rear brake at the point of the brake pedal.

**Free path: 10-20mm**

**Inspection of brake fluid level**

Use the front brake to the upper limit, and check the oil level through the oil indicator. In case the brake fluid level is at or below the arrow in the picture, certain brake fluid (DOT3 or DOT4) shall be added until it reaches the upper limit.

**Note:**
The oil pump component shall be paralleled with the ground during the inspection.

**Front light**

Remove the left and right rearview mirror components.
Remove the front shield.
Disconnect the lead of front light.
Fix the front light, and rotate the bulb counterclockwise.
Remove the bulb.
**Clutch**

Start the engine and increase its speed gradually to check the working condition of the clutch. If the motorcycle fails to go and the engine stops, you should check the clutch block. If necessary, change a new one.

摩擦片：friction piece

**Front/rear suspension system**

**Front**
Pull the front brake tight and check the absorber. Check whether the absorber has leakage or loose.

**Rear**
Check the rear absorber when operating. Check whether part of the absorber is loose or wear. Suspend the rear wheel and check it movingly. Check whether the suspension bushing of the engine is loose or not.

**Nuts/bolts/fixed parts**
Check whether nuts, bolts, fixed parts are loose or not.
If any, tighten them according to their torque force.

**Rim/Tyre**
Check whether the tyre or rim has crack, screw or any other damage.
Check the tyre pressure.

*Note
Check the tyre air pressure when it is cold.

**Specification:**

<table>
<thead>
<tr>
<th>Tyre specification</th>
<th>QJ50QT-22D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front Wheel</td>
<td>80/80-16</td>
</tr>
<tr>
<td>Rear Wheel</td>
<td>90/80-16</td>
</tr>
</tbody>
</table>

**Tyre specification**

**Specification**

<table>
<thead>
<tr>
<th>QJ50QT-22D</th>
<th>Front Wheel</th>
<th>80/80-16</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Rear Wheel</td>
<td>90/80-16</td>
</tr>
</tbody>
</table>

Check whether the front wheel axle is loose or not.
Check whether the rear wheel nut is loose or not.
In case there is any loosening, tightening them according to the required torque force value.

**Torque force value:**

- Front wheel axle: 55-62 N·m
- Rear wheel nut: 100-113 N·m

**Steering column bearings and handle fix**

Swing the handle in order to confirm there is no interference with wire.
Confirm the handle turn freely when the front wheel turns.
If the handle is loose or unsmooth, you should check the steering column bearings.
## Inspection and maintenance of electrical system

### Torque force list of fixing parts in electrical system

<table>
<thead>
<tr>
<th>Position and name of fixing component</th>
<th>Torque of fixing (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectifier bolt</td>
<td>5.0</td>
</tr>
<tr>
<td>High tension coil fixing bolt</td>
<td>9.0</td>
</tr>
<tr>
<td>Flywheel Fixing bolt</td>
<td>5.0</td>
</tr>
<tr>
<td>Body Shield Bolt</td>
<td>9.0</td>
</tr>
<tr>
<td>Clutch cover bolt of starting motors</td>
<td>12</td>
</tr>
<tr>
<td>Set screw nut of clutch cover of starting motors</td>
<td>95</td>
</tr>
</tbody>
</table>
Charging System

1 Meters assembly   2 Horn   3 Power locking components   4 Frequency conversion flash apparatus
5 Battery 6Temperature controlled   7 Pressure adjuster   8 Ignition coil
1. Battery/charging system

Preparing documents --------1.1        Failure diagnosis ---------------1.2
Battery------------------1.3          Charging system --------------1.4
Voltage current adjustor ------1.5   Magnetor charging coil ------1.6
Removal of magnetor --------1.7

1.1 Preparing documents

Note of work:

*Note
1. Battery charge and discharge can be repeated use, its life span can be shortened and performance decreases after discharging. Usually its performance decreases 2-3 years later. Battery with performance degradation, the voltage will resume but sharply drops with load.

2. Battery overcharge: Generally we can judge its overcharge from its body. If the inside of the battery is short-circuit, it is hard to detect the voltage between its terminals. Adjustment failure: the battery voltage is too high; battery life span will be shortened.

3. If the battery has been place without using for a long time, it will be self-discharged and its capacity will drop. Under this condition, it should be charged every 3 months.

4. Check the charging system following the sequence listed on the table.

5. Don’t remove the connector with current flowing through the electrical parts, otherwise the voltage will be too high and these parts will be broken down. Switch off the main switch and operate.

6. Maintenance free battery (dry cell type) doesn’t have to be checked and added electrolyte and distilled water.

7. Check total electricity load.

8. Emergency charging can only be used in emergent situation.

9. Remove the battery from the motorcycle for emergency charging.

10. Add liquid battery cannot be used when changing the battery.

11. Use the voltage meter for measuring the voltage when charging.

12. Do not disconnect the battery during the adjustment of motorcycle, otherwise inner component of the motorcycle may be damaged.
Preparing standards

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Battery</strong></td>
<td></td>
</tr>
<tr>
<td>Capacity/Type</td>
<td>12V-4AH/dry cell</td>
</tr>
<tr>
<td>Voltage (20℃)</td>
<td></td>
</tr>
<tr>
<td>Full charge</td>
<td>13.1V</td>
</tr>
<tr>
<td>Obligatory charge</td>
<td>12.3V (not working for 1h)</td>
</tr>
<tr>
<td>Charging current</td>
<td>standard: 0.4A, rapid: 4A</td>
</tr>
<tr>
<td>Charging time</td>
<td>standard: 10-15h, rapid: 30min</td>
</tr>
<tr>
<td><strong>Magnetor</strong></td>
<td></td>
</tr>
<tr>
<td>capacity</td>
<td>90W/8000rpm</td>
</tr>
<tr>
<td>Lighting coil impedance(20℃)</td>
<td>Green/Red - Black 2.0-2.5Ω</td>
</tr>
<tr>
<td>Charging coil impedance(20℃)</td>
<td>White – Black 1.5-2Ω</td>
</tr>
<tr>
<td><strong>Voltage adjuster</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Single-phase semi-wave charge under short circuit</td>
</tr>
<tr>
<td>Voltage limit</td>
<td></td>
</tr>
<tr>
<td>Lighting Limit</td>
<td>14.0V±0.4V/5000rpm</td>
</tr>
<tr>
<td>Charging limit</td>
<td>14.8V±0.4V/5000rpm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tightening torque force value</th>
<th>Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rectifier bolt</td>
<td>5.0 N·m</td>
</tr>
<tr>
<td>High tension coil fixing bolt</td>
<td>9.0 N·m</td>
</tr>
<tr>
<td>Flywheel Fixing bolt</td>
<td>5.0 N·m</td>
</tr>
<tr>
<td>Body Shield Bolt</td>
<td>9.0 N·m</td>
</tr>
</tbody>
</table>

1.2 Failure diagnosis

**Power supply dead**
- Battery overcharge
- Battery wire isn't connected
- Fuse blow
- Bad power switch

**Low voltage**
- Bad battery charging
- Poor contact
- Bad charging system

**interrupted electric current**
- Poor contact of the charging wire
- Poor contact of the charging system
- Poor contact or short circuit of lighting system

**Bad charging system**
- Poor contact of the wire, short or open circuit
- Bad voltage current adjustor
- Bad magnetor
1.3 Battery

1.3.1 Battery removing

Remove the rubber pad of pedal
Remove the clamp bolt and clamp of battery.
First remove the negative wire and then remove the positive wire.
Take the battery from the battery container.

Warning

When removing the positive terminal, the tools should not be contacted with the bracket. It is dangerous that spark caused by short circuit will spark the petrol and break the battery.
Do not disconnect the battery during the adjustment of motorcycle, otherwise inner component of the motorcycle may be damaged.

Install the battery in an opposite order.

* Note

First positive terminal then negative terminal to prevent short circuit.
Check the charging situation.
Open the battery cover, and remove the clamp component of battery.
Remove the lead of battery.

Measure the voltage of the terminals

Full charge : 13.1V

Insufficient charge : 12.3V (not working for 1h)
### 1.3.2 Charging

**Connection method:**
- Connect the positive terminal of the battery charge and the battery.
- Connect the negative terminal of the battery charge and the battery.

**Warning:**
- The battery should be far away from fire source.
- Turn off the charger when starting charging or completing charging.
- Take the marked current time as a standard when charging.

**Note:**
- Except emergencies, you should not use emergency charge.
- Measure the voltage for every other 30 minutes.

<table>
<thead>
<tr>
<th>Charging current</th>
<th>standard: 0.4A</th>
<th>emergency: 4.0A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charging time</td>
<td>standard: 10-15h</td>
<td>emergency: 30min</td>
</tr>
<tr>
<td>Charging completes</td>
<td>open-circuit voltage: above 12.8V</td>
<td></td>
</tr>
</tbody>
</table>

### 1.4 Charging system

1.4.1 Charging system

Remove the battery ground wire, and connect the voltmeter between the negative terminal and ground wire. Turn off the switch and check whether it is short circuit.
* Note
Connect the positive terminal of the multimeter and the negative terminal of the battery together.

Check whether the main switch and main wire are short circuit under abnormal conditions.

1.4.2 Charging inspection

Use the multimeter to checking the fully charged battery. Mount the battery after the engine warming up. Connect the voltmeter between terminals. Remove the fuse and connect the ammeter between its terminals. Start the engine slowly and measure the limiting voltage and current. 万用电表：multimeter

**Limiting voltage/rotating speed**: 14-15V (2500rpm)

If the limiting voltage is not within the required range, check the voltage adjustor. Check the limiting voltage of the lighting system.

* Note
Choose AC voltage of the multimeter

**Limiting voltage**: 13.1(+/-)0.5V/2500rpm

If the limiting voltage is not within the required range, check the current adjustor.

1.5 Rectifier

1.5.1 Main wiring inspection

Remove the 6p plug of the rectifier. Check the conducting state of the terminals of the main wiring.

<table>
<thead>
<tr>
<th>Item (wiring color)</th>
<th>Judgments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Battery</td>
<td>With battery voltage</td>
</tr>
</tbody>
</table>
1.5.2 Voltage and current adjustor inspection

When the main wiring is completely normal, check the contact of the adjustor’s plug, and measure the resistance value between the terminals of the adjustor.

* Note

- When checking the metal parts, your finger should not contact test bar of the multimeter.
- Different multimeter will show differently, so use the same multimeter while checking.

Replace the voltage adjustor when the resistance value between the terminals is abnormal.

1.6 Magnetor charging coil

*Note

Check the magnetor charging coil on the engine.

Inspection
Remove the 6p connector of the magnetor
Measure resistance value between the white coils of magnetor with multimeter

**Standard value:** 0.5-10Ω (20)

Replace the magnetor coil when the measured value exceeds the standard value

1.6.1 Magnetor lighting coil

*Note
Check the magnetor lighting coil on the engine.

**Inspection**
Remove the 3p connector of the magnetor
Measure resistance value between the green/red coils of magnetor and the body GND with multimeter

**Standard value:** 2.0-2.5Ω (20)

Replace the magnetor coil when the measured value exceeds the standard value.

1.7 Replacement of magnetor

1.7.1 Replacement
Remove the body shield.
Remove the right body cover.
Remove the 2 fixing bolts and 2 screw, and remove the fan cover.
Remove the four fixing bolts of cooling fan, and remove the cooling fan then.

Fix the flywheel using the universal spanner.
Remove the fixing bolt of the flywheel.

万能固定扳手：universal spanner

Remove the flywheel using the flywheel remover.
Remove the solid key.
Remove the connector of the alternator wiring.
Remove the alternator stator.

飞轮拔取器：flywheel remover

1.7.2 Installation
Install the stator on the body of the engine.
Connect the magnetor terminator.

Clean up the taper part of the bent axle and flywheel.
Install the solid key of the flywheel into the bent axle.
Aim the flywheel groove at the solid key on the axle.

* Note
Ensure the inside of the flywheel do not have bolts.

Fix the flywheel with the universal spanner and tighten the fixing screw.

Torque force value：9.0 N·m

Install the right body fender

飞轮：flywheel 冷却风扇：cooling fan 风扇盖：fan cover
Ignition system

1 Meters assembly   2 Power locking components   3 Horn   4 Battery   5 Starting relay
6 CID DC igniter   7 Frequency conversion flash apparatus   8 Ignition coil
9 Release resistances
2. Ignition system

Preparation system ---------------2.1 CDI Group-------------------2.4
Failure diagnosis ---------------2.2 Ignition coil ------------------2.5
Ignition system checking --------2.3 Trigger---------------------2.6

2.1 Preparing documents

Note of work:
1. Checking the ignition system following the sequence listed in the table of failure diagnosis.
2. The ignition system is solidified in the CDI group and you don’t have to adjust the ignition time.
3. Checking the ignition system following the sequence listed in the table of failure diagnosis.
4. CDI ignition system cannot subject to strong percussion (which is the main reason for failure), so you need to pay great attention to that.
5. Check whether the connection is bad or not, because usually the reason for failure is poor contact socket.
6. The heat value of the spark plug should be appropriate. Improper spark plug will cause the engine running unsmooth and even the spark plug will be burn-out.
7. Inspection in this chapter is based mainly on the maximum voltage, also inspection of the ignition coil impedance is introduced.
8. Check the main switch according to the table.
9. Remove the alternator and stator according to the instructions.

Preparing standards

<table>
<thead>
<tr>
<th>Items</th>
<th>Standard value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spark plug recommended</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>C5HSA(NGK)</td>
</tr>
<tr>
<td>Hot type</td>
<td>C6HSA(NGK)</td>
</tr>
<tr>
<td>Cold type</td>
<td>C7HSA(NGK)</td>
</tr>
<tr>
<td>Spark gap</td>
<td>0.6-0.7mm</td>
</tr>
<tr>
<td>Ignition coil impedance (20)</td>
<td></td>
</tr>
<tr>
<td>Primary coil</td>
<td>0.6Ω±10%</td>
</tr>
<tr>
<td>Secondary coil</td>
<td></td>
</tr>
<tr>
<td>With plug cap</td>
<td>5-11KΩ</td>
</tr>
<tr>
<td>Without plug cap</td>
<td>0.5-5.5KΩ</td>
</tr>
<tr>
<td>Resistance of trigger (20)</td>
<td>100-500Ω</td>
</tr>
<tr>
<td>Measure the maximum voltage</td>
<td>95-400V</td>
</tr>
<tr>
<td>after ignition coil rotates once</td>
<td></td>
</tr>
<tr>
<td>Trigger voltage</td>
<td>Above 1.7V</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------</td>
</tr>
<tr>
<td>Charging coil voltage</td>
<td>95-400V</td>
</tr>
</tbody>
</table>

Tools
Voltmeter
Multimeter

2.2 Failure diagnosis

Spark plug unable to jump

<table>
<thead>
<tr>
<th>Error</th>
<th>Reason (identify according to the following order)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition coil</td>
<td>The inner resistance is too small and it should be tested by required tester.</td>
</tr>
<tr>
<td></td>
<td>Low rotation speed of the bent axle.</td>
</tr>
<tr>
<td></td>
<td>Tester is interfered. (It is normal that several measured voltage is above the basic standard.)</td>
</tr>
<tr>
<td></td>
<td>Poor contact wire for the ignition system.</td>
</tr>
<tr>
<td></td>
<td>Bad ignition coil.</td>
</tr>
<tr>
<td></td>
<td>Bad charging coils (measure at maximum voltage).</td>
</tr>
<tr>
<td>Secondary Side voltage</td>
<td>Wrong connection with the tester.</td>
</tr>
<tr>
<td></td>
<td>Bad main switch</td>
</tr>
<tr>
<td></td>
<td>Bad connector of the CDI group</td>
</tr>
<tr>
<td></td>
<td>Poor contact of the CDI group or GND of the CDI group is short-circuit.</td>
</tr>
<tr>
<td></td>
<td>Bad charging coil (measure at maximum voltage)</td>
</tr>
<tr>
<td></td>
<td>Bad trigger (measure at maximum voltage)</td>
</tr>
<tr>
<td></td>
<td>Bad high tension electricity connector</td>
</tr>
<tr>
<td></td>
<td>Bad CDI group (when there is no spark for the plug or - is abnormal).</td>
</tr>
<tr>
<td>No or interrupted high voltage electricity</td>
<td>Normal high voltage electricity/no spark for the plug</td>
</tr>
<tr>
<td></td>
<td>Bad plug or secondary ignition coil leakage</td>
</tr>
<tr>
<td></td>
<td>Bad ignition coil</td>
</tr>
<tr>
<td>Charging coil</td>
<td>No high voltage electricity</td>
</tr>
<tr>
<td></td>
<td>The inner resistance is too small and should be tested by required tester.</td>
</tr>
<tr>
<td></td>
<td>Low rotation speed of the bent axle</td>
</tr>
<tr>
<td></td>
<td>Tester is interfered. (It is normal that several measured voltage is above the basic standard.)</td>
</tr>
<tr>
<td></td>
<td>Bad charging coil ( - are normal)</td>
</tr>
<tr>
<td>No or interrupted high tension electricity</td>
<td>Bad ignition coil</td>
</tr>
<tr>
<td></td>
<td>Bad charging coil</td>
</tr>
</tbody>
</table>
2.3 Checking the ignition system

*Note
When there is no spark on the spark plug, check whether there is loose wiring or poor contact of all components, and make sure all voltage values are normal.

• There are various kinds of multimeters with different internal impedances and different test values.

Connect a high-pressure shunt or an ammeter with an input impedance above 10MΩ to the multimeter.

2.3.1 Voltage of the ignition

If you replace the original spark plug with a better one, make ground connection with the engine.

*Note
Make sure the wire connection is correct before testing.
Cylinder compression pressure normally refers to the test value when the spark plug is installed in the cylinder head.
Remove the intermediate cap.
Connect the wires of ignition coils.
Ground connect the two ends (black/white) of the primary coil to the car body to create current divider.
Press the staring motor or step on the actuating lever to measure the voltage of the ignition coil at a time.

Minimum voltage: Above 95V.

*Note
Never touch the metal of test prod when measuring the voltage in case of electric shock.

2.3.2 Trigger

*Note
Install the spark plug in the cylinder head and carry out the measuring when the compression pressure is normal.

Remove the 4p and 2P joints of CDI group, connect the peak-voltage magnetor between the trigger with wiring 2p end (blue/white end) and 4p end (black end). Press the starting motor or step on the actuating lever to measuring the peak voltage of the trigger.

Method of attachment: Blue/white end to the positive pole and black end to the negative pole.

Minimum voltage: Above 1.7V.

*Note
Never touch the metal of test prod when measuring the voltage in case of electric shock.
Remove the adaptor of the alternator when the peak voltage of the adaptor of CDI Group is abnormal.
Connect the magnetor and the trigger (blue/white).
· If the obtained voltage of the end of CDI Group is abnormal while the one of the end of the alternator is normal, the problem should be poor contact or wire break.
· If both ends are abnormal, the trigger may be broken, please refer to the checking method in the failure diagnosis table.

2.4 CDI Group

2.4.1 System check
Check the system.
Remove the CDI Group, check the components concerning the ignition system at the wiring end.

2.4.2 Check
Remove CDI Group, check whether there is loose or corrosion in the adaptor.

<table>
<thead>
<tr>
<th>Checking item</th>
<th>Testing end</th>
<th>Standard value (Ω)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main switch</td>
<td>Red--red/white</td>
<td>Breakover when the main switch is “OFF”</td>
</tr>
<tr>
<td>Trigger</td>
<td>Blue/white – white/green</td>
<td>100-200Ω</td>
</tr>
<tr>
<td>Primary coil of the ignition coil</td>
<td>Black/white--black</td>
<td>0.6Ω±10%</td>
</tr>
<tr>
<td>Secondary coil of the ignition coil</td>
<td>Black--spark plug cap (without the spark plug)</td>
<td>0.5-5.5KΩ±10%</td>
</tr>
</tbody>
</table>
2.5 Ignition coil

2.5.1 Unload
Unload the body shield.
Unload the spark plug cap.
Unload the primary wire of the ignition coil.
Unload the fixed bolt of the ignition coil, remove the ignition coil.
Carry out the operations in the opposite order of unloading during installation.

*Note:
Use the black/white end of primary coil during installation.

2.5.2 Check the primary coil
Impedance measuring between the ends of the primary coil

**Standard value**: 0.6Ω (+/-) 10% (20)

If the impedance value is within the range of the standard value, it is fine.
If the impedance is “∞”, there is wire break in the coil, replace it with a new one.

2.5.3 Secondary coil
With a spark plug attached. Measure the impedance value between the wire side and the end of the spark plug cap.

**Standard value**: 5-11KΩ (20)

If the impedance value is within the range of the standard value, it is fine.
If the impedance is “∞”, there is wire break in the coil.
Remove the spark plug cap, measure the impedance value between a side wire and the negative end.

**Standard value**: 0.5-5.5KΩ (+/-) 10% (20)
2.6 Trigger

*Note:

Check of the trigger could be carried out on the engine.

Check

Remove the body shield.

Remove the wire adaptor of the trigger.

Measure the impedance value between the blue/white end of the wire at the engine side and the ground strap connection of the body.

磁电机接口：magnetor interface

黑：black   绿/红：green/red   白：white

Standard value：100-500Ω (20)

Change the alternator when the value is beyond the range of the standard value.

Activation system
启动示意图

1 Meters assembly  2 Power locking components  3 Horn  4 Battery  5 Starting relay
6 CID DC igniter  7 Frequency conversion flash apparatus  8 Ignition coil
3. Activation system

Preparation ---------------3.1
Failure diagnosis ---------------3.2
Starting motor ---------------3.3
Starting relay ---------------3.4

3.1 Preparing documents

Notes of working
The unloading of the starting engine could be carried out on the engine.
Refer to the method of unloading when unloading the engine.

Preparation standards

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Service limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length of the motor brush of the starting motor</td>
<td>6.2mm</td>
<td>3.0mm</td>
</tr>
<tr>
<td>Liner of the starting idler shaft</td>
<td></td>
<td>8.3mm</td>
</tr>
<tr>
<td>External diameter of the starting idler shaft</td>
<td></td>
<td>7.94mm</td>
</tr>
</tbody>
</table>

Torque tightening value

Clutch cover bolt of starting motors 12 N\(\cdot\)m
Set screw nut of the clutch cover of starting motors 95 N\(\cdot\)m

Instrument

Set screw nut wrench
Universal fixed wrench
3.2 Failure diagnosis

Activation failure  Weak rotating force of the starting motor  Starting motor is rotating well while the engine is not

• Burnt out fuse  • Low storage battery  • Broken starting clutch
• Low storage battery  • Poor contact of connecting line  • Anticlockwise revolution of the starting motor
• Broken main switch  • The gear of the starting motor is Blocked by foreign matters.
• Broken starting clutch
• Broken brake switch
• Broken stating relay
• Poor contact of connecting line
• Broken starting motor

3.3 Starting motor

3.3.1 Unloading

*Attention
Before unloading the starting motor, turn the main switch to “OFF” first; remove the bond strap of the storage battery, then turn the power source on the see if the starting motor is working to ensure the security.

Remove the wire clip of the starting motor first.
Remove the fixed bolt of the starting motor and unload the motor.
Roll up the rubber overshoe and pull down the adaptor of the starting motor.

3.3.2 Breaking down

Unload the screws in the outer cover, the front cover, the motor cover and other parts.

转向器：commutator

3.3.3 Check

Check other component assembling.
Replace for a new one when there is wear,
fragment or burning loss in the surface.
Clean the metal powder on the surface of the commutators.
Conduction check between all interfaces of other components
Make sure armature shafts of all interfaces could not turn on.
Conduction check of the outer cover of the starting motor
Make sure the conduction terminator and the outer cover of the starting motor could not turn on.
Conduction check between conduction terminators and electric brushes
Change for a new one if there is anything abnormal.
Conduction measuring of the electric brush bracket
Change for a new one if it turns on.
Measuring of the length of electric brushes

Available credit: Change for a new one if the length value is less than 3.0mm
Check whether the needle bearing in the front cover is rotating smoothly and whether there is any loose when pressed in.
Change for a new one if there is anything abnormal.
Check whether there is any wear or damage of the oil seal.

3.3.4 Assembling
Oil seal and greasing coating in the front cover.
Install the electric brush on the electric brush bracket.
Grease coating on movable parts of the two ends of electric brush.
Press all the electric brushes into the bracket, then fit on the front cover of the electric motor.

*Note
- Damage is not allowed in the interface between the electric brush and the armature, pay attention please.
The labial part of the oil seal should not be damaged by the installation shaft, pay attention please.

*Note*
In the assembling of the outer shell and the front cover, use the magnet to draw the front cover to make it easy to pull out the armature, and then press it down softly.

3.3.5 Installation

Install new O-shape rings on the front cover.
Pair the screw of the motor shell with the one of the front cover during installation.
Screw up the screw in the outer shell.

3.4 Starting relay

3.4.1 Actuation examination

Remove the fender of the body.
Ensure there is a “click” when turning on the starting motor with the main switch remaining “on”.
If there is sound, it is ok.
If no sound appears: ·check the voltage of the starting relay.
·Check the ground loop of the starting relay.
·Actuation examination of the starting relay.

启动继电器：start the relay
3.4.2 Voltage examination of the starting relay

Set up the main stand, measure the voltage between the negative pole of the green/yellow wire in the adaptor of the starting motor and the ground strap connection of the body.
Hold on the brake tension rod with the main switch remaining “on”, the voltage of the storage battery must be in accordance with specification.
Continuity check and examination of the wires when the voltage between the ends of the starting motor is zero.

3.4.3 Examination of the ground loop of the starting relay

Remove the adaptor of the starting relay.
Conduction examination between the grey wire at the end of conductor joint and the ground strap connection of the body.
When pressing on the starting button, the conduction between the grey wire and the ground strap connection of the body must be fine.
Examination of the conduction of the starting button and wires when there is no conduction.

3.4.4 Actuation examination

Remove the storage battery out of the starting relay, and connect the end of the starting relay with a multimeter.
Connect the fully charged storage battery between the black wire and the green/yellow wire of the relay. The relay will utter a “click” and the electric impedance the multimeter shows is “zero”.

绿/黄/黑  green/yellow/black

Ω

启动继电器

Ω

- 76 -
Bulbs/Switches/Meters
<table>
<thead>
<tr>
<th></th>
<th>Certificate No. of front lamp:</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>E9-00 1555</td>
</tr>
<tr>
<td></td>
<td>Certificate No. of front position lamp: E9 50R-001555</td>
</tr>
<tr>
<td></td>
<td>Certificate No. of rear lamp: E9 50R-001556</td>
</tr>
<tr>
<td></td>
<td>Certificate No. of front turn light:</td>
</tr>
</tbody>
</table>

1 Front signal lamp  2 Right rearview mirror  3 Left rearview mirror  4 Front right turn signal lamp  
5 Front left turn signal lamp  6 Rear left turn signal lamp  7 Taillight  8 Rear reflector  9 Meters assembly
4. Bulbs/Switches/Meters

Preparation --------------4.1                     Meters --------------4.6
Failure diagnosis --------------4.2                 Main switches --------------4.7
Headlight bulb replacement --------4.3         Speaker----------------4.8
Front turn signal lamp replacement----------4.4       Combined switch----------4.9
Replacement of taillight, rear left/right turn signal lamp -------4.5

4.1 Preparing documents

Notice of work
Conduct examination of the switch (The switch could be removed from the motorcar before being examined)

4.2 Failure diagnosis

The main switch can not be turned "On"
• The bulb is broken
• The switch is broken.
• Poor contact at the adaptor or wire break.

Dim light
• generator failure
• manostat failure
• rectifier failure

4.3 Headlight bulb replacement

4.3.1 Unloading
Remove the right/left rearview mirror;
Remove the front shield;
Disconnect the wire of headlight bulb.
Remove the glass lens of the headlight
Keep the headlight in place; rotate the outlet clockwise to remove the bulb.
4.3.2 Installation
Install the bulb in the opposite order of removal.

4.4 Front turn signal lamp bulb replacement

4.4.1 Unloading
Unscrew the setscrew of the turn light.
Remove the front turn signal lamp bulb

4.5 Taillight/Rear turn signal lamp replacement

4.5.1 Unloading
Remove the set screw of taillight to remove the taillight;
Remove the set screw of rear turn signal lamp;
Disconnect the wire of taillight;
Disconnect the wire of turn signal lamp bulb
Remove the taillight and rear turn signal lamp bulb.

4.5.2 Installation
Install the bulb in the opposite order of removal.
4.6 Meters

Remove the decorative parts of meters
Remove the back protective guard of the handlebar,
Disconnect the wire of meters
Remove the meters

Install the speedometer in the opposite order of removal.

4.7 Main switches

4.7.1 Check

Remove the helmet hook, front basket and rear board.
Remove the added board and foot protective plate of front basket and rear board.
Remove the conductor joint of the main switch
Conduction examination of the ends of the adaptor

4.7.2 Main switch replacement

Remove the helmet hook, front basket and rear board.
Remove the added board and foot protective plate of front basket and rear board.
Remove the standing bolt; unload the permanent seat of the main switch.
Remove the standing bolt to replace the main switch.

4.8 Speakers

Examination
Remove the wires of the speaker.
Connect the speaker to the storage battery.
If there is sound, it is working.

4.9 Combined switch

Displacement and installation

Remove the rearview mirror component.
Remove the decorative screw of meter.
Remove the meters and back protective guard of the handlebar.
Remove the set screw of left and right combined switches.
Unscrew the left and right combined switches.
Remove the components of right handle and left handle.
Remove the right and left combined switch.

Install the combined switch in the opposite order of removal.
**Examination and maintenance of chassis**

**Torque force list of set parts on chassis**

<table>
<thead>
<tr>
<th>Position and name of fixing part</th>
<th>Fixing torque ( N·m )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Installing bolt of front fluid brake disc</td>
<td>5-9 N·m</td>
</tr>
<tr>
<td>Bolt component of front absorber</td>
<td>37-44 N·m</td>
</tr>
<tr>
<td>Set bolt of rear brake rocker</td>
<td>5-9 N·m</td>
</tr>
<tr>
<td>Set bolt for welding of handlebar</td>
<td>40-60 N·m</td>
</tr>
<tr>
<td>Front wheel axis</td>
<td>55-62 N·m</td>
</tr>
<tr>
<td>Set bolt of front absorber</td>
<td>37-44 N·m</td>
</tr>
<tr>
<td>Set nut of rear wheel</td>
<td>100-113 N·m</td>
</tr>
<tr>
<td>Top bolt of rear absorber</td>
<td>37-44 N·m</td>
</tr>
<tr>
<td>Bottom bolt of rear absorber</td>
<td>22-29 N·m</td>
</tr>
<tr>
<td>Set bolt of fuel tank</td>
<td>5-9 N·m</td>
</tr>
<tr>
<td>Set bolt of helmet container</td>
<td>5-9 N·m</td>
</tr>
<tr>
<td>Set bolt of fulcrum shaft of motor</td>
<td>55-62 N·m</td>
</tr>
</tbody>
</table>
Front Fluid Brake

A. Dia of front brake disc: \( \phi 220 \text{mm} \)

B. Thickness of front brake disc: 4.0mm
   Limit: 3.0

C. Thickness of front brake disc: 4.0mm
   Limit: 3.0

D. Installing torque of bolt 9 in the picture: 5-9 N·m

E. Free path of brake handle: 10-20mm
Rear Drum Brake

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Torque of bolt 3 in the picture: 100-113 N·m</td>
<td></td>
</tr>
</tbody>
</table>
| B | Inner dia. Of rear drum brake φ140mm  
Wearing limit: φ 141mm |
| C | Thickness of friction piece of rear brake: 4.0mm  
Limit: 3.0mm |
| D | Torque of bolt 10 in the picture: 5-9 N·m |
5. Brake

Maintenance instruction ------------------------5.1

Failure diagnosis ------------------------5.2

Front fluid brake --------------------------5.3

Rear fluid brake --------------------------5.4

5.1 Maintenance instruction

Note of work

* Note

• Parts of the braking system should not be polluted when installing or removing.
• Use the required cleaner to prevent affecting the function of the braking system.

* Check the brake before riding*

5.1.1 Specification

<table>
<thead>
<tr>
<th>Items</th>
<th>Standard value(mm)</th>
<th>Available limits (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>front brake disc diameter</td>
<td>φ220mm</td>
<td></td>
</tr>
<tr>
<td>front brake disc thickness</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>Thickness of friction piece in</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>front liquid brake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inner diameter of rear drum</td>
<td>φ140mm</td>
<td></td>
</tr>
<tr>
<td>brake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness of friction piece in</td>
<td>4.0</td>
<td>3.0</td>
</tr>
<tr>
<td>rear brake pad</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

5.1.2 Torque

Installing bolt of front liquid brake plate 5-9 N·m
Set bolt of rear brake rocker 5-9 N·m
Set bolt of rear wheel 100-113 N·m
5.2 Failure Diagnosis

Brake

Poor performance of the braking system
1. Improper adjustments for the brake
2. Brake shoe or brake plate wears
3. Improper installation for the brake shoe
4. Polluted brake plate of brake shoe

Slow reaction and tight lever
1. Improper adjustments for the brake
2. Brake shoe or brake plate wears
3. Improper installation for the brake shoe

Abnormal noise
1. Brake shoe or brake plate wears
2. Polluted brake plate of brake shoe

5.3 Front fluid brake

5.3.1 Remove

* Note
• Replacement of the brake shoe assembly
• Mark the replaced shoe for the next use

Remove the following parts from the right grip and front absorber

1. Oil pump component (3)
2. Front brake component (10)
3. Brake cylinder component (6)
4. Friction piece component (2)
5. Brake tube assembly (5)
6. Switch (7)

Note: See Fig. 76 for details

*Note
• Oil should not be allowed to pollute the brake shoe during installing and removing.
• Use the required cleaner to prevent affecting the function of the braking system.
Loosen the fixed bolt of the brake cylinder.
Remove the brake cylinder from the front absorber.
Remove the front wheel axis, and dismantle the front wheel.

Remove the brake plate from front wheel.

5.3.2 Check

Check whether the friction piece of front fluid brake is worn,
Replace the shoe when necessary.
Measure the thickness of friction piece of front fluid brake,
Measure the front brake disc and write down the maximum value

**Specification:**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>QJ50QT-22D</td>
<td>Dia. O front brake plate</td>
</tr>
<tr>
<td></td>
<td>Thickness of front brake plate</td>
</tr>
<tr>
<td></td>
<td>Thickness of friction piece of front fluid brake</td>
</tr>
</tbody>
</table>

*Note

- Use inside micrometer or caliper only to measure.
Measure the thickness of friction piece of front fluid brake
If the thickness of the brake disc and friction piece is smaller than the maintenance value or polluted by oil, they should be replaced.

**Available limits**

<table>
<thead>
<tr>
<th>Component</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friction piece of front liquid brake</td>
<td>3.0mm</td>
</tr>
<tr>
<td>Front brake plate</td>
<td>3.0mm</td>
</tr>
</tbody>
</table>

**Note:**
The friction piece of front liquid brake shall be replaced in pair.
The brake plate can be measured on the motorcycle without being dismantled.

5.3.3 Installation

Install the front brake plate and front wheel components.
Install the friction piece of front liquid brake.
Install the tube assembly and brake cylinder assembly of front brake.
Install the oil pump component and switch component.
The friction piece of front liquid brake and brake plate shall not be polluted by oil stains.

*Note

Any oil stains in the friction piece of front liquid brake may reduce the performance of brake

Tighten the nuts and bolts according to their torque force value.

**Torque value:**
Installing bolt of front liquid brake: 5-9 N·m
Don't let oil stains pollute the friction piece of front liquid brake.
If the friction piece of front liquid brake is polluted by oil stains, you should use special cleaner to clean it up.

*Note
Any oil stains in the friction piece of front liquid brake may reduce the performance of brake.

5. 4 Rear drum brake

5.4.1 Remove
Remove the muffler.
Remove the set bolt (3) of rear wheel.
Remove the rear wheel assembly.
Remove the brake pad component (7).

*Note
• Brake shoe replacement.
• Mark the replaced shoe for the next use

Remove the following parts from the rear wheel:
Rear brake:
1. Bolt M6X30 (10)  7. Brake pad part (4)
2. Rear brake rocker part (11)  8. Brake pad spring (5)
3. Nut M6 (12)  9. Vacuum tyre 80/80-16 (1)
4. Rear wheel component 16×1.85 (2)
5. Set nut of rear wheel (3)
6. Camshaft of rear brake (8)

Note: See Fig. P77 for details

5.4.2 Check
Check if the brake drum and brake pad are worn.
Replacement shall be made if necessary.
Measure the thickness of friction piece of brake pad.
Measure the inner diameter of brake drum and write down the maximum value.

*Note
• Use micrometer only to measure.
Measure the inner diameter of brake drum, as well as friction piece of brake shoe.

If the thickness of the brake shoe is smaller than the maintenance value or polluted by oil, they should be replaced.

**Note:** the brake shoes shall be replaced in pairs.

**Inner diameter of rear brake drum**  \( \phi 140 \text{mm} \)

**Thickness of friction piece in rear brake shoe**  4.0mm

**Available limit:**

**Inner diameter of brake drum**  \( \phi 141 \text{mm} \)

**Friction piece of brake shoe**  3.0mm

### 5.4.3 Installation

Install the brake shoe component.

Install the rear wheel component.

Install the muffle.

**Note**

Any oil stains in the friction piece of brake shoe may reduce the performance of brake.

Tighten the nuts and bolts according to their torque force value.

**Torque value:**

**Set nut of rear wheel:**  100-113N·m

Don’t let oil stains pollute the friction piece of brake shoe.

If the friction piece of brake shoes polluted by oil stains, you should use special cleaner to clean it up.

Rear brake:

1. Bolt M6X30 ( 10 )
2. Rear brake rocker party ( 11 )
3. NutM6 ( 12 )
4. Rear wheel component 16×1.85 ( 2 )
5. Set bolt of rear wheel ( 3 )
6. Camshaft of rear brake ( 8 )
7. Brake shoe component ( 4 )
8. Brake shoe spring ( 5 )
9. Vacuum 80/80-16 ( 1 )

**Note**

Any oil stains in the friction piece of brake shoe may reduce the performance of brake.

**Note:** See Fig. P77 for details
Body Panel
*Note*

Do not damage the body when removing.
Do not damage the hook of the body.
Do match the grooves for the panels.
Correctly install the hooks of each part.
Do not damage the accessories while installing.
6. Body panel

Follows the sequence below to tear down the body:

Instrument decorative part → Front shield of handle bar → Rear shield of handle bar → Front lamp → Cushion assembly → Rear rack assembly → Rear left signal lamp → Rear right signal lamp → Taillight → Left decorative part of fender → Right decorative part of fender → Rubber pedal → Battery cover → Battery → Helmet hook → Rear cover of front box → Reinforced board for rear cover of front box → Foot protective board → Left decorative plate of front cover → Right decorative plate of front cover → lower junction plate I → lower junction plate II → Front shield panel → Front mudguard → Front left fender → Front right fender → Left fender → Right fender → Spark plug cover → bracket for rear license plate → Reinforced part of rear mudguard → rear mudguard → bracket part of secondary rear mudguard → Rear secondary mudguard → Rear mudguard

*Note
Do not damage the body when removing.
Do not damage the hook of the body.
Do match the grooves for the panels.
Correctly install the hooks of each part.
Do not damage the accessories while installing.
Front wheel

A. Front wheel tyre specification:
   Outer tyre 80/80-16

B. Item 12(front axle) mounting torque force:
   55-62 N·m

C. Rim tilt limit:
   Vertical: 2.0mm
   Horizontal: 2.0mm

D. Front wheel axle bend limit:
   0.2mm

E. Front outer tyre certificate No.:
   E11 75R-001062
1 front rim 16×1.6  2 vacuum tyre 80/80-16  3 front outer bushing 4 front axle oil seal 5 bearing 6201-2RS 6 screw M6×20  7 front brake disc  8 valve cap 9 valve  10 front wheel middle bushing 11 pinion stand assembly  12 front wheel axle M12×1.5×153.7

**Front suspension**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bolt 3 mounting torque force: 22-29 N·m</td>
</tr>
<tr>
<td>B</td>
<td>Bolt 6 mounting torque force: 37-44 N·m</td>
</tr>
<tr>
<td>C</td>
<td>Ball upper quantity: 21 pcs</td>
</tr>
<tr>
<td></td>
<td>Ball lower quantity: 21 pcs</td>
</tr>
</tbody>
</table>
1 lower connection board welding assembly  2 front left shock absorber assembly  3 bolt M8×30  4 socket head screw M6×20  5 front right shock absorber assembly  6 bolt M10×1.25×30  7 lower bearing lower steel bow  8 steel ball assembly  9 upper bearing lower steel bowl  10 upper bearing upper steel bowl  11 gasket  12 compression nut

**Steering handle**

| A | Bolt 9 (steering handle standing bolt) mounting torque force: 40-60 N·m |
| B | Front brake handle free travel: 10-20mm |
| C | Rear brake handle free travel: 10-20mm |
| D | Throttle operation handle(fig 3) free travel: 5-10mm |
| E | Rearview mirror 4、5 certificate No.: E3 001002 |
7. Front wheel/front suspension

Preparation documents--------------------------7.1

Failure diagnosis--------------------------7.2

Front wheel-------------------------------7.3

Steering handle--------------------------7.4

Front fork-------------------------------7.5

7.1 Preparation documents

Notes
Before removing the front wheel, you should use jack to let it float above the ground and it cannot be rotated. Pay attention that no oil stains sticking to the brake shoe, brake shoe assembly and brake disc while operating.

Entire motorcycle standards

<table>
<thead>
<tr>
<th>Measuring position</th>
<th>Item</th>
<th>Standard value(mm)</th>
<th>Available limits(mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front wheel axle</td>
<td>Bow</td>
<td></td>
<td>0.2</td>
</tr>
<tr>
<td>Front wheel</td>
<td>Rim vertical</td>
<td></td>
<td>2.0</td>
</tr>
<tr>
<td></td>
<td>shimmy</td>
<td>Horizontal</td>
<td>Within 1.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.0</td>
</tr>
</tbody>
</table>

Torque force

<table>
<thead>
<tr>
<th>Standing bolt for steering handle welding assembly</th>
<th>40-60 N·m</th>
<th>bearing replacing bar</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front wheel axle</td>
<td>55-62 N·m</td>
<td>standing bolt spanner</td>
</tr>
<tr>
<td>Standing bolt of front shock absorber assembly</td>
<td>37-44 N·m</td>
<td></td>
</tr>
</tbody>
</table>
7.2 Failure diagnosis

7.2.1 Difficulty of steering
The steering handle bearing has problems
Steering handle bearing is damaged
Low gas pressure for the tyre
Gas leakage of tyre

7.2.2 Unsteady steering
Bearing of the steering handle is broken
Not enough tire gas pressure
Bent front fork and front wheel axle
Deformed or tilting front tyre

7.2.3 Shimmy of front wheel
Deformed tyre
Loose front wheel bearing
Bad tyre

7.2.4 Difficulty of rolling wheel
Trouble of the wheel axle, pinion stand or brake

7.2.5 Abnormal noise of front shock absorber
Friction noise of shock absorber guard plate
Loose bolts of absorber parts

7.3 Front wheel

7.3.1 Removal

Attention:
Prop up motorcycle firmly.
Loose brake cylinder assemble to install bolt④.
Remove brake cylinder assembly ③。
Put a support under the driver to raise front wheel.
Loose front wheel axle① and remove front wheel assembly.
Remove pinion stand assembly.
Remove front brake disc ②.
Remove front wheel oil seal, front wheel outer bushing, Bearing 6201-2RS and front wheel middle bushing.

* Note : QJ50QT-22D front wheel removal diagram is available in P85 of the instruction.

7.3.2 Check

7.3.2.1 Axle bent inspection
Put the axle on the V-pedestal and measure the eccentricity ratio with dial indicator

Available limits : Replace if it is above 0.2mm

7.3.2.2 Rim swinging inspection
Put the rim on a precise support and inspect swinging value of rim.
Turn wheel by hand and read the swinging value.

Available limits :

Vertical : Replace if it is above 2mm.

Horizontal : Replace if it is above 2mm.

7.3.2.3 Front wheel bearing inspection
Remove the front wheel axle and front brake disc.
Remove front wheel outer bushing and front wheel oil seal.
Remove bearing.
Remove middle bushing.

Check rolling of bearing.
If it is not rolling, the bearing would have been damaged or loose, thus requiring replacement.

游隙 clearance 轴向 axial 径向 radial
7.3.3 Bearing replacement

Remove front wheel axle, front wheel brake disc and front wheel outer bushing.
Remove front wheel middle bushing and then remove oil seal and bearing by oil seal remover and bearing remover.

**Note: removed bearing shall be replaced by new bearing.**

Lay grease on bearing in installation.
Press bearing with bearing installation tools.

*Note*
- The bearing must be pressed parallelly.

7.3.4 Installation

Install according to reversed procedures of "removal". Pay attention to the following items:
Grease front wheel axle, pinion stand assembly, oil seal (open), bearing 6201-2RS, front wheel middle axle bushing and front wheel outer bushing.
Calcium base grease is recommended.
Install front wheel, front wheel axle and pinion stand assembly. In installing pinion stand assembly, pay attention to match parts well. If pinion stand assembly of odometer is not matched and locked well, the pinion assembly of front axle odometer will be deformed.
Install brake cylinder assemble on front wheel rim.
Tighten front wheel axle.

*Note : QJ50QT-22D front wheel removal diagram is available in P85 of the instruction.*

Torque force
Front wheel axle  
55-62  N·m

7.4 Steering handle

7.4.1 Removal

Remove left, right and rearview mirror assembly (4) and (5).

Remove left handle assembly (2) and right handle.
assembly (7).

Remove throttle line assembly (8).

Remove front brake switch assembly (18).

Remove cable clamp assembly (17).

Remove rear brake cable assembly (13).

Remove steering handle welding assembly (1).

7.4.2 Installation

*Note: QJ50QT-22D steering handle is available in P87 of the instruction.

Do the installation according to reversed procedures of removal.

Standing screw of steering handle

Torque force: 40-60 N·m

7.5 Front fork

7.5.1 Removal

Remove guard plate, pedal and front cover plate.
Remove lower connecting plate I, front mudguard assembly and front wheel.
Remove instrument, instrument decoration and front lamp.
Remove front and rear protective guard of handlebar, brake tube, and odometer cable.
Remove steering handle welding assembly.
Remove the following in order:
Compression nut (12), upper bearing upper steel bowl (11),
gasket (10), steel ball assembly (8), upper bearing lower steel bowl (9), and front fork.
Remove lower bearing lower steel bowl (7) and steel ball assembly (8).
Remove front shock absorber standing bolt (6).
Remove front left/right shock absorber (2) and (5).

Tools:
Steering handle standing bolt spanner
Bearing steel bowl removing tool

*Note:
Clean open part of motorcycle guard plate with rag.
Use bearing steel ball removing tool for upper and lower bearing steel bowl.

7.5.3 Installation

Grease bearing steel bowl at the bottom
Confirm steel ball quantity (21pcs).
Do not move steering handle (in case steel ball falls), and then install steering pole.
Prop steering handle, grease bearing steel bowl on the top and confirm steel ball quantity (21pcs).
Turn steering handle leftwards and rightwards to make steel ball match tightly.

Tools:
Standing nut spanner

Procedure:
Install front shock absorber assembly.
Installation of steering handle, large lamp, brake tube, odometer cable and instrument
Installation of motorcycle guard plate
Installation of front wheel

Front shock absorber assembly standing bolt
Torque force: 37-44 N·m
Onyx 50 front fork oil volume: 80ml - Castrol SAE 10W
*Note: QJ50QT-22D front fork removing diagram is available in P86 of the instruction.
Rear wheel/rear suspension
1 self-tapping screw ST4.8X16  2 gas filter standing rubber sleeve  3 gas filter assembly  4 bolt M10×1.25×40  5 bolt M8×35  6 rear shock absorber assembly  7 motor assembly  8 bolt M8×20  9 bolt M8×30  10 muffler bushing  11 muffler  12 nut M16X1.5  13 vacuum tyre 90/80-16  14 rear tyre rim assembly 16×1.85  15 brake shoe spring  16 brake shoe assembly  17 dustproof cover  18 rear brake camshaft  19 rear brake rocker arm assembly

**Rear wheel**

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Torque Force / Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Item 12 rear wheel standing nut</td>
<td>100-113 N·m</td>
</tr>
<tr>
<td>B</td>
<td>Bolt 4 mounting</td>
<td>37-44 N·m</td>
</tr>
<tr>
<td>C</td>
<td>Bolt 5 mounting</td>
<td>22-29 N·m</td>
</tr>
<tr>
<td>D</td>
<td>Brake ID: φ140mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Abrasion limit: φ141mm</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>Brake shoe thickness:</td>
<td>6.9mm</td>
</tr>
<tr>
<td></td>
<td>Abrasion limit: 5.9mm</td>
<td></td>
</tr>
</tbody>
</table>
1 vacuum tyre 90/80-16  2 rear tyre rim assembly 16×1.85  3 nut M16X1.5  4 dustproof cover  5 valve cap  6 valve  7 brake shoe assembly  8 rear brake camshaft  9 brake shoe spring  10 bolt M6X30  11 rear brake rocker assembly

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Wheel dimension: 90/80-16</td>
</tr>
<tr>
<td>B</td>
<td>Wheel rim tilt limit:</td>
</tr>
<tr>
<td></td>
<td>Vertical: 2.0mm</td>
</tr>
<tr>
<td></td>
<td>Horizontal: 2.0mm</td>
</tr>
<tr>
<td>C</td>
<td>Item 10 rear wheel standing nut torque force: 100-113 N·m</td>
</tr>
<tr>
<td>D</td>
<td>Rear wheel certificate No.: E11 75R-001063</td>
</tr>
</tbody>
</table>
8. Rearwheel/rear suspension

Preparing documents ------------------8.1
Failure diagnosis ------------------8.2
Rear wheel ------------------8.3
Rear shock absorber-----------------8.4

8.1 Preparing documents

Notes
No oil stains sticking to the brake shoe and disc.

Preparing standards

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value (mm)</th>
<th>Available limits (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical Amplitude of fluctuation of the rear wheel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal Vertical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Horizontal Horizontal</td>
<td></td>
<td>2.0</td>
</tr>
</tbody>
</table>

Locking torque force:
Rear wheel standing nut 100 - 113 N·m
Rear shock absorber bolt on the top 37 - 44 N·m
Rear shock absorber bolt at the bottom 22 - 29 N·m

8.2 Failure diagnosis

8.2.1 Swinging rear wheel
Deformed rim
Failed tyre
Untight rear wheel
Pressure shortage of tyre

8.2.2 Too soft shock absorber
8.3 Rear wheel

8.3.1 Removal

Remove the muffler (11) and gas filter assembly (3).
Remove rear mudguard and rear small mudguard assembly.
Remove the rear mudguard assembly and rear license plate support assembly.
Remove the rear wheel axle standing nut (12).
Remove the rear wheel assembly.

8.3.2 Inspection

8.3.2.1 Rim swinging inspection

Rotate the wheel and measure eccentricity ratio using Dial indicator
Available limits:

vertical: Replace if it is above 2.0mm

horizontal: Replace if it is above 2.0mm

When the amplitude of fluctuation of the rear wheel outweighs the available limits and the bearings is loose resulting in swinging rear wheel. Replace new rear bearing.

8.3.3 Installation

Install the rear wheel in the opposite sequence of removing and tighten the locking nut.
Rear wheel locking nut

Torque force: 100-113 N·m

QJ50QT-22D Rear wheel
8.4 Rear shock absorber

8.4.1 Removal
Remove the seat assembly and left body guard plate.
Loose the upper standing bolt of absorber.
Loose the lower standing bolt of absorber.
Remove the standing bolt of rear absorber.
Remove the rear absorber.

8.4.2 Inspection and adjustment

Note:
Set the same preload value for each shock absorber.
Uneven adjustment may worsen operational performance and make it unsteady.

Adjust spring preload. Adjust the device by rotating towards orientation of ○,a or○,b.

Rotate towards ○,a to increase spring preload value; rotate towards ○,b to decrease preload value.
Adjust device location: standard location of 2; minimum location of 1; maximum location of 5.

8.4.3 Installation

Install rear shock absorber.

**Torque force:**

Upper standing bolt: 37-44 N·m  
Lower standing bolt: 22-29 N·m

Install rear shock absorber.
Install rear mudguard, rear small mudguard and rear mud guard plate.
Install seat assembly, left and right guard plate.

**Fuel tank/seat**
1 rear storage rack assembly  2 seat assembly  3 left front guard plate  4 right front guardplate  5 left guard plate  6 right guard plate  7 rear left steering lamp assembly  8 left decoration plate of guard plate  9 rear right steering lamp assembly  10 right decoration plate of guard plate  11 fuel tank assembly

A. Note: in removing fuel tank, turn fuel switch to "OFF".

B. Do not damage body cover in removal and installation. Do not damage hook on cover. Match panel and cover plate of body cover with the slot respectively. Location of hook of each part shall be right in installation.
Fuel tank
Fuel tank capacity: 5.5 L ± 0.2 L
Bolt 9 (standing bolt of oil tank) torque force: 5-9 N·m
Note: in removing fuel tank, turn fuel switch to "OFF".

1 oil tank assembly  2 waterproof gasket  3 fuel tank assembly  4 connecting tube  5 fuel tube  6 assembled screw M5×14  7 fuel level sensor cushion  8 fuel sensor assembly  9 bolt M6×12  10 fuel tank switch assembly  11 fuel tube  12 filter assembly  13 fuel tube  14 steel wire clamp ø8  15 fuel tube

Seat
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bolt 11 torque force:</td>
</tr>
<tr>
<td></td>
<td>5-9 N·m</td>
</tr>
<tr>
<td>B</td>
<td>Exclusive for seat</td>
</tr>
</tbody>
</table>

1 seat assembly  2 helmet case  3 sealing strip  4 rubber cushion  5 nut M6  6 pin roll  7 gasket  8 elastic gasket  9 helmet bottom cap  10 self-tapping screw ST4.2×13  11 bolt M6×16
9. Fuel tank/seat

Preparation documents---------9.1
Failure diagnosis---------9.2
Fuel tank/seat--------9.3

9.1 Preparation documents

Note:
The removing site shall be ventilated and away from fire.
Before removing fuel tank, shut motor and turn fuel switch to "OFF".
In installation tighten the bolt nut to defined torque force.
After installation, check and see whether all parts and operation are right.

Preparation standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Available usage limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline tank capacity</td>
<td>5.5 L±0.2L</td>
<td>/</td>
</tr>
</tbody>
</table>

Locking torque force

Fuel tank standing bolt    5 - 9 N·m
Helmet barrel standing bolt 5 - 9 N·m

9.2 Failure diagnosis

Decreasing gasoline
Natural consumption of gasoline
Leakage of gasoline
9.3 Fuel tank/seat

9.3.1 Removal

Remove rear storage rack assembly.
Open seat.
Remove sparking-plug cover and machine oil pot cap.
Remove pedal rubber mat.
Open storage battery case cap.
Remove storage battery.
Remove seat assembly and helmet case standing bolt.
Remove seat assembly and helmet case.

Remove left/right front guard plate assembly.
Remove foot guard plate and left and right guard plate.
Remove left and right steering lamps and left and right decoration articles for guard plate.
Remove fuel tank standing bolt.
Remove fuel tank.

Turn fuel switch to "OFF".
Disconnect fuel tube.
Remove fuel tank from the frame.

Note:
Detail removing diagram see P98, 99 and 100.

9.3.1 Installation

Install according to reversed sequence of removal.

Torque force of installation:
Fuel tank standing bolt 5 - 9 N·m
Helmet barrel standing bolt 5 - 9 N·m
### Removal and installation of motor

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Torque Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Kinetic force hanger support</td>
<td>55-62 N·m</td>
</tr>
<tr>
<td></td>
<td>fulcrum axle</td>
<td></td>
</tr>
<tr>
<td></td>
<td>standing nut 14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>torque force:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>37-44 N·m</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Square bolt 6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>torque force:</td>
<td>37-44 N·m</td>
</tr>
<tr>
<td>C</td>
<td>Bolt 12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>torque force:</td>
<td>37-44 N·m</td>
</tr>
</tbody>
</table>

1 fuel tank  2 rear shock absorber assembly  3 gas filter assembly  4 muffler  5 fulcrum axle  6 square bolt M10×1.25×41  7 locking nut M10×1.25  8 kinetic force hanger assembly  9 motor assembly  10 rear storage rack assembly  11 rear wheel assembly  12 bolt M10×1.25×40  13 bolt M8×35  14 nut M12×1.25  15 teeth serrated lock gasket 12
10. Removal / installation of motor

Preparation documents-----------------------------10.1

Failure diagnosis -----------------------------10.2

Removal of motor/suspension standing clamp--------10.3

Installation of motor--------------------------10.4

10.1 Preparation documents

Note
Make motorcycle not tilt in removing motor.
Remove motor when maintain crankshaft and final drive shaft.
When maintaining magnetogenerator, camshaft, carburetor, driving wheel, clutch, driven wheel and oil pump, the motor can stay at the frame and needs not to be removed.

Preparation standard

Motor is not only kinetic resource of motorcycle, but also driving part and main rear suspension device. On one hand, the motor with rotating action output by crankshaft, getting slowed by clutch and V shape tape stepless speed variator, can drive rear wheel directly; on the other hand, the motor acts as girder rocker arm.

Locking torque force:

Motor hanger support fulcrum axle standing nut 55-62 N·m
Rear shock absorber standing bolt ( upper ) 37-44 N·m
Rear shock absorber standing bolt ( lower ) 22-29 N·m

10.2 Failure diagnosis

Swinging motor
Swinging or bended of girder rocker arm
Loose motor driving device
10.3 Removal of motor

10.3.1 Removal
Remove bolt and left crankcase ventilated tube. Removal procedures:
- remove frame cover.
- remove gas filter.
- remove primary cable of ignition coil.
- remove starter motor cable.
- remove fuel tube and vacuum tube.
- remove starter valve 2P connector.
- remove magnetogenerator/pulser 3P connector.

Remove bolt and underground cable of motorcycle.

Remove rear shock absorber standing bolt (upper). Remove nut and gasket of motor kinetic force hanger support. Remove bolt of motor kinetic force hanger support. Remove motor from the frame.

10.3.2 Motor suspension standing clamp

10.3.2.1 Removal
Remove spark plug cap. Remove fuel tube and vacuum tube from carburetor. Remove motor suspension bolt/nut and motor assembly.

Remove bolt and ignition coil. Remove bolt, fuel tube and vacuum tube.

10.3.2.2 Inspection
Check whether shock absorber of motor kinetic force hanger support is abraded or damaged. Check whether rubber ring of shock absorber is abraded or damaged.
10.3.2.3 Installation

Install bolt and ignition coil.
Install fuel tube, vacuum tube and bolt.
Install spark plug cap.

Connect carburetor fuel tube and vacuum tube.
Connect motor kinetic force hanger support to motor assembly.
Install temporarily bolt and nut of motor kinetic force hanger support.

10.4 Installation of motor

Install according to reversed procedures of "removal".
Note: Detailed removal diagram is available in P102.

Torsion value of installation:
Motor standing axle 55-62 N·m
rear shock absorber standing bolt(upper): 37-44 N·m
rear shock absorber standing bolt(lower): 22-29 N·m
## Inspection and maintenance of motor

### Motor fastener torque force table

<table>
<thead>
<tr>
<th>Fastening parts and fasteners Name</th>
<th>Torque force (N·m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>cylinder head nut</td>
<td>25 ~ 28</td>
</tr>
<tr>
<td>oil drain nut</td>
<td>22 ~ 35</td>
</tr>
<tr>
<td>Spark plug</td>
<td></td>
</tr>
<tr>
<td>Assemble mould bolt</td>
<td>10 ~ 15</td>
</tr>
<tr>
<td>Speed shift case cap bolt</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Motor standing bolt</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Machine oil pump standing bolt</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Machine oil pump chain wheel standing bolt</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Flywheel locking nut</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Right cap stud</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td>Impeller standing screw</td>
<td>50 ~ 60</td>
</tr>
<tr>
<td>Double-end bolt</td>
<td></td>
</tr>
<tr>
<td>Chain adjuster standing bolt</td>
<td>10 ~ 12</td>
</tr>
<tr>
<td></td>
<td>10 ~ 12</td>
</tr>
<tr>
<td></td>
<td>18 ~ 22</td>
</tr>
<tr>
<td></td>
<td>10 ~ 12</td>
</tr>
</tbody>
</table>
Lubrication system

Note: worm gear and worm wheel shall rotate flexibly without stagnation or single side tightness, while the worm wheel shall allow certain axial movement. Machine oil pump O shape gasket shall not cut the edge.

Machine oil pump plugs shall not leak and sealing gasket
11. Lubrication system

Preparation documents--------11.1
Failure diagnosis ---------11.2
Machine oil pump --------11.3

11.1 Preparation documents

Note:
Worm gear and worm wheel shall rotate flexibly without stagnation or single side tightness, while the worm wheel shall allow certain axial movement. Machine oil pump O shape gasket shall not cut the edge. Machine oil pump plugs shall not leak and sealing gasket shall be normal.

After installation, remove bolt 3 in trial running motor, and lock it when machine oil runs out continuously.

Use of the lubrication system:
Function of the engine lubrication system is to supply lubricant to component surface, transforming the dry friction on the surface to liquid friction among the lubricant particles, in order to reduce wear of the components; cooling components with higher heat load; absorbing the shock of bearings and other machine components to reducing noises; increasing leak tightness between the piston ring and the cylinder wall; clean and wash away the impurity on the surfaces of components.

Preparation standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Usage limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machine oil capacity</td>
<td>During oil change</td>
<td>0.1L</td>
</tr>
<tr>
<td></td>
<td>During removing</td>
<td>0.11L</td>
</tr>
</tbody>
</table>

11.2 Failure diagnosis

Decreasing machine oil
Burnt motor
11.3 Machine oil pump

11.3.1 Removal
Loose the bolt and remove gas director assembly.

 Loose screws on fan and remove fan.

 Remove magnetogenerator stator, rotor and support.

 Remove worm wheel from crankshaft and remove machine
oil pump assembly.

机油泵组件  machine oil pump assembly
Installation of machine oil pump as follows

11.3.2 Installation
Install according to reversed procedures of removal.

11.3.3 Inspection
Check whether worm wheel teeth are damaged, or whether key slot is damaged.

Measure plunger OD.

**Permitted limit:** 2.61mm
Carburetor

Attention: gasoline is very dangerous, fireworks is strictly prohibited in workplace.

After disassembling of the carburetor, block the intake manifold with cloth in case of the entering of foreign material.

1 screw  2 float room  3 needle valve part  4 float part  5 float pin  6 main metering hole  7 idle spray nozzle  8 main bubble tube  9 idle adjusting screw
12. Carburetor

Preparation documents----------------12.1

Failure diagnosis -----------12.2

Removal of carburetor--------12.3

Installation of carburetor-------12.4

Adjustment of carburetor-------12.5

12.1 Preparation documents

Note

Gasoline is very dangerous, fireworks is strictly prohibited in workplace.
· Pay special attention to sparks.
· Forcibly pulling and bending of wires is not allowed. Distortion and damage will affect the wires.
· After disassembling of the carburetor, block the intake manifold with cloth in case of the entering of foreign matter.
· Unused for more than a month, the gas in carburetors of displacer type should be let out, as the gas in the displacer type may go bad, blocking the idling jet to make idle speed not safe.

Use of carburetor: Carburetor is a critical component in the fuel feed system of the engine; its working directly affects the stability of the engine and dynamic, economic indicators. Certain amount of gasoline is atomized into little oil drops in it, and mixed with different quantities of gas homogeneously, forming vaporific fuel mixture of different thickness according to needs of different working condition of the engine and supplied to the engine to ensure continuous and normal operation of the engine.

Preparation standard 

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main spray nozzle</td>
<td>47.5</td>
</tr>
<tr>
<td>Main metering hole</td>
<td>50#</td>
</tr>
<tr>
<td>Idle metering hole</td>
<td>22.5#</td>
</tr>
<tr>
<td>Oil needle</td>
<td>B05-2</td>
</tr>
</tbody>
</table>
12.2 Failure diagnosis

Starting disorder       hard starting       Flameout after starting       unstable idling speed
No fuel in the carburetor   Carburetor blockage
Gas filter blockage      too thick or too thin gas mixture
Gas pipe blockage       secondary gas suction in the inspiration system
Needle valve ankylosis   idle speed maladjustment
Oil level maladjustment  oil volume maladjustment

Blockage in the idling system or the electric enrichment valve

Excessive fuel in the engine       too thin gas mixture
Outflow due to excessive oil       oil jet blockage
Secondary gas suction in the inspiration system       needle valve blockage
Fuel deteriorate       low oil level
Enrichment valve disorder       fuel system blockage
Blockage in the idling system or the choke system       secondary gas suction in the inspiration system

Over thick gas mixture       flashover interruption on acceleration
Enrichment valve disorder       too thin gas mixture
Needle valve disorder
Over high oil level
Carburetor outflow
Gas channel blockage
Dirty gas cleaner

12.3 Removal of carburetor

12.3.1 Removal

Turn fuel switch to "OFF".
Remove feeding rubber tube. Loose throttle cable.
Remove end plug of oil drain tube and put fuel of float component room into another box.
Remove plug of electronic enrichment valve.
Loose carburetor plug with motor and the screw of gas filter plug, and remove carburetor from the two interfaces.

进油胶管  oil feeding rubber tube
油门拉线  throttle cable
电加浓阀  electronic enrichment valve
12.3.2 Disassembly of carburetor

Loose screws of electronic enrichment valve and remove electronic enrichment valve components.

Check abrasion condition of electronic enrichment valve and oil needle.  
If the abrasion is severe, change the electronic enrichment valve component.  
Loose screw and remove upper cover.  
Remove spring and plunger component.  
Check abrasion of plunger.  
Change it if abrasion exists.  
Check abrasion of oil needle.  
Change it if abrasion exists.  
Loose screw and remove float component room.  
Remove float component, float pin and needle valve component.

12.3.3 Inspection

Check whether abrasion or damage of needle valve components, needle valve and float component exists.  
Change abraded or damaged needle valve core.  
If needle valve seat is abraded, change main body of carburetor.  
Change abraded float component tongue.  
Check oil needle of carburetor, and change abraded or damaged one, if any, meanwhile replace main nozzle.  
Check and change abraded, dirt or damaged metering hole, main metering hole and main nozzle.  
Check and change abraded plunger.
12.4 Installation and adjustment

Assemble and install it according to reversed sequence of removal.

Adjustment of carburetor

Note: the idle adjustment screw has been adjusted in factory, which needs no adjustment usually. In disassembly, record the rev number for installation.

Start and warm machine up for about 3 minutes to let motor run at normal driving temperature.

Adjust idle adjustment screw to make motor rev reach 1800rpm;

Spin mixture adjustment screw inwards to the bottom with moderate force;

Then the motor will switch off (if not, check whether gas filter interface is leaked, or screw is tight or gas filter inlet is blocked);
Retreat mixture adjustment screw for one circle;
Restart, and adjust idle adjustment screw to make the rev reach 2000-2500rpm;
Adjust mixture screw counter-clockwise slowly until the motor rev reaches the maximum (mixture screw shall be retreat 2 circles at most);
Readjust idle adjustment screw to make motor rev decrease to 1900±100rpm;
Stir throttle to speed for several times to check whether idle rev is steady;
Test outlet and compare it with defined standard.

Cylinder cap
Attention: The cylinder cap bears large bolt preload to ensure seal between the cylinder cap and the cylinder body. Preload value: 50 Nm
13. Cylinder cap

Preparation documents---------------13.1
Failure diagnosis ------------------13.2
Cylinder cap ----------------------13.3
Cylinder cap inspection-----------13.4
Installation of cylinder cap-------13.5

13.1 Preparation documents

Note
For gas tightness between the cylinder cap and the cylinder body, the cap bears tremendous bolt pre-tightening force. Pre-tightening force value: 50 Nm.
All components must be cleaned and dried with high-pressure gas before examination.
**Function of the cylinder cap:** The cylinder cap is used to seal the cylinder and form the combustion chamber with the piston. It bears HPHT fuel gas, and carries out gas entering and exhaust distribution devices.

13.2 Failure diagnosis

In running, there is gas leakage or too high combustion pressure between cylinder cap and cylinder body
Cylinder cap gasket is broken
Curve bottom surface of cylinder
Too much carbon is combustion room

13.3 Cylinder cap

13.3.1 Removal
Loose gas director standing bolt.
Remove gas director.
Loose standing nut and spark plug and remove cylinder cap.

13.4 Cylinder cap inspection

Check whether cylinder cap is broken.
Check flatness of cylinder cap bottom surface.
Usage limit: 0.04mm.

13.5 Installation of cylinder cap

Install according to reversed sequence of removal.
Cylinder body and piston
Note: all parts shall be cleaned and blown by high pressure air before test.
14. Cylinder body and piston

Preparation documents----------------------14.1
Piston---------------------------14.4
Failure diagnosis--------14.2   Installation of piston-----14.5
Cylinder body-------------------------14.3

14.1 Preparation documents

Note
All parts shall be cleaned and blown by high pressure gas before test.

Function of cylinder body: cylinder body provides space for gas compression, combustion and expansion.
It also transfer part of heat energy of cylinder to cooling medium around.

Function of piston:
Piston bear pressure arising from mixture gas combustion inside cylinder and transfer the pressure to connecting rod to make crankshaft revolve.
It forms combustion room along with cylinder cap.
It acts as slide valve for airport, compresses fresh mixed gas of crankcase into cylinder and discharge deposed gas from cylinder.

Preparation standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Usage value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

unit: mm
### 14.2 Failure diagnosis

**Low compression pressure**
- wear, burning or snap in the piston
- wear or damage in the cylinder or the piston
- damaged gasket, gas leak between the crankcase and the gas

**Higher compression pressure**
- Excessive carbon deposit in the combustion chamber

**white smoke from the vent pipe**
- wear and damage in the piston ring
- wear and damage in the piston or the cylinder

**abnormal sound from the piston**
- damage in the cylinder, the piston or the piston ring

---

### 14.3 Cylinder body

#### 14.3.1 Removal of cylinder body
Remove cylinder body after removing cylinder cap.
14.3.2 Cylinder body inspection

Check abrasion of inner wall of cylinder. Change it if abrasion is severe.
Check flatness of cylinder face.
Usage limit: 0.05

14.4 Piston

14.4.1 Removal

Remove retaining ring of piston pin.
Note: don’t allow the retaining ring fall into the crankcase during unloading. Remove the piston pin and unload the piston.

Examine the piston, the piston pin and the piston ring.
Remove the piston ring.

Note: don’t break off or damage the piston ring. Clear the carbon deposit in the piston ring groove.
Remove piston ring and install piston ring at the bottom of cylinder. 

Note: press piston ring into cylinder with piston head. Measure clearance of piston ring mouth. 

Usage limit: 0.5mm

Measure ID of piston pin hole. 

Usage limit: 12.04mm

Measure OD of piston pin. 

Usage limit: 11.96mm

Clearance between piston pin hole and piston pin. 

usage limit: 0.02mm

Measure OD of piston. 

Note: measured place shall be perpendicular to piston pin, at about 11.5mm bellow piston skirt. 

Usage limit: 39.9mm
Check scratch and abrasion of inner wall of cylinder.

**Note:** it shall be perpendicular to piston pin, and the cylinder ID shall be measured at upper, middle and lower locations.

**Usage limit: 40.05mm.**

Measure clearance between cylinder and piston. Take the maximum value.

**Usage limit: 0.1mm.**

---

Measure circular degree of inner wall of cylinder (difference in ID between X orientation and Y orientation).

**Usage limit: 0.05mm.**

Measure circular degree of inner wall of cylinder (difference in ID among upper, middle and lower locations between X orientation and Y orientation).

**Usage limit: 0.05mm.**

上  upper
中  middle
下  lower

Measure wrist-pin end of connecting rod.

**Usage limit: 14.06mm.**
14.4.2 Installation of piston

Install location pin.
Lubricate piston ring and piston with machine oil and install the slope upwards.

**Note:**
Piston shall not be scratched and piston ring shall not break.
After installation of piston ring, it shall revolve easily inside piston ring groove.

Clean gasket on crankcase.

**Note:**
There should be no foreign material inside crankcase.
Install piston, piston pin, and piston pin retaining ring.

**Note:**
Install piston skirt tube with the gap face towards gas inlet.

14.5 Installation of piston

Install gasket on crankcase.
Lubricate machine oil on inner wall of cylinder, piston and piston ring.
Be careful in installing piston ring into cylinder.

**Note:**
Do not damage piston ring.
Driving disc/clutch/driven wheel
Note: in operation, no oil shall stick to triangular belt, and shall be cleaned if any to minimize possibility of sliding between triangular belt and wheel.
Foot starting device

Note: in operation, no oil shall stick to triangular belt, and shall be cleaned if any to minimize possibility of sliding between triangular belt and wheel.

1 snap spring   2 starting claw   3 idle gear   4 idle shaft   5 starting shaft component   6 foot starting shaft spring
15. Driving /clutch/driven wheel/foot driving device

Preparation documents-----15.1    Clutch/driven wheel----15.5

Failure diagnosis -15.2   Disassemble clutch and driven wheel --15.6

Left crankcase cover---15.3    Installation---------15.7

Driven disc------------------15.4    Foot starting device---15.8

15.1 Preparation documents

Note

in operation, no 注 oil shall stick to triangular belt, and shall be cleaned if any to minimize possibility of sliding between triangular belt and wheel.

Function: driving disc/clutch/driven wheel form stepless speed variator. Driving disc 从 and driven wheel transfer torsion through triangular belt.

Preparation standard

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Usage limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right semi-diameter of driving wheel</td>
<td>25.989-26.052</td>
<td>26.06</td>
</tr>
<tr>
<td>OD of slid bushing</td>
<td>25.96-25.974</td>
<td>25.94</td>
</tr>
<tr>
<td>Width of triangular belt</td>
<td>17</td>
<td>16</td>
</tr>
<tr>
<td>Thickness of clutch abrasion piece</td>
<td>1.8</td>
<td>1.5</td>
</tr>
<tr>
<td>ID of clutch outer bushing</td>
<td>118-118.3</td>
<td>118.5</td>
</tr>
<tr>
<td>Free length of clutch compression spring</td>
<td>68-70</td>
<td>68</td>
</tr>
<tr>
<td>OD of driven wheel right semi-shaft</td>
<td>32.95-32.975</td>
<td>32.94</td>
</tr>
<tr>
<td>ID of driven wheel left semi slid bushing</td>
<td>33-33.025</td>
<td>33.06</td>
</tr>
<tr>
<td>OD of boll bearing</td>
<td>14.92-15.08</td>
<td>14.4</td>
</tr>
</tbody>
</table>

15.2 Failure diagnosis

Motor fails not make cycle run   low horsepower   shaking driving

Worn triangular belt         Worn triangular belt   broken clutch abrasion piece spring
Broken driven wheel                      deformed clutch compression spring
Broken or damaged clutch abrasion piece  worn ball bearing
Broken clutch compression spring          dirty main belt wheel surface

15.3 Left crankcase cover

Removal
Remove cover standing bolt and remove gasket as well as standing pin.

Note:
Remove standing bolt and loose in cross type.

Remove location pin.

15.4 Driving disc

15.4.1 Removal
Remove driving disc standing nut and remove left semi part of driving disc.
Remove triangular belt from driving disc.

Check whether the triangular belt has crack, or whether rubber or cotton yarn has fallen or been worn.
Measure width of triangular belt.
Usage limit: 16mm

Note:
Choose original factory parts in changing.

Remove driving wheel right semi part.

15.4.2 Disassemble driving wheel right semi part

Check abrasion of ball bearing.
Measure OD of ball bearing.

Usage limit: 14.4mm
Measure right semi ID of driving wheel.

**Usage limit:** 26.06mm

Measure OD of slide bushing.

**Usage limit:** 25.94mm

从动轮 driven wheel

固定器 retainer

离合器外套 clutch bushing

套筒扳手 sleeve spanner

### 15.5 Clutch/driven wheel

#### 15.5.1 Removal

Use retainer to fix clutch bushing and remove standing nut. Remove clutch bushing and clutch/driven wheel.

#### 15.5.2 Disassemble clutch

Remove retaining ring and disassemble clutch.

**Note:**

In disassembly, not oil shall stick to clutch abrasion piece.
挡圈 retaining ring 摩擦片 abrasion piece
Check abrasion of clutch bushing.
Measure ID of clutch bushing.

**Usage limit: 118.5mm.**

Check abrasion of clutch abrasion piece.
Measure thickness of abrasion piece.

**Usage limit: 1.5mm.**

### 15.6 Detach clutch and driven wheel

Use clutch spring compressor in disassembling clutch.

**Note:**
Use spring compressor in removal in case spring is damaged.
Fix spring compressor, and remove clutch standing nut.
Loose compressor, and detach clutch and driven wheel.

扳手 spanner
Remove spring bushing.

Remove directing pin.
Remove left
Remove oil s

Check free length of clutch spring.

Usage limit: 68mm.

自由长度  free length

从动轮右半  right semi part of driven wheel
从动轮左半  left semi part of driven wheel

Check abrasion of driven wheel.
Measure right semi bushing OD of driven wheel.

Usage limit: 32.94mm.
Measure left semi slide bushing ID of driven wheel.

Usage limit: 33.06mm.

15.6.1 Change right semi bearing of driven wheel

Remove needle bearing from right semi driven wheel.
Remove elastic retaining ring and outer rolling bearing.

Note:
Disassembled bearing is unusable.

Grease outer rolling bearing and put it into bushing.

Note:
Press outer rolling bearing into bushing, face the marked side outward, and then fill the shaft cavity with 8-9g grease. Install elastic retaining ring.

Install needle bearing.
Press needle bearing with the tool in the figure.

15.6.2 Assemble clutch/driven wheel
Clean grease on the driven wheel surface.
Install oil seal of driven left semi slide bushing.

Install greased O shape ring in driven left semi part.

Assemble left and right parts of driven wheel together.
Install greased directing pin into directing groove.

Install spring bushing.
Clean leaked grease.

- 154 -
Install clutch compression spring and clutch on driven wheel. Use clutch spring compression assembly, after compression install locking nut.

**Note:**
Compress spring moderately. Do not damage it.

### 15.7 Install

Install driven disc/clutch/driven wheel in reversed sequence of removal.

### 15.8 Foot starting device

**Removal/inspection**

Remove left crankcase cover.
Loose screw and remove guard plate.
Remove starting claws assembly.
Remove starting shaft assembly.

Check abrasion of starting shaft.
Check starting shaft bushing, abrasion of force received part of idle shaft.
Check abrasion of idle gear.
Measure clamping force of snap spring.

**General standard value: 8-12N.**

**Note:** 1 snap spring 2 starting claws 3 idle gear 4 idle shaft 5 starting shaft assembly 6 foot starting shaft spring

**弹簧护套** spring sleeve

**扳手** spanner (locking nut)
Decelerator device
Function: transfer torsion and decide final output torsion and rev.

1 middle gear  2 middle shaft  3 main shaft of clutch  4 output shaft gear  5 bearing  6 oil seal  7 bolt  
8 gasket  9 gear room cover
16. Decelerator device

Preparation documents-----------------16.1

Failure diagnosis-----------------16.2

Gear box-------------------16.3

Installation ---------------------16.4

16.1 Preparation documents

Function: transfer torsion and decide final output torsion and rev.

16.2 Failure diagnosis

Motor fails to make motorcycle run

Broken driving gear
Burnt driving gear

Leaked gear oil

Too much gear oil
Damaged oil seal

16.3 Gear box

15.3.1 Removal

Remove oil drain nut, and discharge gear oil from gear box.
Loose bolt and remove gear room cover.

Remove gasket and location pin.
Remove clutch main shaft and output shaft gear.
Remove middle shaft and middle gear.

16.3.2 Output gear box cover inspection

Check abrasion and damage condition of clutch main shaft, gear and bearing.
Change gear room cover bearing.
Press clutch main shaft in changing clutch main shaft bearing, remove it from gear room.

Note:
Bearing knocked out shall not be used any more, and should be replaced by new one.
Use special tools to disassemble bearing and oil seal.

Remove oil seal of gear box and remove bearing.

Note:
Bearing knocked out shall not be used any more, and should be replaced by new one.
Use special tools to disassemble bearing and oil seal.

16.4 Installation

Install according in reversed sequence of removal.

Note:
Use special tools to install bearing and oil seal in case they are damaged.
Crankcase

Note: The crankcase is thin-section casting thus has to avoid shock on operation in case of deformation and fracture. All components must be cleaned and dried with high-pressure air before test. The lubricant in the crankcase should be released before operation.

1 crankshaft  2 bolt  3 oil seal  4 location pin
17. Crankcase

Preparation documents------------------------17.1
Failure diagnosis-------------------------17.2
Crankcase--------------------------17.3
Installation------------------------17.4

17.1 Preparation documents

Note
The crankcase is thin-section casting thus has to avoid shock on operation in case of deformation and fracture. All components must be cleaned and dried with high-pressure gas before test. The lubricant in the crankcase should be released before operation.

Function of the crankcase: The crankcase is the force-bearing part of the engine. Its main function is bearing crankshaft, clutch, transmission case, cylinder body and cylinder head, bearing the inertia force from combustion shock and the movement of crankshaft connecting rod system, and forming a closed space (oil sealing, gas sealing).
There are suspension holes in the crankcase, connecting the engine to other parts of the body through the connection with suspension holes in the car circuit.

Preparation standard  

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard value</th>
<th>Usage limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left-right clearance of rod big end</td>
<td>0.25-0.40</td>
<td>0.55</td>
</tr>
<tr>
<td>Radial clearance of rod big end</td>
<td>0.015-0.025</td>
<td>0.05</td>
</tr>
</tbody>
</table>

Tools

<table>
<thead>
<tr>
<th>Universal holder</th>
<th>spring compressor of the clutch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Screwdriver lever</td>
<td>sleeve spanner</td>
</tr>
<tr>
<td>Guide rod</td>
<td>bearing driver</td>
</tr>
</tbody>
</table>

17.2 Failure diagnosis

Noise in crankcase
17.3 Crankcase

17.3.1 Removal of crankcase

Loose bolt, remove starting driving gear. Remove star gear.

Remove crankcase standing bolt
Remove left and right crankcase.

Note:
Gasket shall not be damaged.

Remove gasket, location pin.

Remove crankshaft from crankcase.
Clean gasket from crankcase matching face.
Note:
Crankcase matching face shall not be damaged.
Remove oil seal from left crankcase.

Remove oil seal from right crankcase.

17.3.2 Inspection
Right-left clearance of connecting rod big end.

Usage limit: 0.6mm.

Measuring location of connecting rod

Clearance between X-Y orientation of connecting rod big end.

Usage limit: 0.05mm.
Check whether crankshaft bearing revolution has noise or loose condition. If there is noise or loose condition, replace the crankshaft component.

**Note:**
Oil seal disassembled shall not be used again. Use special tools to remove oil seal.

**17.4 Installation**

Assemble crankcase according to reversed sequence of removal.

**Note:**
Install oil seal with special tools, in case the oil seal is damaged.

**Inspection and maintenance of exhaust gas discharge control system**
Muffler

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Torque force of muffler connector standing bolt 8: 5-9 N·m</td>
</tr>
<tr>
<td>B</td>
<td>Torque force of muffler standing bolt 18: 5-9 N·m</td>
</tr>
<tr>
<td>C</td>
<td>Torque force of standing bolt 13: 22-29 N·m</td>
</tr>
<tr>
<td>D</td>
<td>Torque force of bolt 14: 22-92 N·m</td>
</tr>
</tbody>
</table>

1 muffler shell component  2 gas discharge component  3 muffler decoration plate  4 standing spacer  5 rubber spacer  6 bolt  7 card nut  8 screw M6×25  9 gasket Φ6  10 elastic gasket Φ6  11 nut M6
18. Exhaust gas discharge control system

Exhaust gas discharge control system recognizance---------18.1

Regular maintenance notes/guarantee of discharge standard-----18.2

Mechanical function of exhaust gas control system-----------18.3

Catalytic transfer system-----------------------18.4

Measures for idle discharge value over defined value--------18.5

18.1 Exhaust gas discharge control system recognizance

1. The exhaust gas discharge system of this motorcycle is in conformity with the revision of EC/97/24/5/I and 2002/81/EC B stage by EU. We can assure you the quality under absolute normal use and proper maintenance according to the provision within effective service life.

2. New motorcycle of our company has been inspected for noise with a result in conformity with EC 97/24/9 by EU.

18.2 Regular maintenance notes

· The state gives provisions for motor vehicles to conform gas pollutant emission standards to all manufacturers to ensure that the environmental pollution doesn’t get worse. Apart from keeping with the gas pollutant emission standard in our production, our company makes great effort in gas purification and gas pollutant reduction.

· This motorcycle undergoes strict examination before leaving the factory with all qualities in conformity with gas pollutant emission standards. We formulate the regular check list concerning gas emission as follows in consideration of different use condition by customers. The use is requested to carry out regular check, adjustment or maintenance according to the scheduled time to ensure normal emission.

· If other problems occur, please contact Generic distributors or Generic service center for help.

· Relevant discharge provisions are shown as follows:

<table>
<thead>
<tr>
<th>Discharge provision</th>
<th>CO</th>
<th>HC+ NOx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharge standard</td>
<td>≤1.0g/km</td>
<td>≤1.2g/km</td>
</tr>
</tbody>
</table>
Please pay attention to the following to make discharge meet standard:

1) use of fuel: please use 92# or 95 lead-free gasoline, or catalytic device (two-stroke) may be damaged.

2) Please use defined machine oil. Since the disorder of ignition system, the charging system, and the fuel system has great influence on the catalytic system, please come to designated distributors or service center of our company for examination, adjustment or maintenance if any disorder of the above ones occurs.

3) Maintain the vehicle according to the regular maintenance table. The exhaust gas emission control system of the vehicle is in line with relevant provision of our country, make sure to use the quality components of our factory if needed, and receive service from designated distributors and service centers.

4) As to the exhaust gas emission control system, arbitrary adjustment or replacement is forbidden (including the adjustment on the use of spark plug, idle speed, ignition timing, carburetor, etc).

**18.3 Mechanic function of exhaust gas discharge control system**

**In general**
Solution for exhaust gas is base on two-stroke single-cylinder motor and carburetor, which adopts gasintaking device to maintain qualified exhaust gas standard, meanwhile the fuel evaporative exhaust gas adopts active carbon canister.

※ **Gasintaking device**
Intake gas into gas discharge tube, make incompletely burnt CO and HC react to form harmless gas.

<table>
<thead>
<tr>
<th>Division</th>
<th>Device</th>
<th>Component</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust system</td>
<td>Catalytic device</td>
<td>Catalytic transfer</td>
<td>Canister oxidation catalyst in the center of gas discharge tube actualizes oxidation of CO, HC and NOX.</td>
</tr>
</tbody>
</table>

**18.4 Catalytic transfer system**

18.4.1 Structure:
18.4.2 Instruction:

1. Function of transfer catalyst is to transfer completely burnt HC, CO and NO\textsubscript{X} to harmless gas such as H\textsubscript{2}O, CO\textsubscript{2} and N\textsubscript{2} for discharge.

2. Transfer catalyst includes rare metal such as platinum and rhodium. Only lead-free gasoline can be used. Note that lead gasoline may invalidate catalyst.

- **Notes in maintaining motorcycles (gas discharge tube) with catalytic transfer:**

  1. For motorcycles with transfer catalyst, when the motor is running or just shut, it shall not be touched because of high temperature.

  2. Motorcycle with transfer catalyst shall not be near flammable material.

  3. There is CO inside gas discharge tyre, which is harmful to health. So do not run the motor in closed space.

  4. Motorcycle with transfer catalyst shall not use lead gasoline. (prevention for catalytic poison.)

  5. Do not push motorcycle to run motor. If it is necessary, you must stop for temperature of motor and catalyst to lower down.

  6. Do not shut the motor with gear up when running downward.

  7. Do not drive motorcycle with bad ignition.

  8. Do not remove spark plug and run motor to see whether there is spark in maintain motor ignition system. If necessary, the time shall be short.
18.5 Solution for idle discharge value exceeding defined value (two-stroke)

Regular inspection / maintenance plan

1. Measure idle discharge (note1)

2. Adjust (t2)

3. Remove carburetor (SJ, MJ, SAJ, MAJ etc.)

4. Change carburetor

5. Remove motor
   - valve (leaked)
   - piston (worn)

Qualified to leave factory
Note 1: test with idle test programme.
Note 2: adjust motor rev with check screw to be qualified, and test idle CO/HC.