2008

MOTORCYCLE

SERVICE MANUAL

Model : YW50X_
FORWORD
This supplementary service manual has been prepared to introduce new service and data for YW50BP 2001. For complete service manual procedures it is necessary to use this supplementary service manual together with the following manual.

YW50BP 2001 SERVICE MANUAL : 5PN1-ME1
NOTICE

This manual was produced by the Yamaha Motor Taiwan Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Taiwan Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE: Designs and specifications are subject to change without notice.

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠️ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠️ WARNING: Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person checking or repairing the scooter.

⚠️ CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

NOTE: A NOTE provides key information to make procedures easier or clearer.
**HOW TO USE THIS MANUAL**

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

1. The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to “SYMBOLS”.

2. Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

3. Sub-section titles appear in smaller print than the section title.

4. To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

5. Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

6. Symbols indicate parts to be lubricated or replaced. Refer to “SYMBOLS”.

7. A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

8. Jobs requiring more information (such as special tools and technical data) are described sequentially.
### SYMBOLS

The following symbols are not relevant to every vehicle. Symbols 1 to 9 indicate the subject of each chapter.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>General information</td>
</tr>
<tr>
<td>2</td>
<td>Specifications</td>
</tr>
<tr>
<td>3</td>
<td>Periodic checks and adjustments</td>
</tr>
<tr>
<td>4</td>
<td>Chassis</td>
</tr>
<tr>
<td>5</td>
<td>Engine</td>
</tr>
<tr>
<td>6</td>
<td>Cooling system</td>
</tr>
<tr>
<td>7</td>
<td>Carburetor</td>
</tr>
<tr>
<td>8</td>
<td>Electrical system</td>
</tr>
<tr>
<td>9</td>
<td>Troubleshooting</td>
</tr>
</tbody>
</table>

Symbols 10 to 17 indicate the following.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>Serviceable with engine mounted</td>
</tr>
<tr>
<td>11</td>
<td>Filling fluid</td>
</tr>
<tr>
<td>12</td>
<td>Lubricant</td>
</tr>
<tr>
<td>13</td>
<td>Special tool</td>
</tr>
<tr>
<td>14</td>
<td>Tightening torque</td>
</tr>
<tr>
<td>15</td>
<td>Wear limit, clearance</td>
</tr>
<tr>
<td>16</td>
<td>Engine speed</td>
</tr>
<tr>
<td>17</td>
<td>Electrical data</td>
</tr>
</tbody>
</table>

Symbols 18 to 25 in the exploded diagrams indicate the types of lubricants and lubrication points.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Engine oil</td>
</tr>
<tr>
<td>19</td>
<td>Gear oil</td>
</tr>
<tr>
<td>20</td>
<td>Molybdenum-disulfide oil</td>
</tr>
<tr>
<td>21</td>
<td>Brake fluid</td>
</tr>
<tr>
<td>22</td>
<td>Wheel-bearing grease</td>
</tr>
<tr>
<td>23</td>
<td>Lithium-soap-based grease</td>
</tr>
<tr>
<td>24</td>
<td>Molybdenum-disulfide grease</td>
</tr>
<tr>
<td>25</td>
<td>Silicone grease</td>
</tr>
</tbody>
</table>

Symbols 26 to 27 in the exploded diagrams indicate the following.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>26</td>
<td>Apply locking agent (LOCTITE®)</td>
</tr>
<tr>
<td>27</td>
<td>Replace the part</td>
</tr>
</tbody>
</table>
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<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>2</td>
</tr>
<tr>
<td>PERIODIC CHECKS AND ADJUSTMENTS</td>
<td>3</td>
</tr>
<tr>
<td>CARBURETOR</td>
<td>4</td>
</tr>
</tbody>
</table>
CHAPTER 1
GENERAL INFORMATION

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GENERAL INFORMATION

VEHICLE IDENTIFICATION NUMBER
The vehicle identification number ① is stamped into the frame.

MODEL LABEL
The model label ① is affixed to the seat. This information will be needed to order spare parts.
PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.

2. Use only the proper tools and cleaning equipment. Refer to the “SPECIAL TOOLS”.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

REPLACEMENT PARTS

Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

GASKETS, OIL SEALS AND O-RINGS

1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.
LOCK WASHERS/PLATES AND COTTER PINS
After removal, replace all lock washers/plates and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.

BEARINGS AND OIL SEALS
Install bearings and oil seals so that the manufacturer’s marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium-soap-based grease. Oil bearings liberally when installing, if appropriate.

CAUTION:
Do not spin the bearing with compressed air because this will damage the bearing surfaces.

CIRCLIPS
Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip, make sure the sharp-edged corner is positioned opposite the thrust that the circlip receives.
CHECKING THE CONNECTIONS

Check the leads, couplers, and connectors for stains, rust, moisture, etc.

1. Disconnect:
   • lead
   • coupler
   • connector

2. Check:
   • lead
   • coupler
   • connector
   Moisture → Dry with an air blower.
   Rust/stains → Connect and disconnect several times.

3. Check:
   • all connections
   Loose connection → Connect properly.

   **NOTE:**
   If the pin ① on the terminal is flattened, bend it up.

4. Connect:
   • lead
   • coupler
   • connector

   **NOTE:**
   Make sure all connections are tight.

5. Check:
   • continuity
     (with the pocket tester)

   **NOTE:**
   • If there is no continuity, clean the terminals.
   • When checking the wire harness, perform steps (1) to (3).
   • As a quick remedy, use a contact revitalizer available at most part stores.
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools as this will help prevent damage caused by the use of inappropriate tools or improvised techniques. Special tools, part numbers or both may differ depending on the country.

When placing an order, refer to the list provided below to avoid any mistakes.

**NOTE:**
- For U.S.A. and Canada, use part number starting with “YM-“, “YU-“, or “ACC-“.
- For others, use part number starting with “90890-“.

<table>
<thead>
<tr>
<th>Tool NO.</th>
<th>Tool name / Function</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>90890-01235 YU-01235</td>
<td>Rotor holding tool&lt;br&gt;This tool is used to hold the generator rotor when removing or installing and generator rotor bolt.</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01337 YM-33285 YM-33285-6</td>
<td>Clutch spring holder&lt;br&gt;These tool are used for removing the nut with holding the compression spring.</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01284 YU-90050 90890-01383 YU-90062</td>
<td>Crankshaft installer set ①&lt;br&gt;Adapter ②&lt;br&gt;These tools are used to install the crankshaft.</td>
<td><img src="image3.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01189 YU-01189</td>
<td>Flywheel puller&lt;br&gt;This tool is used to remove the generator rotor.</td>
<td><img src="image4.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01135 YU-01135-B</td>
<td>Crankcase separating tool&lt;br&gt;This tool is used to remove the crankshaft or separate the crankcase.</td>
<td><img src="image5.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01384 YM-33299</td>
<td>Oil seal guide&lt;br&gt;This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.</td>
<td><img src="image6.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01403 YU-A9472</td>
<td>Steering nut wrench&lt;br&gt;This tool is used to loosen and tighten the steering ring nut.</td>
<td><img src="image7.jpg" alt="Image" /></td>
</tr>
<tr>
<td>90890-01701 YS-01880-A</td>
<td>Sheave holder&lt;br&gt;This tool is used for holding the secondary sheave.</td>
<td><img src="image8.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Tool NO.</td>
<td>Tool name / Function</td>
<td>Illustration</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>90890-06760</td>
<td>Digital tachometer</td>
<td><img src="image1" alt="Digital tachometer" /></td>
</tr>
<tr>
<td></td>
<td>This tool is needed for detecting engine rpm.</td>
<td></td>
</tr>
<tr>
<td>90890-03112</td>
<td>Pocket tester</td>
<td><img src="image2" alt="Pocket tester" /></td>
</tr>
<tr>
<td>YU-03112-C</td>
<td>This instrument is invaluable for checking the electrical system.</td>
<td></td>
</tr>
<tr>
<td>90890-01409</td>
<td>Oil seal guide</td>
<td><img src="image3" alt="Oil seal guide" /></td>
</tr>
<tr>
<td>YM-01409</td>
<td>This tool is used to install the left side crankcase oil seal.</td>
<td></td>
</tr>
<tr>
<td>90890-01410</td>
<td>Oil seal installer</td>
<td><img src="image4" alt="Oil seal installer" /></td>
</tr>
<tr>
<td>YM-01410</td>
<td>This tool is used to install the left side crankcase oil seal.</td>
<td></td>
</tr>
<tr>
<td>90890-06754</td>
<td>Ignition checker</td>
<td><img src="image5" alt="Ignition checker" /></td>
</tr>
<tr>
<td>YM-34487</td>
<td>This tool is used to check the ignition system components.</td>
<td></td>
</tr>
<tr>
<td>90890-85505</td>
<td>Yamaha bond NO.1215</td>
<td><img src="image6" alt="Yamaha bond" /></td>
</tr>
<tr>
<td>ACC-11001-05-01</td>
<td>Sealant (Quick Gasket ®)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This sealant (bond) is used on crankcase mating surfaces (e.g., crankcase mating surfaces).</td>
<td></td>
</tr>
<tr>
<td>90890-01348</td>
<td>Locknut wrench</td>
<td><img src="image7" alt="Locknut wrench" /></td>
</tr>
<tr>
<td>YM-01348</td>
<td>This tool is used when removing or installing the secondary sheave nut.</td>
<td></td>
</tr>
<tr>
<td>90890-01268</td>
<td>Ring nut wrench</td>
<td><img src="image8" alt="Ring nut wrench" /></td>
</tr>
<tr>
<td>YU-01268</td>
<td>This tool is used to loosen and tighten the steering ring nut.</td>
<td></td>
</tr>
<tr>
<td>90890-01367</td>
<td>Fork seal driver weight</td>
<td><img src="image9" alt="Fork seal driver" /></td>
</tr>
<tr>
<td>YM-A9409-7</td>
<td>Fork seal driver attachment</td>
<td></td>
</tr>
<tr>
<td>90890-01400</td>
<td>These tools are used when installing the fork seal.</td>
<td></td>
</tr>
<tr>
<td>YM-A9409-3</td>
<td><img src="image10" alt="Fork seal driver" /></td>
<td></td>
</tr>
<tr>
<td>90890-01326</td>
<td>T-handle</td>
<td><img src="image11" alt="T-handle" /></td>
</tr>
<tr>
<td>YM-01326</td>
<td>These tools are used to hold the damper rod when removing or installing the damper rod.</td>
<td></td>
</tr>
<tr>
<td>90890-01294</td>
<td>Damper rod holder</td>
<td></td>
</tr>
<tr>
<td>YM-01300-1</td>
<td><img src="image12" alt="Damper rod holder" /></td>
<td></td>
</tr>
<tr>
<td>Tool NO.</td>
<td>Tool name / Function</td>
<td>Illustration</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>90890-01312</td>
<td>Fuel level gauge</td>
<td></td>
</tr>
<tr>
<td>YM-01312-A</td>
<td>This gauge is used to measure the fuel lever in the float chamber.</td>
<td></td>
</tr>
</tbody>
</table>
CHAPTER 2
SPECIFICATIONS

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<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Model</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Code</td>
<td>5PJ5 (USA)</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>5PN6 (CAN)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall length</td>
<td>1890mm (74.41in)</td>
<td>...</td>
</tr>
<tr>
<td>Overall width</td>
<td>705mm (27.76in)</td>
<td>...</td>
</tr>
<tr>
<td>Overall height</td>
<td>1110mm (43.70in)</td>
<td>...</td>
</tr>
<tr>
<td>Seat height</td>
<td>765mm (30.12in)</td>
<td>...</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>1275mm (50.20in)</td>
<td>...</td>
</tr>
<tr>
<td>Minimum ground clearance</td>
<td>120mm (4.72in)</td>
<td>...</td>
</tr>
<tr>
<td>Minimum turning radius</td>
<td>1800mm (70.87in)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wet (without oil and a full fuel tank)</td>
<td>94kg (207lb)</td>
<td>...</td>
</tr>
<tr>
<td>Dry (without oil and fuel)</td>
<td>90kg (198lb)</td>
<td>...</td>
</tr>
<tr>
<td>Maximum load (total of cargo, rider, passenger, and accessories)</td>
<td>143kg (315lb)</td>
<td>...</td>
</tr>
</tbody>
</table>
## ENGINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine type</td>
<td>Air-cooled 2-stroke reed valve</td>
<td></td>
</tr>
<tr>
<td>Displacement</td>
<td>0.049L (49cm³, 2.99cu-in)</td>
<td></td>
</tr>
<tr>
<td>Cylinder arrangement</td>
<td>Forward inclined single cylinder</td>
<td></td>
</tr>
<tr>
<td>Bore × stroke</td>
<td>40.0 × 39.2mm (1.57 × 1.54in)</td>
<td></td>
</tr>
<tr>
<td>Compression ratio</td>
<td>7.01:1</td>
<td></td>
</tr>
<tr>
<td>Engine idle speed</td>
<td>1800 ~ 1900r/min</td>
<td></td>
</tr>
<tr>
<td><strong>Fuel</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended fuel</td>
<td>Unleaded gasoline only (USA)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Regular unleaded gasoline only (CAN)</td>
<td></td>
</tr>
<tr>
<td>Fuel tank capacity</td>
<td>5.7L (1.25 Imp gal, 1.50 US gal)</td>
<td></td>
</tr>
<tr>
<td><strong>Engine oil</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lubrication system</td>
<td>Separate lubrication</td>
<td></td>
</tr>
<tr>
<td>Recommended oil</td>
<td>YAMALUBE 2 or air cooled 2-stroke engine oil</td>
<td></td>
</tr>
<tr>
<td>Quantity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil tank</td>
<td>1.4L (1.23 Imp qt, 1.48 US qt)</td>
<td></td>
</tr>
<tr>
<td><strong>Final gear oil</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Recommended oil</td>
<td>SAE85W140 hypoid gear oil</td>
<td></td>
</tr>
<tr>
<td>Periodic oil change</td>
<td>0.11L (0.10 Imp qt, 0.12 US qt)</td>
<td></td>
</tr>
<tr>
<td>Total amount</td>
<td>0.13L (0.12 Imp qt, 0.14 US qt)</td>
<td></td>
</tr>
<tr>
<td><strong>Air filter</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air filter type</td>
<td>Wet element</td>
<td></td>
</tr>
<tr>
<td><strong>Starting system type</strong></td>
<td>Electric and kick starter</td>
<td></td>
</tr>
<tr>
<td><strong>Carburetor</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Y14P-13E</td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td>TEIKEI</td>
<td></td>
</tr>
<tr>
<td><strong>Spark plug</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer) × quantity</td>
<td>BPR7HS (NGK ) × 1</td>
<td></td>
</tr>
<tr>
<td>Spark plug gap</td>
<td>0.6 ~ 0.7mm (0.024 ~ 0.028in)</td>
<td></td>
</tr>
<tr>
<td><strong>Cylinder head</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Volume</td>
<td>5.54 ~ 5.84cm³ (0.34 ~ 0.36cu-in)</td>
<td></td>
</tr>
<tr>
<td>Maximum warpage</td>
<td><img src="image" alt="Diagram" /> 0.05mm (0.0020in)</td>
<td></td>
</tr>
</tbody>
</table>

* Lines indicate straighedge measurement
## ENGINE SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cylinder</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bore</td>
<td>40.000 – 40.014mm</td>
<td>0.05mm 0.0020in</td>
</tr>
<tr>
<td></td>
<td>(1.5748 – 1.5754in)</td>
<td>(0.0039in)</td>
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<tr>
<td>Maximum taper</td>
<td></td>
<td>0.05mm 0.0020in</td>
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<tr>
<td>Maximum out-of-round</td>
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<td>(0.0039in)</td>
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<tr>
<td><strong>Piston</strong></td>
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<tr>
<td>Piston-to-cylinder clearance</td>
<td>0.035 – 0.040mm</td>
<td>0.10mm 0.0039in</td>
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<td></td>
<td>(0.0014 – 0.0016in)</td>
<td>(0.0028in)</td>
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<td>Diameter D</td>
<td>39.960 – 39.979mm</td>
<td>10.045mm 0.3955in</td>
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<td></td>
<td>(1.5732 – 1.5739in)</td>
<td>(0.3934in)</td>
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<tr>
<td>Height H</td>
<td>5.0mm 0.1969in</td>
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<td>Piston pin bore (in the piston)</td>
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<tr>
<td>Diameter</td>
<td>10.004 – 10.015mm</td>
<td>10.045mm 0.3955in</td>
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<tr>
<td></td>
<td>(0.3939 – 0.3943in)</td>
<td>(0.3934in)</td>
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<td>Piston pin</td>
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<tr>
<td>Outside diameter</td>
<td>9.996 – 10.000mm</td>
<td>9.976mm 0.3928in</td>
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<td></td>
<td>(0.3935 – 0.3937in)</td>
<td>(0.3928in)</td>
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<td>Piston rings</td>
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<td>Section sketch (B × T)/type</td>
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<tr>
<td>Top ring</td>
<td>1.2 × 1.6mm/keystone</td>
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</tr>
<tr>
<td></td>
<td>(0.0472 × 0.0630in)</td>
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<tr>
<td>2nd ring</td>
<td>1.2 × 1.6mm/keystone</td>
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<td></td>
<td>(0.0472 × 0.0630in)</td>
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<tr>
<td>End gap (installed)</td>
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<td>(0.0059 – 0.0138in)</td>
<td>(0.0236in)</td>
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<td>Side clearance (installed)</td>
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<td>Top ring</td>
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<td>0.1mm 0.0039in</td>
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<td>(0.0012 – 0.0020in)</td>
<td>(0.0039in)</td>
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<td>0.03 – 0.05mm</td>
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<td>(0.0012 – 0.0020in)</td>
<td>(0.0043in)</td>
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<td><strong>Connecting rod</strong></td>
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<td>Connecting rod length</td>
<td>79.9 – 80.1mm</td>
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<td></td>
<td>(3.1457 – 3.1535in)</td>
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<tr>
<td>Small end inside diameter</td>
<td>13.996 – 14.007mm</td>
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<td>Crankshaft</td>
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<td>Width “A”</td>
<td>37.90 ~ 37.95mm (1.4921 ~ 1.4941in)</td>
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<td>Maximum runout “C”</td>
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<td>Big end side clearance “D”</td>
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<td>Small end free play “F”</td>
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<td>Clutch</td>
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<td>Clutch type</td>
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<td>Clutch shoe thickness</td>
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<td>1.0mm (0.04in)</td>
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<td>Clutch housing inside diameter</td>
<td>105mm (4.13in)</td>
<td>105.5mm (4.15in)</td>
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<td>Compression spring free length</td>
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<td>61.8mm (2.43in)</td>
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<td>Weight outside diameter</td>
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<td>14.5mm (0.57in)</td>
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<td>Clutch - in revolution</td>
<td>2800 ~ 3200r/min</td>
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<tr>
<td>Clutch - stall revolution</td>
<td>4500 ~ 5500r/min</td>
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<td>V-belt</td>
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<td>V-belt width</td>
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<td>14.8mm (0.58in)</td>
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<td>Kickstarter</td>
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<td>Type</td>
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<td>Kick clip tension</td>
<td>0.7 ~ 2N (0.07 ~ 0.2kgf) (0.15 ~ 0.44lb)</td>
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<td>Transmission</td>
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<td>Transmission type</td>
<td>V-belt automatic</td>
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<tr>
<td>Primary reduction system</td>
<td>Helical gear</td>
<td>...</td>
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<tr>
<td>Primary reduction ratio</td>
<td>52/13 (4.000)</td>
<td>...</td>
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<tr>
<td>Secondary reduction system</td>
<td>Super gear</td>
<td>...</td>
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<td>Secondary reduction ratio</td>
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<td>Single speed automatic</td>
<td>2.693 ~ 0.889:1</td>
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<td>Maximum main axle runout</td>
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<td>0.02mm (0.0008in)</td>
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<tr>
<td>Maximum drive axle runout</td>
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<td>0.02mm (0.0008in)</td>
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# ENGINE SPECIFICATIONS

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<td><strong>Carburetor</strong></td>
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<td>ID mark</td>
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<td>Main jet (M.J.)</td>
<td># 80</td>
<td>...</td>
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<td>Needle jet (N.J.)</td>
<td>2.085</td>
<td>...</td>
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<td>Jet needle-clip position (J.N.)</td>
<td>3N24-1/1</td>
<td>...</td>
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<tr>
<td>Main air jet (M.A.J.)</td>
<td>2.0</td>
<td>...</td>
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<tr>
<td>Cutaway (C.A.)</td>
<td>3.0</td>
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<tr>
<td>Pilot jet (P.J.)</td>
<td># 44</td>
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<td>Bypass</td>
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<td>Valve seat size (V.S.)</td>
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<td>...</td>
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<td>Starter jet (St.J.)</td>
<td>0.45</td>
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<tr>
<td>Float height</td>
<td>15 ~ 17mm (0.59 ~ 0.67in)</td>
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<td>Fuel level height</td>
<td>3.0 ~ 4.0mm (0.12 ~ 0.16in)</td>
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<td>Engine idle speed</td>
<td>1800 ~ 1900r/min</td>
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<td><strong>Reed valve</strong></td>
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<td>Thickness</td>
<td>0.132 ~ 0.172mm (0.0052 ~ 0.0068in)</td>
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<td>Valve stopper height</td>
<td>5.9 ~ 6.5mm (0.23 ~ 0.26in)</td>
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<td>Valve bending limit</td>
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## CHASSIS SPECIFICATIONS

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<td>Steel tube underbone</td>
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<td>Trail</td>
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<tr>
<td>Wheel type</td>
<td>Cast wheel</td>
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<tr>
<td>Rim</td>
<td>J10 × MT3.50</td>
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<tr>
<td>Size</td>
<td>J10 × MT3.50</td>
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<td>Wheel travel</td>
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<td>Maximum radial wheel runout</td>
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<td>1.0mm (0.04in)</td>
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<td>Maximum lateral wheel runout</td>
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<td>1.0mm (0.04in)</td>
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<td>Wheel axle bending limit</td>
<td>...</td>
<td>0.45mm (0.02in)</td>
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<tr>
<td><strong>Rear wheel</strong></td>
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<tr>
<td>Wheel type</td>
<td>Cast wheel</td>
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<tr>
<td>Rim</td>
<td>J10 × MT3.50</td>
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<tr>
<td>Size</td>
<td>J10 × MT3.50</td>
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<td>Material</td>
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<td>Wheel travel</td>
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<td>Wheel runout</td>
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<td>1.0mm (0.04in)</td>
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<tr>
<td>Maximum lateral wheel runout</td>
<td>...</td>
<td>0.5mm (0.02in)</td>
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<tr>
<td><strong>Front tire</strong></td>
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<td>Tire type</td>
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<td>Model (manufacturer)</td>
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<td>Tire pressure (cold)</td>
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<tr>
<td>Up to 90kg (198lb) load</td>
<td>200kPa (2.00kgf/cm², 29psi)</td>
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<td>90kg (198lb) load ~ Maximum load*</td>
<td>200kPa (2.00kgf/cm², 29psi)</td>
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<tr>
<td>Minimum tire tread depth</td>
<td>...</td>
<td>0.8mm (0.03in)</td>
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<tr>
<td>Item</td>
<td>Standard</td>
<td>Limit</td>
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<td>---------------------------</td>
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<tr>
<td><strong>Rear tire</strong></td>
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<tr>
<td>Tire type</td>
<td>Tubeless</td>
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<tr>
<td>Size</td>
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<td>90kg (198lb) load ~ Maximum load*</td>
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<td>Minimum tire tread depth</td>
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<td>Pad thickness</td>
<td>4.0mm (0.16in)</td>
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<td>Caliper cylinder inside diameter</td>
<td>30.16mm (1.19in)</td>
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<td>Brake fluid type</td>
<td>DOT 4 or DOT3</td>
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<td><strong>Rear brake</strong></td>
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<td>Brake type</td>
<td>Drum brake</td>
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<td>Brake lever free play (front lever end)</td>
<td>2 ~ 5mm (0.08 ~ 0.20in)</td>
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<td>Brake lever free play (rear lever end)</td>
<td>10 ~ 20mm (0.39 ~ 0.79in)</td>
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<td>1.5 ~ 3.5mm (0.06 ~ 0.14in)</td>
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<td>Lock-to-lock angle (right)</td>
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## ELECTRICAL SPECIFICATIONS

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<tbody>
<tr>
<td><strong>System voltage</strong></td>
<td>12V</td>
<td></td>
</tr>
<tr>
<td><strong>Ignition system</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition system type</td>
<td>C.D.I.</td>
<td></td>
</tr>
<tr>
<td>Ignition timing</td>
<td>14° BTDC at 5000r/min</td>
<td></td>
</tr>
<tr>
<td>Advance type</td>
<td>Fixed</td>
<td></td>
</tr>
<tr>
<td>Pick coil resistance/color</td>
<td>400 ~ 600Ω at 20°C (68°F)/ black - white/red</td>
<td></td>
</tr>
<tr>
<td>C.D.I. unit model (manufacturer)</td>
<td>5PJ (T-MORIC)</td>
<td></td>
</tr>
<tr>
<td><strong>Ignition coil</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>2JN (T-MORIC)</td>
<td></td>
</tr>
<tr>
<td>Minimum ignition spark gap</td>
<td>6mm (0.24in)</td>
<td></td>
</tr>
<tr>
<td>Primary coil resistance</td>
<td>0.184 ~ 0.276Ω at 20°C (68°F)</td>
<td></td>
</tr>
<tr>
<td>Secondary coil resistance</td>
<td>6.32 ~ 9.48kΩ at 20°C (68°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Spark plug cap</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Material</td>
<td>Resin</td>
<td></td>
</tr>
<tr>
<td>Resistance</td>
<td>4 ~ 6kΩ at 20°C (68°F)</td>
<td></td>
</tr>
<tr>
<td><strong>Charging system</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System type</td>
<td>AC magneto</td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>F5PJ (T-MORIC)</td>
<td></td>
</tr>
<tr>
<td>Nominal output</td>
<td>12V 85W/5000r/min</td>
<td></td>
</tr>
<tr>
<td>Charging current</td>
<td>0.6A at 3000r/min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.2A at 8000r/min</td>
<td></td>
</tr>
<tr>
<td>Charging coil resistance/color</td>
<td>0.48 ~ 0.72Ω/white - black</td>
<td></td>
</tr>
<tr>
<td>Lighting voltage</td>
<td>12V at 3000r/min</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15V at 8000r/min</td>
<td></td>
</tr>
<tr>
<td>Lighting coil resistance/color</td>
<td>0.4 ~ 0.6Ω/yellow/red - black</td>
<td></td>
</tr>
<tr>
<td>Source coil resistance/color</td>
<td>640 ~ 960Ω at 20°C (68°F)/ black - black/red</td>
<td></td>
</tr>
<tr>
<td><strong>Rectifier</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>SH614-12 (SHIN DEN GEN)</td>
<td></td>
</tr>
<tr>
<td>No load regulated voltage (DC)</td>
<td>14 ~ 15V</td>
<td></td>
</tr>
<tr>
<td>No load regulated voltage (AC)</td>
<td>13 ~ 14V</td>
<td></td>
</tr>
<tr>
<td>Rectifier capacity</td>
<td>8A</td>
<td></td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>18V</td>
<td></td>
</tr>
<tr>
<td><strong>Battery</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery type (manufacturer)</td>
<td>GTX5L-BS (GS)</td>
<td></td>
</tr>
<tr>
<td>Battery voltage/capacity</td>
<td>12V/4AH</td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.330</td>
<td></td>
</tr>
<tr>
<td>Ten hour rate amperage</td>
<td>0.4A</td>
<td></td>
</tr>
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### Electrical Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Headlight type</strong></td>
<td>Halogen bulb</td>
<td>...</td>
</tr>
<tr>
<td><strong>Indicator light (voltage/wattage × quantity)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Turn signal indicator light</td>
<td>12V 1.7W × 1</td>
<td>...</td>
</tr>
<tr>
<td>High beam indicator light</td>
<td>12V 1.7W × 1</td>
<td>...</td>
</tr>
<tr>
<td>Oil level indicator light</td>
<td>12V 1.7W × 1</td>
<td>...</td>
</tr>
<tr>
<td><strong>Bulbs (voltage/wattage × quantity)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headlight</td>
<td>12V 35/35W × 1</td>
<td>...</td>
</tr>
<tr>
<td>Tail/brake light</td>
<td>12V 5/21W × 1</td>
<td>...</td>
</tr>
<tr>
<td>Front turn signal light</td>
<td>12V 10W × 2</td>
<td>...</td>
</tr>
<tr>
<td>Rear turn signal light</td>
<td>12V 10W × 2</td>
<td>...</td>
</tr>
<tr>
<td>License plate light</td>
<td>12V 5W × 1</td>
<td>...</td>
</tr>
<tr>
<td>Speedometer light</td>
<td>12V 3.4W × 1, 1.7W × 1</td>
<td>...</td>
</tr>
<tr>
<td><strong>Electric starting system</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System type</td>
<td>Constant mesh</td>
<td>...</td>
</tr>
<tr>
<td>Starter motor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>4WX 01 (SHINLIN)</td>
<td>...</td>
</tr>
<tr>
<td>Suction voltage</td>
<td>12V</td>
<td>...</td>
</tr>
<tr>
<td>Power output</td>
<td>0.14kW</td>
<td>...</td>
</tr>
<tr>
<td>Brushes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall length</td>
<td>6.5mm (0.26in)</td>
<td>3.0mm (0.12in)</td>
</tr>
<tr>
<td>Spring force</td>
<td>5.49 ~ 8.24N</td>
<td>...</td>
</tr>
<tr>
<td>(360 ~ 540gf, 12.69 ~ 19.04oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commutator diameter</td>
<td>16.1mm (0.63in)</td>
<td>15.1mm (0.59in)</td>
</tr>
<tr>
<td>Armature coil resistance</td>
<td>0.063 ~ 0.077Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td>Mica undercut (depth)</td>
<td>1.05mm (0.04in)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Starter relay</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>4WX 00 (SHINLIN)</td>
<td>...</td>
</tr>
<tr>
<td>Amperage</td>
<td>20A</td>
<td>...</td>
</tr>
<tr>
<td>Coil resistance</td>
<td>54 ~ 66Ω</td>
<td>...</td>
</tr>
<tr>
<td><strong>Horn</strong></td>
<td></td>
<td></td>
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<tr>
<td>Horn type</td>
<td>Plane</td>
<td>...</td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>AH-368 (SAKURA)</td>
<td>...</td>
</tr>
<tr>
<td>Maximum amperage</td>
<td>1.5A</td>
<td>...</td>
</tr>
<tr>
<td>Performance</td>
<td>95 ~ 105dB/2m</td>
<td>...</td>
</tr>
<tr>
<td>Coil resistance</td>
<td>4.05 ~ 4.55Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Turn signal relay</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relay type</td>
<td>Condenser</td>
<td>...</td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>5PJ1 (TAYOUNG)</td>
<td>...</td>
</tr>
<tr>
<td>Self-cancelling device built-in</td>
<td>NO</td>
<td>...</td>
</tr>
<tr>
<td>Turn signal blinking frequency</td>
<td>75 ~ 95cycles/minute</td>
<td>...</td>
</tr>
<tr>
<td>Wattage</td>
<td>10W × 2 + 1.7W+ AP</td>
<td>...</td>
</tr>
</tbody>
</table>
### ELECTRICAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fuse (amperage × quantity)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Main fuse</td>
<td>7A × 1</td>
<td>...</td>
</tr>
<tr>
<td><strong>Fuel sender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>4VP (TATUNG)</td>
<td>...</td>
</tr>
<tr>
<td>Sender unit resistance - full</td>
<td>4 ~ 10Ω</td>
<td>...</td>
</tr>
<tr>
<td>Sender unit resistance - empty</td>
<td>90 ~ 100Ω</td>
<td>...</td>
</tr>
<tr>
<td><strong>Oil lever gauge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model (manufacturer)</td>
<td>4VP (LUN PING)</td>
<td>...</td>
</tr>
</tbody>
</table>
CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS.
Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

<table>
<thead>
<tr>
<th>METRIC</th>
<th>MULTIPLIER</th>
<th>IMPERIAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>** mm</td>
<td>0.03937</td>
<td>** in</td>
</tr>
<tr>
<td>2 mm</td>
<td>0.03937</td>
<td>0.08 in</td>
</tr>
</tbody>
</table>

CONVERSION TABLE

<table>
<thead>
<tr>
<th>Metric unit</th>
<th>Multiplier</th>
<th>Imperial unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>m·kg</td>
<td>7.233</td>
<td>ft·lb</td>
</tr>
<tr>
<td>m·kg</td>
<td>86.794</td>
<td>in·lb</td>
</tr>
<tr>
<td>cm·kg</td>
<td>0.0723</td>
<td>ft·lb</td>
</tr>
<tr>
<td>cm·kg</td>
<td>0.8679</td>
<td>in·lb</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Weight</th>
<th>kg</th>
<th>2.205</th>
<th>lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>g</td>
<td>0.03527</td>
<td>oz</td>
<td></td>
</tr>
</tbody>
</table>

| Speed | km/hr | 0.6214 | mph |

<table>
<thead>
<tr>
<th>Distance</th>
<th>km</th>
<th>0.6214</th>
<th>mi</th>
</tr>
</thead>
<tbody>
<tr>
<td>m</td>
<td>3.281</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>cm</td>
<td>1.094</td>
<td>yd</td>
<td></td>
</tr>
<tr>
<td>mm</td>
<td>0.3937</td>
<td>in</td>
<td></td>
</tr>
</tbody>
</table>

| Volume/Capacity | cc (cm\(^3\)) | 0.03527 | oz (IMP liq.) |
|                 | cc (cm\(^3\)) | 0.06102 | cu-in         |
|                 | lt (liter)    | 0.8799  | qt (IMP liq.) |
|                 | lt (liter)    | 0.2199  | gal (IMP liq.) |

| Misc. | kg/mm | 55.997 | lb/in |
|       | kg/cm\(^2\) | 14.2234 | psi (lb/in\(^2\)) |
|       | Centigrade (°C) | 9/5+32 | Fahrenheit (°F) |

GENERAL TIGHTENING TORQUE SPECIFICATIONS

This chart specifies tightening torques for standard fasteners with a standard ISO thread pitch. Tightening torque specifications for special components or assemblies are provided for each chapter of this manual. To avoid warpage, tighten multi-fastener assemblies in a crisscross pattern and progressive stages until the specified tightening torque is reached. Unless otherwise specified, tightening torque specifications require clean, dry threads. Components should be at room temperature.

<table>
<thead>
<tr>
<th>A (nut)</th>
<th>B (bolt)</th>
<th>General tightening torques</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
<td>Nm</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>17</td>
<td>12</td>
<td>55</td>
</tr>
<tr>
<td>19</td>
<td>14</td>
<td>85</td>
</tr>
<tr>
<td>22</td>
<td>16</td>
<td>130</td>
</tr>
</tbody>
</table>

A: Width across flats
B: Thread diameter
## TIGHTENING TORQUES

### ENGINE

<table>
<thead>
<tr>
<th>Part to be tightened</th>
<th>Part name</th>
<th>Thread size</th>
<th>Qty</th>
<th>Tightening torque</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nm</td>
<td>mkg</td>
</tr>
<tr>
<td>Spark plug</td>
<td>—</td>
<td>M 14</td>
<td>1</td>
<td>20</td>
<td>2.0</td>
</tr>
<tr>
<td>Cylinder head and cylinder</td>
<td>Nut</td>
<td>M 7</td>
<td>4</td>
<td>14</td>
<td>1.4</td>
</tr>
<tr>
<td>Cylinder</td>
<td>Stud bolt</td>
<td>M 7</td>
<td>4</td>
<td>10</td>
<td>1.0</td>
</tr>
<tr>
<td>Air shroud 1</td>
<td>Screw</td>
<td>M 6</td>
<td>3</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>Air shroud 1× 2</td>
<td>Screw</td>
<td>M 6</td>
<td>1</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Fan</td>
<td>Screw</td>
<td>M 6</td>
<td>3</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>Autolube pump</td>
<td>Screw</td>
<td>M 5</td>
<td>2</td>
<td>4</td>
<td>0.4</td>
</tr>
<tr>
<td>Reed valve</td>
<td>Bolt</td>
<td>M 6</td>
<td>4</td>
<td>11</td>
<td>1.1</td>
</tr>
<tr>
<td>Air filter</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>9</td>
<td>0.9</td>
</tr>
<tr>
<td>Carburetor cap</td>
<td>Screw</td>
<td>M 4</td>
<td>2</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Exhaust pipe</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>9</td>
<td>0.9</td>
</tr>
<tr>
<td>Muffler</td>
<td>Bolt</td>
<td>M 8</td>
<td>2</td>
<td>26</td>
<td>2.6</td>
</tr>
<tr>
<td>Exhaust protector</td>
<td>Bolt</td>
<td>M 6</td>
<td>3</td>
<td>11</td>
<td>1.1</td>
</tr>
<tr>
<td>Protector</td>
<td>Screw</td>
<td>M 6</td>
<td>1</td>
<td>9</td>
<td>0.9</td>
</tr>
<tr>
<td>Crankcase 1× 2</td>
<td>Bolt</td>
<td>M 6</td>
<td>6</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>Transmission case cover</td>
<td>Bolt</td>
<td>M 6</td>
<td>6</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>Crankcase cover 1(left)</td>
<td>Bolt</td>
<td>M 6</td>
<td>12</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>Bolt(case2)</td>
<td>Screw</td>
<td>M 6</td>
<td>1</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>Crankcase cover2(left)</td>
<td>Bolt</td>
<td>M 6</td>
<td>3</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>Drain bolt</td>
<td>Bolt</td>
<td>M 8</td>
<td>1</td>
<td>18</td>
<td>1.8</td>
</tr>
<tr>
<td>Oil plug</td>
<td>Plug</td>
<td>M 14</td>
<td>1</td>
<td>3</td>
<td>0.3</td>
</tr>
<tr>
<td>Idle gear plate</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>8</td>
<td>0.8</td>
</tr>
<tr>
<td>Kick crank</td>
<td>Bolt</td>
<td>M 6</td>
<td>1</td>
<td>9</td>
<td>0.9</td>
</tr>
<tr>
<td>Starter motor</td>
<td>Bolt</td>
<td>M 6</td>
<td>2</td>
<td>13</td>
<td>1.3</td>
</tr>
<tr>
<td>Clutch housing</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
<td>40</td>
<td>4.0</td>
</tr>
<tr>
<td>Clutch weight</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
<td>30</td>
<td>3.0</td>
</tr>
<tr>
<td>Magnet base</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>8</td>
<td>0.8</td>
</tr>
<tr>
<td>C.D.I. rotor</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
<td>38</td>
<td>3.8</td>
</tr>
<tr>
<td>Part to be tightened</td>
<td>Thread size</td>
<td>Tightening torque</td>
<td>Remarks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------------</td>
<td>-------------</td>
<td>-------------------</td>
<td>---------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame and engine bracket</td>
<td>M 12</td>
<td>84 8.4 61</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine bracket, compression rod and engine</td>
<td>M 10</td>
<td>45 4.5 31</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear carrier</td>
<td>M 6</td>
<td>13 1.3 9.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear shock absorber and frame</td>
<td>M 10</td>
<td>30 3.0 22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear shock absorber and engine</td>
<td>M 8</td>
<td>16 1.6 12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steering ring nut</td>
<td>M 25</td>
<td>60 6.0 43.4</td>
<td>See “NOTE”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Handle holder and steering shaft</td>
<td>M 10</td>
<td>60 6.0 43.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake hose and master cylinder</td>
<td>M 8</td>
<td>20 2.0 14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel tank</td>
<td>M 6</td>
<td>10 1.0 7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel cock</td>
<td>M 6</td>
<td>7 0.7 5.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel sender</td>
<td>M 5</td>
<td>4 0.4 2.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Box</td>
<td>M 6</td>
<td>7 0.7 5.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seat lock assembly</td>
<td>M 6</td>
<td>7 0.7 5.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic parts &amp; cover</td>
<td>M 5</td>
<td>2 0.2 1.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Footrest board</td>
<td>M 6</td>
<td>7 0.7 5.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front wheel axle and nut</td>
<td>M 10</td>
<td>70 7.0 51</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear wheel axle and nut</td>
<td>M 14</td>
<td>120 12.0 87</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rear brake cam lever</td>
<td>M 6</td>
<td>10 1.0 7.2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front brake caliper and front fork</td>
<td>M 8</td>
<td>23 2.3 16.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake disc and hub</td>
<td>M 10</td>
<td>20 2.0 14.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake hose and caliper</td>
<td>M 8</td>
<td>23 2.3 16.6</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brake caliper and bleed screw</td>
<td>M 5</td>
<td>6 0.6 4.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
NOTE:
1. First, tighten the ring nut(lower) approximately 38Nm(3.8m•kg, 27.5ft•lb) by using the torque wrench, then loosen the ring nut 1/4 turn.
2. Second, tighten the ring nut(lower) approximately 12Nm(1.2m•kg, 8.7ft•lb) by using the torque wrench.
3. Installing the rubber washer.
4. Then finger tighten the center ring nut and touch rubber washer. Align the slots both ring nut and install the lock washer.
5. Final, hold the ring nuts(lower and center) and tighten the ring nut(upper) 75Nm(7.5m•kg, 54.2ft•lb) by using the torque wrench.
6. Confirm, adjust the direction handlebar to the right direction, front wheel suspended. Push direction handlebar lightly with the finger (approximately 1.5kgf • cm), direction handlebar should turn slowly without interference or hindrance.

1. Lower ring nut
2. Rubber washer
3. Center ring nut
4. Lock washer
5. Upper ring nut
<table>
<thead>
<tr>
<th>Lubrication Point</th>
<th>Lubricant</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil seal lips</td>
<td>G</td>
</tr>
<tr>
<td>O-rings</td>
<td>G</td>
</tr>
<tr>
<td>Bearings</td>
<td>E</td>
</tr>
<tr>
<td>Piston surface</td>
<td>E</td>
</tr>
<tr>
<td>Piston pin</td>
<td>E</td>
</tr>
<tr>
<td>Cylinder</td>
<td>E</td>
</tr>
<tr>
<td>Transmission case (bearing)</td>
<td>G</td>
</tr>
<tr>
<td>Autolube pump</td>
<td>E</td>
</tr>
<tr>
<td>Starter wheel gear</td>
<td>E</td>
</tr>
<tr>
<td>Idle gear plate</td>
<td>M</td>
</tr>
<tr>
<td>Secondary drive gear</td>
<td>G</td>
</tr>
<tr>
<td>Kickstarter pinion gear</td>
<td>E</td>
</tr>
<tr>
<td>Drive axle</td>
<td>M</td>
</tr>
<tr>
<td>Pump drive gear</td>
<td>E</td>
</tr>
<tr>
<td>Main axle</td>
<td>G</td>
</tr>
<tr>
<td>Main axle (bearing)</td>
<td>G</td>
</tr>
<tr>
<td>Lubrication Point</td>
<td>Lubricant</td>
</tr>
<tr>
<td>------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Oil seal lips</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>O-rings</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>Bearings</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>Speedometer drive gear</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>Front brake lever pivot shaft</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
<tr>
<td>Rear brake lever pivot shaft</td>
<td><img src="image6.png" alt="Image" /></td>
</tr>
<tr>
<td>Front brake camshaft</td>
<td><img src="image7.png" alt="Image" /></td>
</tr>
<tr>
<td>Front brake cable</td>
<td><img src="image8.png" alt="Image" /></td>
</tr>
<tr>
<td>Throttle cable</td>
<td><img src="image9.png" alt="Image" /></td>
</tr>
<tr>
<td>Tube guide (throttle grip) inner surface</td>
<td><img src="image10.png" alt="Image" /></td>
</tr>
<tr>
<td>Upper steering stem ring nut</td>
<td><img src="image11.png" alt="Image" /></td>
</tr>
<tr>
<td>Upper bearing outer race</td>
<td><img src="image12.png" alt="Image" /></td>
</tr>
<tr>
<td>Lower bearing outer race</td>
<td><img src="image13.png" alt="Image" /></td>
</tr>
<tr>
<td>Rear brake camshaft</td>
<td><img src="image14.png" alt="Image" /></td>
</tr>
<tr>
<td>Centerstand</td>
<td><img src="image15.png" alt="Image" /></td>
</tr>
</tbody>
</table>
CABLE ROUTING

1. Horn
2. Rectifier regulator
3. Main switch
4. Headlight leads
5. Speedometer cable
6. Ignition coil
7. Throttle cable 1
8. Throttle cable 3
9. Battery negative lead
10. Wire brake
11. Fuel sender lead
12. Seat lock cable
13. Oil tank hose
14. C.D.I. unit

Wire harness
A. Pass the speedometer cable through the right hole of front fender, then through the guide.
B. Pass the wire harness through the inside of ignition coil.
C. Secure the ground lead and the ignition coil base to the ignition coil stay.
D. Pass the wire harness through the inside of oil tank.
E. Pass the seat cable through the inside of frame.

F. Align the clip with the white brand.
G. Clamp the wire harness.
H. Insert the seat cable through the frame tube.
I. Clamp wire harness, rear brake cable throttle cable 1, 3.
J. Position the cylinder between the supporter and main switch.
① Brake cable
② Speedometer cable
③ Fuel tank overflow hose
④ Brake cable holder
⑤ Brake hose
⑥ Brake hose holder
⑦ License bracket
⑧ Flasher relay
⑨ Fuel tank breather hose
⑩ Fuel hose
⑪ Breather hose

A Pass the brake hose through the holder.
B Insert the fuel overflow hose bottom.
C Pass the fuel overflow hose through the rear fender hole.
D Pass the fuel overflow hose through the holder.
E Hold the fuel overflow hose with a clamp.
F Pass the brake cable through the holder.
① Brake hose
② Front fender
③ Front fork assembly
④ Nut
⑤ Plate washer
⑥ Brake hose holder 1
⑦ Flange bolt
⑧ Brake hose holder 2
⑨ Bolt
⑩ Grommet
⑪ Flange bolt
⑫ Brake hose holder
⑬ Brake hose holder 3

A Tightening torque: 3.5 ~ 5.5Nm.
B Assemble the brake hose holder 3 hang hook must certainty hook the brake hose holder.
C Tightening torque: 8.5 ~ 14Nm.
D Tightening torque: 3.5 ~ 5Nm.
E Tightening torque: 3.5 ~ 5.5Nm.
F Pass the brake hose through the brake hose holder.

2-20
A Pass battery leads through the slot of footrestboard.
B Cover them after securing starter relay leads.
C Pass the seat lock cable through the hole of bracket.
D Pass the fuel tank breather hose over seat lock cable.
E Clamp carburetor vacuum hose, fuel hose and fuel cock vacuum hose.
F Clamp autochoke leads and autolube hose on to carburetor throttle cable.
G Pass the battery leads through the forward of cross pipe.
H Put fuse box on to footrest board holder.
I Pass throttle cable 1, 3 wire harness, autolube pump cable, brake cable through the outside of battery box.

1 Ignition coil
2 Spark plug lead
3 Starter relay leads
4 Auto choke leads
5 Starter relay
6 Band
7 C.D.I. unit
8 Autolube hose
9 Seat lock cable
10 Bracket
11 Fuel tank breather hose
12 Band 2
13 Battery lead
14 Battery lead

2-21
**CABLE ROUTING**

1. Grip assembly  
2. Handlebar switch (right)  
3. Front brake light switch  
4. Speedometer  
5. Rear brake cable  
6. Handlebar switch (left)  
7. Grip  
8. Handlebar assembly  
9. Wire harness  
10. Throttle cable 1  
11. Throttle cable 3  
12. Speedometer cable  
13. Brake hose

**A** Route the front brake light switch lead through between the handlebar pipe and the brake hose.  
**B** Route the front brake light switch lead, left handlebar switch lead and front turn signal light lead through the backward of speedometer cable.

**C** Route the front turn signal light lead through the slot of handlebar bracket and through the backward of rear brake cable.  
**D** Route the left handlebar switch lead through the backward of handlebar pipe.  
**E** Fasten the throttle cables, brake hose, wire harness, speedometer cable and rear brake cable to the frame and cut the end to be shorter than 5mm and reserve for a finger clearance, the position on the above of guide wire and align white point mark of wire harness.

**F** Route the speedometer cable through between the frame and the brake hose to right side.  
**G** Route the throttle cable 1, 3 through between the handlebar, wire harness and brake hose to left side.  
**H** Connect the couplers securely in rear of the brake hose.  
**I** Pass the throttle cable 1, 3 through the hole in the handlebar cover 1.  
**J** After adjusting the throttle cable free play, insert into the boots.  
**K** After tightening must has clearance, and tightening torque 60Nm (6.0m • kg, 43.4ft • lb).
# CHAPTER 3
## PERIODIC CHECKS AND ADJUSTMENTS

**INTRODUCTION**

**PERIODIC MAINTENANCE AND MINOR REPAIR**
- Periodic maintenance chart for the emission control system  
- General maintenance and lubrication chart

**COVER AND PANEL**
- Seat and side covers
- Lower cowling, upper cover and leg shield 1
- Leg shield 2 and footrest board
- Handlebar cover (front and rear)

**ADJUSTING THE ENGINE IDLING SPEED**
**PERIODIC CHECKS AND ADJUSTMENTS**

**INTRODUCTION**
This chapter includes all information necessary to perform recommended checks and adjustments. If followed, these preventive maintenance procedures will ensure more reliable vehicle operation, a longer service life and reduce the need for costly overhaul work. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

**PERIODIC MAINTENANCE AND MINOR REPAIR**

*Periodic maintenance chart for the emission control system*

Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>ROUTINE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Fuel line</td>
<td>• Check fuel and vacuum hoses for cracks or damage. Replace if necessary.</td>
</tr>
<tr>
<td>2</td>
<td>Idle speed</td>
<td>• Check and adjust engine idle speed.</td>
</tr>
<tr>
<td>3</td>
<td>Exhaust system</td>
<td>• Check for leakage. Tighten if necessary. Replace gasket(s) if necessary.</td>
</tr>
<tr>
<td>4</td>
<td>Air induction system</td>
<td>• Check the air cut-off valve, reed valve, and hose for damage. Replace any damaged parts.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ODOMETER READING</th>
</tr>
</thead>
<tbody>
<tr>
<td>INITIAL</td>
</tr>
<tr>
<td>1,000 km (600 mi) or 1 month</td>
</tr>
</tbody>
</table>

- ✓: Done
- ✗: Not done
### General maintenance and lubrication chart

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>ROUTINE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>INITIAL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,000 km</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(600 mi)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or 1 month</td>
</tr>
<tr>
<td>1</td>
<td>* Air filter element</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>* Front brake</td>
<td>✔</td>
</tr>
<tr>
<td>3</td>
<td>* Rear brake</td>
<td>✔</td>
</tr>
<tr>
<td>4</td>
<td>* Wheels</td>
<td>✔</td>
</tr>
<tr>
<td>5</td>
<td>* Tires</td>
<td>✔</td>
</tr>
<tr>
<td>6</td>
<td>* Wheel bearings</td>
<td>✔</td>
</tr>
<tr>
<td>7</td>
<td>* Steering bearings</td>
<td>✔</td>
</tr>
<tr>
<td>8</td>
<td>* Chassis fasteners</td>
<td>✔</td>
</tr>
<tr>
<td>9</td>
<td>Front brake lever pivot shaft</td>
<td>✔</td>
</tr>
<tr>
<td>10</td>
<td>Rear brake lever pivot shaft</td>
<td>✔</td>
</tr>
<tr>
<td>11</td>
<td>Centerstand</td>
<td>✔</td>
</tr>
<tr>
<td>12</td>
<td>* Front fork</td>
<td>✔</td>
</tr>
<tr>
<td>13</td>
<td>* Shock absorber assembly</td>
<td>✔</td>
</tr>
<tr>
<td>14</td>
<td>* Autolube pump</td>
<td>✔</td>
</tr>
<tr>
<td>15</td>
<td>Final transmission oil</td>
<td>✔</td>
</tr>
<tr>
<td>16</td>
<td>* V-belt</td>
<td>✔</td>
</tr>
<tr>
<td>17</td>
<td>* Control and meter cables</td>
<td>✔</td>
</tr>
<tr>
<td>18</td>
<td>* Throttle grip housing and</td>
<td>✔</td>
</tr>
<tr>
<td></td>
<td>cable</td>
<td>✔</td>
</tr>
<tr>
<td>19</td>
<td>* Lights, signals and switches</td>
<td>✔</td>
</tr>
</tbody>
</table>

* *Since these items require special tools, data and technical skills, have a Yamaha dealer perform the service.*

**NOTE:** From 19000 km (12000 mi) or 36 months, repeat the maintenance intervals starting from 7000 km (4000 mi) or 12 months.
NOTE:

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- Hydraulic brake system
  - When disassembling the master cylinder or caliper cylinder, always replace the brake fluid. Check the brake fluid level regularly and fill as required.
  - Replace the oil seals on the inner parts of the master cylinder and caliper cylinder every two years.
  - Replace the brake hoses every four years or if cracked or damaged.
COVER AND PANEL
SEAT AND SIDE COVERS

13Nm (1.3 m·kg, 9.4 ft·lb)

Removing the seat and side covers

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Battery box cover</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Seat</td>
<td>1</td>
<td><strong>NOTE:</strong> Insert the (-) screwdriver into the slot of battery box cover and pickup then remove.</td>
</tr>
<tr>
<td>3</td>
<td>Seat hanger</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Rear carrier</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Rear cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Side cover (left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Side cover (right)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Center cover</td>
<td>1</td>
<td>For installation, reverse the removal procedure.</td>
</tr>
</tbody>
</table>

For installation, reverse the removal procedure.
### ORDER JOB/PART

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lower cowling</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Head light lead coupler(low)</td>
<td>1</td>
<td>Disconnect.</td>
</tr>
<tr>
<td>3</td>
<td>Head light lead coupler(high)</td>
<td>1</td>
<td>Disconnect.</td>
</tr>
<tr>
<td>4</td>
<td>Upper cover</td>
<td>1</td>
<td>For installation, reverse the removal pro-</td>
</tr>
<tr>
<td>5</td>
<td>Leg shield 1</td>
<td>1</td>
<td>cedure.</td>
</tr>
</tbody>
</table>

**Removing the lower cowling, upper cover, and leg shield 1**
## LEG SHIELD 2 AND FOOTREST BOARD

### Removing the leg shield 2 and footrest board

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Main switch cover</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Leg shield 2</td>
<td>1</td>
<td>Refer to “LOWER COWLING, UPPER COVER AND LEG SHIELD 1”.</td>
</tr>
<tr>
<td>3</td>
<td>Footrest(left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Footrest(right)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Battery negative lead</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Battery positive lead</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Battery</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Footrest board</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**WARNING**

First, disconnect the battery negative lead, and then the battery positive lead.

For installation, reverse the removal procedure.
## HANDLEBAR COVER (FRONT AND REAR)

**Removing the handlebar cover (front and rear)**

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Handlebar cover (front)</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Speedometer cable</td>
<td>1</td>
<td>Disconnect.</td>
</tr>
<tr>
<td>3</td>
<td>Handlebar cover (rear)</td>
<td>1</td>
<td>For installation, reverse the removal procedure.</td>
</tr>
</tbody>
</table>

For installation, reverse the removal procedure.
ADJUSTING THE ENGINE IDLING SPEED

NOTE:
Prior to adjusting the engine idling speed, the air filter element should be clean, and the engine should have adequate compression.

1. Start the engine and let it warm up for several minutes.

**WARNING**
Before starting the engine, be sure to use the centerstand for safety.

2. Remove:
   - battery box cover ①
   Refer to “SEAT AND SIDE COVERS”.

3. Connect:
   - digital tachometer ①
     (onto the spark plug lead of cylinder )

   **Digital tachometer**
   90890-06760

4. Check:
   - engine idling speed
     Out of specification → Adjust

   **Engine idling speed**
   1800 ~ 1900 r/min
5. Adjust:
   • engine idling speed

   ┌─────────────────────────────────────────────
   │ a. Turn the throttle stop screw ① in direction
   │  a or b until the specified engine idling
   │  speed is obtained.
   └─────────────────────────────────────────────

   │ Direction (a) │ Engine idling speed is increased.
   │ Direction (b) │ Engine idling speed is decreased.

6. Install:
   • battery box cover
     Refer to “SEAT AND SIDE COVERS”.
CHAPTER 4
CARBURETOR

AIR INDUCTION SYSTEM ................................................................. 4-1
AIR FILTER CASE ASSEMBLY ...................................................... 4-1
CHECKING THE AIR INDUCTION SYSTEM ............................... 4-3
### AIR INDUCTION SYSTEM

#### AIR FILTER CASE ASSEMBLY

**Removing the air filter case assembly**

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hose (to air filter)</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Pipe (to exhaust pipe)</td>
<td>1</td>
<td>Disconnect.</td>
</tr>
<tr>
<td>3</td>
<td>Air filter case assembly</td>
<td>1</td>
<td>Disconnect.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>For installation, reverse the removal procedure.</td>
</tr>
</tbody>
</table>

For installation, reverse the removal procedure.
### Disassembling the Air Filter Case Assembly

<table>
<thead>
<tr>
<th>Order</th>
<th>Job/Part</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cap</td>
<td>1</td>
<td>Remove the parts in the order listed.</td>
</tr>
<tr>
<td>2</td>
<td>Damper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Air filter case cap</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reed valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Reed valve stopper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Reed valve seat</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Reed valve assembly</td>
<td>1</td>
<td>For assembly, reverse the disassembly</td>
</tr>
<tr>
<td>8</td>
<td>Element</td>
<td>1</td>
<td>procedure.</td>
</tr>
<tr>
<td>9</td>
<td>Plate</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>O-ring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Air filter case body</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Damper</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
CHECKING THE AIR INDUCTION SYSTEM

1. Check:
   - hoses
     Loose connection → Connect properly.
     Cracks/damage → Replace.
   - pipes
     Cracks/damage → Replace.

2. Check:
   - reed valve
   - reed valve stopper
   - reed valve seat
     Cracks/damage → Replace the reed valve assembly.

3. Measure:
   - reed valve bending limit
     Out of specification → Replace the reed valve assembly.

4. Check:
   - air filter case assembly
     Cracks/damage → Replace.

Start the engine and let it warm up for several minutes.
Dismount the intake tube of air filter case assembly, and put a piece of thin paper at the opening of the body, the paper will not pulsate (sucking and releasing).
If there is no pulsation, turn off the engine and check if there is any leakage or clog in the air filter case assembly or not. If there is, repair and repeat the inspection steps in a and b.
If it is still not pulsating, replace the air filter case assembly.
YW50X WIRING DIAGRAM

1. Main switch
2. Main fuse
3. Battery
4. Starter relay
5. Starter motor
6. Rectifier/regulator
7. Auto choke
8. C.D.I magnetor
9. C.D.I Unit
10. Ignition coil
11. Spark plug
12. Front brake light switch
13. Rear brake light switch
14. Tail brake light
15. Rear turn signal light(left)
16. Rear turn signal light(right)
17. License plate light
18. Front turn signal light(right)
19. Front turn signal light(left)
20. Headlight(high)
21. Headlight(low)
22. Turn signal relay
23. Horn
24. Handlebar switch(left)
25. Horn switch
26. Dimmer switch
27. Turn signal switch
28. Fuel sender
29. Speedometer
30. Fuel gauge
31. Oil level indicator light
32. Speedometer light
33. High beam indicator light
34. Turn signal indicator light
35. Oil level gauge
36. Handlebar switch(right)
37. Engine stop switch
38. Start switch

MARK | EXPLANATION
---|---
PL. BUSH COLOR CODE | CONNECTING WITH GRD. WIRE
| CONNECTING WITH GRD. WIRE | GRD
| CONNECTOR MARK | CONNECTOR SYMBOL

<table>
<thead>
<tr>
<th>MARK</th>
<th>EXPLANATION</th>
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</thead>
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<td>Black</td>
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<td>Green</td>
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<tr>
<td>Blue</td>
<td>Yellow</td>
</tr>
<tr>
<td>Orange</td>
<td>Dark green</td>
</tr>
<tr>
<td>Gray</td>
<td>Brown/White</td>
</tr>
<tr>
<td>Green/Yellow</td>
<td>Black/White</td>
</tr>
<tr>
<td>Red</td>
<td>Red/White</td>
</tr>
<tr>
<td>Brown</td>
<td>Brown</td>
</tr>
<tr>
<td>Chocolate</td>
<td>Chocolate</td>
</tr>
<tr>
<td>Pink</td>
<td>Pink</td>
</tr>
<tr>
<td>Blue/White</td>
<td>Blue/White</td>
</tr>
<tr>
<td>Black/Red</td>
<td>Black/Red</td>
</tr>
<tr>
<td>Pink/White</td>
<td>Pink/White</td>
</tr>
</tbody>
</table>
NOTICE

This manual was produced by the Yamaha Motor Company, Ltd. primarily for use by Yamaha dealers and their qualified mechanics. It is not possible to include all the knowledge of a mechanic in one manual. Therefore, anyone who uses this book to perform maintenance and repairs on Yamaha vehicles should have a basic understanding of mechanics and the techniques to repair these types of vehicles. Repair and maintenance work attempted by anyone without this knowledge is likely to render the vehicle unsafe and unfit for use.

Yamaha Motor Company, Ltd. is continually striving to improve all of its models. Modifications and significant changes in specifications or procedures will be forwarded to all authorized Yamaha dealers and will appear in future editions of this manual where applicable.

NOTE: 

Designs and specifications are subject to change without notice.

IMPORTANT MANUAL INFORMATION

Particularly important information is distinguished in this manual by the following.

⚠️ The Safety Alert Symbol means ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED!

⚠️ WARNING: Failure to follow WARNING instructions could result in severe injury or death to the scooter operator, a bystander or a person checking or repairing the scooter.

⚠️ CAUTION: A CAUTION indicates special precautions that must be taken to avoid damage to the scooter.

⚠️ NOTE: A NOTE provides key information to make procedures easier or clearer.
HOW TO USE THIS MANUAL

This manual is intended as a handy, easy-to-read reference book for the mechanic. Comprehensive explanations of all installation, removal, disassembly, assembly, repair and check procedures are laid out with the individual steps in sequential order.

1. The manual is divided into chapters. An abbreviation and symbol in the upper right corner of each page indicate the current chapter. Refer to “SYMBOLS”.

2. Each chapter is divided into sections. The current section title is shown at the top of each page, except in Chapter 3 (“PERIODIC CHECKS AND ADJUSTMENTS”), where the sub-section title(s) appears.

3. Sub-section titles appear in smaller print than the section title.

4. To help identify parts and clarify procedure steps, there are exploded diagrams at the start of each removal and disassembly section.

5. Numbers are given in the order of the jobs in the exploded diagram. A circled number indicates a disassembly step.

6. Symbols indicate parts to be lubricated or replaced. Refer to “SYMBOLS”.

7. A job instruction chart accompanies the exploded diagram, providing the order of jobs, names of parts, notes in jobs, etc.

8. Jobs requiring more information (such as special tools and technical data) are described sequentially.
### SYMBOLS

The following symbols are not relevant to every vehicle.

Symbols ① to ⑧ are designed as thumb tabs to indicate the chapter’s number and content.

① General information
② Specifications
③ Periodic inspection and adjustment
④ Engine
⑤ Carburetor(s)
⑥ Chassis
⑦ Electrical system
⑧ Troubleshooting

Symbols ⑨ to ⑱ indicate the following.

⑨ Serviceable with engine mounted
⑩ Filling fluid
⑪ Lubricant
⑫ Special tool
⑬ Tightening torque
⑭ Wear limit, clearance
⑮ Engine speed
⑯ Electrical data

Symbols ⑰ to ⑲ in the exploded diagrams indicate the types of lubricants and lubrication points.

⑰ Engine oil
⑱ Gear oil
⑲ Molybdenum disulfide oil
⑳ Wheel bearing grease
⑳ Lithium soap base grease
㉑ Molybdenum disulfide grease

Symbols ㉒ to ㉓ in the exploded diagrams indicate the following.

㉒ Apply locking agent (LOCTITE ®)
㉓ Replace the part
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GENERAL INFORMATION

SCOOTER IDENTIFICATION

EAS00015

VEHICLE IDENTIFICATION NUMBER
The vehicle identification number ① is stamped into the frame.

EAS00017

MODEL CODE
The model code label ① is affixed to the location shown in the figure. Record the information on this label in the space provided. This information will be needed to order spare parts.
IMPORTANT INFORMATION

PREPARATION FOR REMOVAL AND DISASSEMBLY

1. Before removal and disassembly, remove all dirt, mud, dust and foreign material.
2. Use only the proper tools and cleaning equipment.
   Refer to “SPECIAL TOOLS”.
3. When disassembling, always keep mated parts together. This includes gears, cylinders, pistons and other parts that have been “mated” through normal wear. Mated parts must always be reused or replaced as an assembly.
4. During disassembly, clean all of the parts and place them in trays in the order of disassembly. This will speed up assembly and allow for the correct installation of all parts.
5. Keep all parts away from any source of fire.

REPLACEMENT PARTS

Use only genuine Yamaha parts for all replacements. Use oil and grease recommended by Yamaha for all lubrication jobs. Other brands may be similar in function and appearance, but inferior in quality.

GASKETS, OIL SEALS AND O-RINGS

1. When overhauling the engine, replace all gaskets, seals and O-rings. All gasket surfaces, oil seal lips and O-rings must be cleaned.
2. During reassembly, properly oil all mating parts and bearings and lubricate the oil seal lips with grease.

LOCK WASHERS/PLATES AND COTTER PINS

After removal, replace all lock washers/plates and cotter pins. After the bolt or nut has been tightened to specification, bend the lock tabs along a flat of the bolt or nut.
**BEARINGS AND OIL SEALS**

Install bearings and oil seals so that the manufacturer’s marks or numbers are visible. When installing oil seals, lubricate the oil seal lips with a light coat of lithium soap base grease. Oil bearings liberally when installing, if appropriate.

**CAUTION:**

Do not spin the bearing with compressed air because this will damage the bearing surfaces.

**CIRCLIPS**

Before reassembly, check all circlips carefully and replace damaged or distorted circlips. Always replace piston pin clips after one use. When installing a circlip, make sure the sharp-edged corner is positioned opposite the thrust that the circlip receives.
CHECKING OF CONNECTIONS
Dealing with stains, rust, moisture, etc. on the connector.

1. Disconnect:
   • Connector
2. Dry each terminal with an air blower.

3. Connect and disconnect the connector two or three.
4. Pull the read to check that it will not come off.
5. If the terminal comes off, bend up the pin ① and reinsert the terminal into the connector.

6. Connect:
   • Connector

NOTE: 

The two connectors “click” together.

7. Check for continuity with a tester.

NOTE: 

• If there is no continuity, clean the terminals.
• Be sure to perform the steps 1 to 7 listed above when checking the wireharness.
• For a field remedy, use a contact revitalizer available on the market.
• Use the tester on the connector as shown.
HOW TO USE THE CONVERSION TABLE

All specification data in this manual are listed in SI and METRIC UNITS. Use this table to convert METRIC unit data to IMPERIAL unit data.

Ex.

<table>
<thead>
<tr>
<th>METRIC</th>
<th>MULTIPLIER</th>
<th>IMP</th>
</tr>
</thead>
<tbody>
<tr>
<td>** mm</td>
<td>0.03937</td>
<td>** in</td>
</tr>
<tr>
<td>2 mm</td>
<td>0.03937</td>
<td>0.083 in</td>
</tr>
</tbody>
</table>

## CONVERSION TABLE

<table>
<thead>
<tr>
<th>METRIC TO IMP</th>
<th>Known</th>
<th>Multiplier</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Torque</td>
<td>m.kg</td>
<td>7.233</td>
<td>ft.lb</td>
</tr>
<tr>
<td></td>
<td>m.kg</td>
<td>86.794</td>
<td>in.lb</td>
</tr>
<tr>
<td></td>
<td>cm.kg</td>
<td>0.0723</td>
<td>ft.lb</td>
</tr>
<tr>
<td></td>
<td>cm.kg</td>
<td>0.8879</td>
<td>in.lb</td>
</tr>
<tr>
<td>Weight</td>
<td>kg</td>
<td>2.205</td>
<td>lb</td>
</tr>
<tr>
<td></td>
<td>g</td>
<td>0.03527</td>
<td>oz</td>
</tr>
<tr>
<td>Distance</td>
<td>km/h</td>
<td>0.6214</td>
<td>mph</td>
</tr>
<tr>
<td></td>
<td>km</td>
<td>0.6214</td>
<td>mi</td>
</tr>
<tr>
<td></td>
<td>m</td>
<td>3.281</td>
<td>ft</td>
</tr>
<tr>
<td></td>
<td>m</td>
<td>1.094</td>
<td>yd</td>
</tr>
<tr>
<td></td>
<td>cm</td>
<td>0.3937</td>
<td>in</td>
</tr>
<tr>
<td></td>
<td>mm</td>
<td>0.03937</td>
<td>in</td>
</tr>
<tr>
<td>Volume/</td>
<td>cc(cm³)</td>
<td>0.03527</td>
<td>oz (IMP liq.)</td>
</tr>
<tr>
<td>Capacity</td>
<td>cc(cm³)</td>
<td>0.06102</td>
<td>cu.in</td>
</tr>
<tr>
<td></td>
<td>lit(liter)</td>
<td>0.8799</td>
<td>qt(IMP liq.)</td>
</tr>
<tr>
<td></td>
<td>lit(liter)</td>
<td>0.2199</td>
<td>gal(IMP liq.)</td>
</tr>
<tr>
<td>Miscellaneous</td>
<td>kg/mm</td>
<td>55.997</td>
<td>lb/in</td>
</tr>
<tr>
<td></td>
<td>kg/cm²</td>
<td>14.2234</td>
<td>psi(lb/in²)</td>
</tr>
<tr>
<td></td>
<td>Centigrade</td>
<td>9/5(°C)+32</td>
<td>Fahrenheit (°F)</td>
</tr>
</tbody>
</table>
SPECIAL TOOLS

The following special tools are necessary for complete and accurate tune-up and assembly. Use only the appropriate special tools; this will help prevent damage caused by the use of inappropriate tools or improvised techniques.

When placing an order, refer to the list provided below to avoid any mistakes.

<table>
<thead>
<tr>
<th>Tool No.</th>
<th>Tool name / Function</th>
<th>Illustration</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU-01235</td>
<td>Rotor holding tool</td>
<td><img src="image1" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to hold the generator rotor when removing or installing the generator rotor bolt.</td>
<td></td>
</tr>
<tr>
<td>YS-28891</td>
<td>Clutch spring holder</td>
<td><img src="image2" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to disassemble and assemble the secondary pulley.</td>
<td></td>
</tr>
<tr>
<td>YU-01135-A</td>
<td>Crankshaft Installation set (1)</td>
<td><img src="image3" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>Adapter (2)</td>
<td><img src="image4" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>These tools are used to install the crankshaft.</td>
<td></td>
</tr>
<tr>
<td>YU-01189</td>
<td>Flywheel puller</td>
<td><img src="image5" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used for removing the rotor.</td>
<td></td>
</tr>
<tr>
<td>YU-01135-A</td>
<td>Crankcase Separating tool</td>
<td><img src="image6" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to remove the crankshaft or separate the crankcase.</td>
<td></td>
</tr>
<tr>
<td>YM-33299</td>
<td>Oil seal guide</td>
<td><img src="image7" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used for protecting the oil seal lip when installing the secondary sliding sheave.</td>
<td></td>
</tr>
<tr>
<td>YU-33975</td>
<td>Steering nut wrench</td>
<td><img src="image8" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to loosen or tighten the steering stem ring nut.</td>
<td></td>
</tr>
<tr>
<td>YU-01701</td>
<td>Sheave holder</td>
<td><img src="image9" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to hold the clutch housing when removing or installing the clutch housing nut.</td>
<td></td>
</tr>
<tr>
<td>YU-8036-A</td>
<td>Inductive tachometer</td>
<td><img src="image10" alt="Illustration" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to check engine speed.</td>
<td></td>
</tr>
<tr>
<td>Tool No.</td>
<td>Tool name / Function</td>
<td>Illustration</td>
</tr>
<tr>
<td>------------------</td>
<td>---------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>YU-03112</td>
<td>Pocket tester</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This tool is used to check the electrical system.</td>
<td></td>
</tr>
<tr>
<td>YM-1409</td>
<td>Oil seal guide</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This tool is used to install the left side crank-case oil seal.</td>
<td></td>
</tr>
<tr>
<td>YM-1410</td>
<td>Oil seal driver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This tool is used to install the left side crank-case oil seal.</td>
<td></td>
</tr>
<tr>
<td>YM-34487</td>
<td>Dynamic spark tester</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This instrument is necessary for checking the ignition system components.</td>
<td></td>
</tr>
<tr>
<td>ACC-1100-15-01</td>
<td>Quick Gasket ®</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This sealant is used to seal to mating surfaces (e.g., crankcase mating surfaces).</td>
<td></td>
</tr>
<tr>
<td>90890-01348</td>
<td>Locknut wrench</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This tool is used to loosen and tighten the clutch carrier locknut of the secondary sheave.</td>
<td></td>
</tr>
<tr>
<td>YU-33963 (1) &amp; 1400 (2)</td>
<td>Front fork seal driver</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight (1)</td>
<td>(1)</td>
</tr>
<tr>
<td></td>
<td>Adapter (2)</td>
<td>(2)</td>
</tr>
<tr>
<td></td>
<td>These tools are used when installing the fork seal.</td>
<td></td>
</tr>
<tr>
<td>T-handle (1)</td>
<td>T-handle (1) / Damper rod holder (2)</td>
<td></td>
</tr>
<tr>
<td>YM-01326 Holder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YM-01300-1 (2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>These tools are needed to loosen and tighten the damper rod holding bolt.</td>
<td></td>
</tr>
<tr>
<td>YM-01312-A</td>
<td>Fuel level gauge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>This gauge is used to measure the fuel level in the float chamber.</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>YW50AP</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>Model code:</td>
<td>5PJ1</td>
<td></td>
</tr>
<tr>
<td>Dimensions:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall length</td>
<td>1,890 mm (74.4 in)</td>
<td></td>
</tr>
<tr>
<td>Overall width</td>
<td>705 mm (27.8 in)</td>
<td></td>
</tr>
<tr>
<td>Overall height</td>
<td>1,110 mm (43.7 in)</td>
<td></td>
</tr>
<tr>
<td>Seat height</td>
<td>765 mm (30.1 in)</td>
<td></td>
</tr>
<tr>
<td>Wheelbase</td>
<td>1,275 mm (50.2 in)</td>
<td></td>
</tr>
<tr>
<td>Minimum ground clearance</td>
<td>120 mm (4.7 in)</td>
<td></td>
</tr>
<tr>
<td>Minimum turning radius</td>
<td>2,000 mm (78.7 in)</td>
<td></td>
</tr>
<tr>
<td>Basic weight:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>With oil and full fuel tank</td>
<td>94 kg (207 lb)</td>
<td></td>
</tr>
<tr>
<td>Engine:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine type</td>
<td>Air cooled 2 stroke, gasoline torque induction</td>
<td></td>
</tr>
<tr>
<td>Cylinder arrangement</td>
<td>Forward-inclined single cylinder</td>
<td></td>
</tr>
<tr>
<td>Displacement</td>
<td>49 cm³ (2.99 cu.in)</td>
<td></td>
</tr>
<tr>
<td>Bore × stroke</td>
<td>40.0 × 39.2 mm (1.57 × 1.54 in)</td>
<td></td>
</tr>
<tr>
<td>Compression ratio</td>
<td>7.2:1</td>
<td></td>
</tr>
<tr>
<td>Starting system</td>
<td>Electric and kick starter</td>
<td></td>
</tr>
<tr>
<td>Lubrication system:</td>
<td>Separate lubrication</td>
<td></td>
</tr>
<tr>
<td>Oil Type or Grade:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Oil</td>
<td>For YAMAHA brand:</td>
<td></td>
</tr>
<tr>
<td></td>
<td>YAMALUBE 2 or Air cooled 2-stroke engine oil (ISO EG-C, EG-D grade)</td>
<td></td>
</tr>
<tr>
<td>Transmission Oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oil Capacity:</td>
<td>Yamalube 4 SAE 10W/30 SE or GL gear oil</td>
<td></td>
</tr>
<tr>
<td>Oil Tank (Engine Oil)</td>
<td>1.4 L (1.23 Imp qt, 1.48 US qt)</td>
<td></td>
</tr>
<tr>
<td>Transmission Oil:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodic Oil Change</td>
<td>0.11 L (0.096 Imp qt, 0.12 US qt)</td>
<td></td>
</tr>
<tr>
<td>Total Amount</td>
<td>0.13 L (0.11 Imp qt, 0.13 US qt)</td>
<td></td>
</tr>
<tr>
<td>Air Filter:</td>
<td>Wet type element</td>
<td></td>
</tr>
<tr>
<td>Fuel:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Regular unleaded gasoline</td>
<td></td>
</tr>
<tr>
<td>Tank Capacity</td>
<td>5.7 L (1.25 Imp gal, 1.5 US gal)</td>
<td></td>
</tr>
<tr>
<td>Carburetor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type / Manufacturer</td>
<td>Y14P/1/ TEIKEI</td>
<td></td>
</tr>
<tr>
<td>Model</td>
<td>YW50A</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>-------</td>
<td></td>
</tr>
<tr>
<td>Spark Plug:</td>
<td>BPR7HS/NGK</td>
<td></td>
</tr>
<tr>
<td>Type/Manufacturer</td>
<td>0.6 ~ 0.7 mm(0.02 ~ 0.03 in)</td>
<td></td>
</tr>
<tr>
<td>Clutch Type</td>
<td>Dry, Centrifugal automatic</td>
<td></td>
</tr>
<tr>
<td>Transmission:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary Reduction System</td>
<td>Helical gear</td>
<td></td>
</tr>
<tr>
<td>Primary Reduction Ratio</td>
<td>4.000</td>
<td></td>
</tr>
<tr>
<td>Secondary Reduction System</td>
<td>Supur gear</td>
<td></td>
</tr>
<tr>
<td>Secondary Reduction Ratio</td>
<td>3.666</td>
<td></td>
</tr>
<tr>
<td>Transmission Type</td>
<td>V-belt</td>
<td></td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic</td>
<td></td>
</tr>
<tr>
<td>Chassis:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frame type</td>
<td>Steel tube underbone</td>
<td></td>
</tr>
<tr>
<td>Caster angle</td>
<td>26.5°</td>
<td></td>
</tr>
<tr>
<td>Trail</td>
<td>93mm(3.7 in)</td>
<td></td>
</tr>
<tr>
<td>Tire:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Tubeless</td>
<td></td>
</tr>
<tr>
<td>Size</td>
<td></td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>120/90-10</td>
<td></td>
</tr>
<tr>
<td>rear</td>
<td>130/90-10</td>
<td></td>
</tr>
<tr>
<td>Manufacturer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>CHENG SHIN</td>
<td></td>
</tr>
<tr>
<td>rear</td>
<td>CHENG SHIN</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>56J</td>
<td></td>
</tr>
<tr>
<td>rear</td>
<td>59J</td>
<td></td>
</tr>
<tr>
<td>Maximum load*</td>
<td>143 kg(315 lb)</td>
<td></td>
</tr>
<tr>
<td>Cold tire Pressure:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up to 90 kg</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>200kpa(2.0 kg/cm², 29 psi)</td>
<td></td>
</tr>
<tr>
<td>Rear</td>
<td>200kpa(2.0 kg/cm², 29 psi)</td>
<td></td>
</tr>
<tr>
<td>90 kg load–Maximum load*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>200kpa(2.0 kg/cm², 29 psi)</td>
<td></td>
</tr>
<tr>
<td>Rear</td>
<td>200kpa(2.0 kg/cm², 29 psi)</td>
<td></td>
</tr>
<tr>
<td>Brake:</td>
<td>Single disc brake</td>
<td></td>
</tr>
<tr>
<td>Front brake type</td>
<td>Right hand operation</td>
<td></td>
</tr>
<tr>
<td>Rear brake type</td>
<td>Drum brake</td>
<td></td>
</tr>
<tr>
<td>operation</td>
<td>Left hand operation</td>
<td></td>
</tr>
<tr>
<td>Suspension:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front suspension</td>
<td>Telescopic fork</td>
<td></td>
</tr>
<tr>
<td>Rear suspension</td>
<td>Unit swing</td>
<td></td>
</tr>
<tr>
<td>Shock absorber:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front shock absorber</td>
<td>Coil spring/oil damper</td>
<td></td>
</tr>
<tr>
<td>Rear shock absorber</td>
<td>Coil spring/oil damper</td>
<td></td>
</tr>
<tr>
<td>Wheel travel:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Front wheel travel</td>
<td>65 mm(2.56 in)</td>
<td></td>
</tr>
<tr>
<td>Rear wheel travel</td>
<td>60 mm(2.36 in)</td>
<td></td>
</tr>
<tr>
<td>Electrical:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition system</td>
<td>C.D.I</td>
<td></td>
</tr>
<tr>
<td>Generator system</td>
<td>Flywheel Magneto</td>
<td></td>
</tr>
<tr>
<td>Battery type</td>
<td>YTX5L-BS</td>
<td></td>
</tr>
<tr>
<td>Battery capacity</td>
<td>12V 4AH</td>
<td></td>
</tr>
<tr>
<td>Headlight type</td>
<td>Bulb</td>
<td></td>
</tr>
<tr>
<td>------------------------</td>
<td>---------------</td>
<td></td>
</tr>
<tr>
<td>Bulb wattage x quantity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headlight</td>
<td>12V 35W/35W×2</td>
<td></td>
</tr>
<tr>
<td>Tail/brake light</td>
<td>12 V 5W/21W×1</td>
<td></td>
</tr>
<tr>
<td>Flasher light</td>
<td>10W×4</td>
<td></td>
</tr>
<tr>
<td>Licence plate light</td>
<td>5W×1</td>
<td></td>
</tr>
<tr>
<td>Meter light</td>
<td>3.4W×1/1.7W×1</td>
<td></td>
</tr>
<tr>
<td>High beam indicator light</td>
<td>1.7W×1</td>
<td></td>
</tr>
<tr>
<td>Oil indicator light</td>
<td>1.7W×1</td>
<td></td>
</tr>
<tr>
<td>Turn indicator light</td>
<td>1.7W×1</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Standard</td>
<td>Limit</td>
</tr>
<tr>
<td>------------------------------------------</td>
<td>------------------------</td>
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<tr>
<td>Cylinder head:</td>
<td></td>
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</tr>
<tr>
<td>Warp limit</td>
<td>...</td>
<td>0.03 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0012 in)</td>
</tr>
<tr>
<td>*Lines indicate straightedge measurement</td>
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<tr>
<td>Cylinder:</td>
<td></td>
<td></td>
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<tr>
<td>Bore size</td>
<td>40.000~40.014 mm</td>
<td>40.10 mm</td>
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<tr>
<td></td>
<td>(1.5748~1.5754 in)</td>
<td>(1.5787 in)</td>
</tr>
<tr>
<td>Taper limit</td>
<td>...</td>
<td>0.05 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0020 in)</td>
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<tr>
<td>Out of round limit</td>
<td>...</td>
<td>0.03 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.0012 in)</td>
</tr>
<tr>
<td>Piston:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Piston to cylinder clearance</td>
<td>0.035~0.040 mm</td>
<td>0.10 mm</td>
</tr>
<tr>
<td></td>
<td>(0.0014~0.0016 in)</td>
<td>(0.0039 in)</td>
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<tr>
<td>Piston size “D”</td>
<td>39.958~39.972 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.5731~1.5737 in)</td>
<td></td>
</tr>
<tr>
<td>Measuring point “H”</td>
<td>5 mm (0.2 in)</td>
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</tr>
<tr>
<td>Piston pin bore inside diameter</td>
<td>10.004~10.015 mm</td>
<td>10.045 mm</td>
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<tr>
<td></td>
<td>(0.3939~0.3943 in)</td>
<td>(0.4 in)</td>
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<tr>
<td>Piston pin outside diameter</td>
<td>9.996~10.000 mm</td>
<td>9.975 mm</td>
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<tr>
<td></td>
<td>(0.3935~0.3937 in)</td>
<td>(0.39 in)</td>
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<tr>
<td>Piston Ring:</td>
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<tr>
<td>Sectional Sketch (B × T)/Type</td>
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<tr>
<td>Top Ring</td>
<td>1.2 × 1.6 mm/keystone</td>
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</tr>
<tr>
<td></td>
<td>(0.05 × 0.06 in)</td>
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</tr>
<tr>
<td>2nd Ring</td>
<td>1.2 × 1.6 mm/keystone</td>
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</tr>
<tr>
<td></td>
<td>(0.05 × 0.06 in)</td>
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<tr>
<td>End Gap (Installed): Top Ring</td>
<td>0.15~0.35 mm</td>
<td>0.6 mm (0.02 in)</td>
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<tr>
<td></td>
<td>(0.005~0.01 in)</td>
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<tr>
<td>2nd Ring</td>
<td>0.15~0.35 mm</td>
<td>0.6 mm (0.02 in)</td>
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<td></td>
<td>(0.005~0.01 in)</td>
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<tr>
<td>Side Clearance (Installed): Top Ring</td>
<td>0.03~0.05 mm</td>
<td>0.1 mm (0.0039 in)</td>
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<tr>
<td></td>
<td>(0.0012~0.0020 in)</td>
<td></td>
</tr>
<tr>
<td>2nd Ring</td>
<td>0.03~0.05 mm</td>
<td>0.1 mm (0.0039 in)</td>
</tr>
<tr>
<td></td>
<td>(0.0012~0.0020 in)</td>
<td></td>
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<tr>
<td>Item</td>
<td>Standard</td>
<td>Limit</td>
</tr>
<tr>
<td>----------------------------------------------</td>
<td>-------------------------------</td>
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<tr>
<td>Crankshaft:</td>
<td></td>
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<tr>
<td>Crank Width “A”</td>
<td>37.90<del>37.95 mm (1.49</del>1.49 in)</td>
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<tr>
<td>Run Out Limit “C”</td>
<td>0.03 mm (0.0012 in)</td>
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<tr>
<td>Connecting Rod Big End Side Clearance “D”</td>
<td>0.2<del>0.5 mm (0.0029</del>0.020 in)</td>
<td>1.0 mm (0.04 in)</td>
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<tr>
<td>Small End Free Play “F”</td>
<td>0.4<del>0.8 mm (0.016</del>0.031 in)</td>
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<td>Automatic centrifugal clutch:</td>
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<tr>
<td>Clutch shoe thickness</td>
<td>4.0 mm (0.16 in)</td>
<td>2.5 mm (0.1 in)</td>
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<tr>
<td>Clutch housing inside diameter</td>
<td>105 mm (4.13 in)</td>
<td>105.5 mm (4.15 in)</td>
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<tr>
<td>Clutch shoe spring free length</td>
<td>94 mm (3.7 in)</td>
<td>91 mm (3.58 in)</td>
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<tr>
<td>Clutch - in revolution</td>
<td>3,300~3,700 r/min</td>
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<tr>
<td>Clutch - stall revolution</td>
<td>5,500~6,500 r/min</td>
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<tr>
<td>V-belt:</td>
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<tr>
<td>V-belt width</td>
<td>16.6 mm (0.65 in)</td>
<td>14.6 mm (0.57 in)</td>
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<tr>
<td>Kick Starter:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Ratchet type</td>
<td></td>
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<tr>
<td>Kick Clip Tension</td>
<td>1.5<del>2.5 N (0.15</del>0.25 kgf)</td>
<td>(0.34~0.56 lb)</td>
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<tr>
<td>Carburetor:</td>
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<td></td>
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<tr>
<td>I.D. Mark</td>
<td>5DA-01</td>
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<tr>
<td>Main Jet (M.J.)</td>
<td>#80</td>
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<tr>
<td>Needle jet (NJ)</td>
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<tr>
<td>Jet Needle-clip Position (J.N.)</td>
<td>3N24-3/5</td>
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<tr>
<td>Main Air Jet (M.A.J.)</td>
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<tr>
<td>Cutaway (C.A.)</td>
<td>3.5</td>
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<td>Pilot Jet (P.J.)</td>
<td>#44</td>
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<td>Bypass</td>
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<tr>
<td>Valve Seat Size (V.S.)</td>
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<tr>
<td>Starter Jet (G.S.)</td>
<td>#48</td>
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<tr>
<td>Float Height</td>
<td>15 ~17 mm (0.59 ~ 0.67 in)</td>
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<tr>
<td>Fuel level height</td>
<td>3.0~4.0 mm (0.12 ~0.16 in)</td>
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</tr>
<tr>
<td>Engine Idling Speed</td>
<td>1,750~1,850 r/min</td>
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<tr>
<td>Reed Valve:</td>
<td></td>
<td></td>
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<tr>
<td>Thickness</td>
<td>0.150<del>0.154 mm (0.059</del>0.0060 in)</td>
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<tr>
<td>Valve Stopper Height</td>
<td>6.0<del>6.4 mm (0.24</del>0.25 in)</td>
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<tr>
<td>Valve bending limit</td>
<td>0.2 mm (0.0078)</td>
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## TIGHTENING TORQUES

### ENGINE

<table>
<thead>
<tr>
<th>Part to be tightened</th>
<th>Part name</th>
<th>Thread size</th>
<th>Q’ty</th>
<th>Tightening torque</th>
<th>Remarks</th>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Nm</td>
<td>m•kg</td>
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<tr>
<td>Spark plug</td>
<td>—</td>
<td>M 14</td>
<td>1</td>
<td>20</td>
<td>2.0</td>
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<tr>
<td>Cylinder head and cylinder</td>
<td>Nut</td>
<td>M 7</td>
<td>4</td>
<td>14</td>
<td>1.4</td>
</tr>
<tr>
<td>Cylinder</td>
<td>Stud bolt</td>
<td>M 7</td>
<td>4</td>
<td>10</td>
<td>1.0</td>
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<tr>
<td>Air shroud 1</td>
<td>Screw</td>
<td>M 6</td>
<td>3</td>
<td>7</td>
<td>0.7</td>
</tr>
<tr>
<td>Air shroud 1×2</td>
<td>Screw</td>
<td>6.0</td>
<td>1</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Fan</td>
<td>Screw</td>
<td>M 6</td>
<td>3</td>
<td>7</td>
<td>0.7</td>
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<tr>
<td>Autolube pump</td>
<td>Screw</td>
<td>M 5</td>
<td>2</td>
<td>4</td>
<td>0.4</td>
</tr>
<tr>
<td>Reed valve</td>
<td>Bolt</td>
<td>M 6</td>
<td>4</td>
<td>11</td>
<td>1.1</td>
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<tr>
<td>Air filter</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>9</td>
<td>0.9</td>
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<tr>
<td>Carburetor cap</td>
<td>Screw</td>
<td>M 4</td>
<td>2</td>
<td>2</td>
<td>0.2</td>
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<tr>
<td>Exhaust pipe</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>9</td>
<td>0.9</td>
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<tr>
<td>Muffler</td>
<td>Bolt</td>
<td>M 8</td>
<td>2</td>
<td>26</td>
<td>2.6</td>
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<tr>
<td>Exhaust protector</td>
<td>Bolt</td>
<td>M 6</td>
<td>3</td>
<td>11</td>
<td>1.1</td>
</tr>
<tr>
<td>Protector</td>
<td>Screw</td>
<td>M 6</td>
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<td>9</td>
<td>0.9</td>
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<tr>
<td>Crankcase 1×2</td>
<td>Bolt</td>
<td>M 6</td>
<td>6</td>
<td>12</td>
<td>1.2</td>
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<tr>
<td>Transmission case cover</td>
<td>Bolt</td>
<td>M 6</td>
<td>6</td>
<td>12</td>
<td>1.2</td>
</tr>
<tr>
<td>Crankcase cover 1(left)</td>
<td>Bolt</td>
<td>M 6</td>
<td>12</td>
<td>12</td>
<td>1.2</td>
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<tr>
<td>Bolt(case2)</td>
<td>Screw</td>
<td>M 6</td>
<td>1</td>
<td>7</td>
<td>0.7</td>
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<tr>
<td>Crankcase cover2(left)</td>
<td>Bolt</td>
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<tr>
<td>Drain bolt</td>
<td>Bolt</td>
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<td>18</td>
<td>1.8</td>
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<tr>
<td>Oil plug</td>
<td>Plug</td>
<td>M 14</td>
<td>1</td>
<td>3</td>
<td>0.3</td>
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<tr>
<td>Idle gear plate</td>
<td>Screw</td>
<td>M 6</td>
<td>2</td>
<td>8</td>
<td>0.8</td>
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<tr>
<td>Kick crank</td>
<td>Bolt</td>
<td>M 6</td>
<td>1</td>
<td>9</td>
<td>0.9</td>
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<tr>
<td>Starter motor</td>
<td>Bolt</td>
<td>M 6</td>
<td>2</td>
<td>13</td>
<td>1.3</td>
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<tr>
<td>Clutch housing</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
<td>40</td>
<td>4.0</td>
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<tr>
<td>Clutch weight</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
<td>30</td>
<td>3.0</td>
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<tr>
<td>Magnet base</td>
<td>Screw</td>
<td>M 6</td>
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<td>8</td>
<td>0.8</td>
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<tr>
<td>C.D.I. rotor</td>
<td>Nut</td>
<td>M 10</td>
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<td>38</td>
<td>3.8</td>
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## CHASSIS

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Steering system:</strong>&lt;br&gt;Steering bearing type</td>
<td>Ball and race bearing</td>
<td>...</td>
</tr>
<tr>
<td>No./size of steel balls:&lt;br&gt;Upper</td>
<td>22 pcs</td>
<td>...</td>
</tr>
<tr>
<td>Lower</td>
<td>19 pcs</td>
<td>...</td>
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<tr>
<td><strong>Front suspension:</strong>&lt;br&gt;Front fork travel</td>
<td>70 mm (2.8 in)</td>
<td>...</td>
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<tr>
<td>Fork spring free length</td>
<td>236.6 mm (9.31 in)</td>
<td>233.6 mm</td>
</tr>
<tr>
<td>Fork length (Installed)</td>
<td>212.1 mm (8.35 in)</td>
<td>...</td>
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<tr>
<td>Spring rate (K1)</td>
<td>15.66 Nm/mm (1.6 kg/mm, 90 lb/in)</td>
<td>...</td>
</tr>
<tr>
<td>(K2)</td>
<td>23.5 Nm/mm (2.43 kg/mm, 136 lb/in)</td>
<td>...</td>
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<tr>
<td>Inner tube vend limit</td>
<td>...</td>
<td>0.2 mm (0.008 in)</td>
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<tr>
<td><strong>Rear suspension:</strong>&lt;br&gt;Shock absorber stroke</td>
<td>55 mm (2.2 in)</td>
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<tr>
<td>Shock absorber free length (Installed)</td>
<td>281.8 mm (11.1 in)</td>
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<tr>
<td>Spring free length (Installed)</td>
<td>159.8 mm (6.29 in)</td>
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<tr>
<td>Spring rate (K1)</td>
<td>71.15 N/mm (7.26 kg/mm, 407 lb/in)</td>
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<tr>
<td><strong>Front wheel:</strong>&lt;br&gt;Type</td>
<td>Cast wheel</td>
<td>...</td>
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<tr>
<td>Rim size</td>
<td>MT3.50x10</td>
<td>...</td>
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<tr>
<td>Rim material</td>
<td>Aluminum</td>
<td>...</td>
</tr>
<tr>
<td>Rim runout limit radial</td>
<td>...</td>
<td>1 mm (0.04 in)</td>
</tr>
<tr>
<td>lateral</td>
<td>...</td>
<td>1 mm (0.04 in)</td>
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<tr>
<td><strong>Rear wheel:</strong>&lt;br&gt;Type</td>
<td>Cast wheel</td>
<td>...</td>
</tr>
<tr>
<td>Rim size</td>
<td>MT3.50x10</td>
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<tr>
<td>Rim material</td>
<td>Aluminum</td>
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<td>Rim runout limit radial</td>
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<td>1 mm (0.04 in)</td>
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<tr>
<td>lateral</td>
<td>...</td>
<td>1 mm (0.04 in)</td>
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<tr>
<td><strong>Front disc brake:</strong>&lt;br&gt;Type</td>
<td>Single</td>
<td>...</td>
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<tr>
<td>Disc outside diameter x thickness</td>
<td>180x4.0mm (7.1x0.16 in)</td>
<td>180x3.5 mm (7.1x0.14 in)</td>
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<td>Pad thickness</td>
<td>6 mm (0.24 in)</td>
<td>0.8 mm (0.03 in)</td>
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<tr>
<td>Master cylinder inside diameter</td>
<td>11 mm (0.4 in)</td>
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<tr>
<td>Caliper cylinder outside diameter</td>
<td>34.93 mm (1.38 in)</td>
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<tr>
<td>Brake fluid type</td>
<td>DOT #4 (or DOT #3)</td>
<td>...</td>
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<tr>
<td><strong>Rear drum brake:</strong>&lt;br&gt;Type</td>
<td>Leading, trailing</td>
<td>...</td>
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<tr>
<td>Drum inside diameter</td>
<td>130 mm (5.12 in)</td>
<td>131 mm (5.16 in)</td>
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<tr>
<td>Shoe thickness</td>
<td>4 mm (0.16 in)</td>
<td>2 mm (0.08 in)</td>
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<tr>
<td><strong>Brake lever:</strong>&lt;br&gt;Brake lever free play (front at lever side)</td>
<td>2<del>5 mm (0.08</del>0.20 in)</td>
<td>...</td>
</tr>
<tr>
<td>Brake lever free play (rear)</td>
<td>10<del>20 mm (0.39</del>0.79 in)</td>
<td>...</td>
</tr>
<tr>
<td>Throttle cable free play</td>
<td>3<del>5 mm (0.12</del>0.20 in)</td>
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## TIGHTENING TORQUES

### CHASSIS

<table>
<thead>
<tr>
<th>Part to be tightened</th>
<th>Thread size</th>
<th>Tightening torque Nm</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frame and engine bracket</td>
<td>M 12</td>
<td>84</td>
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<tr>
<td>Engine bracket, compression rod and engine</td>
<td>M 10</td>
<td>45</td>
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<tr>
<td>Rear carrier</td>
<td>M 6</td>
<td>13</td>
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<tr>
<td>Rear shock absorber and frame</td>
<td>M 10</td>
<td>30</td>
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<tr>
<td>Rear shock absorber and engine</td>
<td>M 8</td>
<td>16</td>
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<tr>
<td>Steering ring nut</td>
<td>M 25</td>
<td>22</td>
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<tr>
<td>Handle holder and steering shaft</td>
<td>M 10</td>
<td>43</td>
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<tr>
<td>Brake hose and master cylinder</td>
<td>M 8</td>
<td>20</td>
<td></td>
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<tr>
<td>Fuel tank</td>
<td>M 6</td>
<td>10</td>
<td></td>
</tr>
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<td>Fuel cock</td>
<td>M 6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Fuel sender</td>
<td>M 5</td>
<td>4</td>
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<tr>
<td>Box</td>
<td>M 6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Seat lock assembly</td>
<td>M 6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Plastic parts &amp; cover</td>
<td>M 5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Footrest board</td>
<td>M 6</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Front wheel axle and nut</td>
<td>M 10</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Rear wheel axle and nut</td>
<td>M 14</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Rear brake cam lever</td>
<td>M 6</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Front brake caliper and front fork</td>
<td>M 8</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Brake disc and hub</td>
<td>M 10</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Brake hose and caliper</td>
<td>M 8</td>
<td>23</td>
<td></td>
</tr>
<tr>
<td>Brake caliper and bleed screw</td>
<td>M 5</td>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

See page3-18
### ELECTRICAL

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ignition timing:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ignition timing (B.T.D.C.)</td>
<td>14° at 5,000 r/min</td>
<td>...</td>
</tr>
<tr>
<td>Advanced type</td>
<td>Fixed</td>
<td>...</td>
</tr>
<tr>
<td>C.D.I.:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pickup coil resistance/color</td>
<td>248 ~ 372Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>(W/R-W/L)</td>
<td></td>
</tr>
<tr>
<td>Source coil resistance/color</td>
<td>640 ~ 960 Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>(B/R-G/W)</td>
<td></td>
</tr>
<tr>
<td>C.D.I. unit model/manufacturer</td>
<td>5PJ/TIIC</td>
<td>...</td>
</tr>
<tr>
<td>Ignition coil:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer</td>
<td>4WX/TIIC</td>
<td>...</td>
</tr>
<tr>
<td>Minimum spark gap</td>
<td>6 mm (0.24 in)</td>
<td>...</td>
</tr>
<tr>
<td>Primary winding resistance</td>
<td>0.32~0.48 Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td>Secondary winding resistance</td>
<td>5.68~8.52kΩ at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td>Spark plug cap:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Resin</td>
<td>...</td>
</tr>
<tr>
<td>Resistance</td>
<td>5 kΩ</td>
<td>...</td>
</tr>
<tr>
<td>Charging System/Type:</td>
<td>Flywheel magneto</td>
<td>...</td>
</tr>
<tr>
<td>C.D.I. Magneto:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/Manufacturer</td>
<td>5PJ/TIIC</td>
<td>...</td>
</tr>
<tr>
<td>Nominal output</td>
<td>12V 85W/5,000 rpm</td>
<td>...</td>
</tr>
<tr>
<td>Charging current</td>
<td>0.6A at 3,000 r/min</td>
<td>...</td>
</tr>
<tr>
<td></td>
<td>1.2A at 8,000 r/min</td>
<td>...</td>
</tr>
<tr>
<td>Charging voltage</td>
<td>13~14V at 4,000 rpm</td>
<td>...</td>
</tr>
<tr>
<td>Charging Coil Resistance (Color)</td>
<td>0.48~0.72 Ω (White-Black)</td>
<td>...</td>
</tr>
<tr>
<td>Lighting Coil Resistance (Color)</td>
<td>0.4~0.6 Ω (Yellow/Red-Black)</td>
<td>...</td>
</tr>
<tr>
<td>Lighting Voltage</td>
<td>12<del>15V (3,000</del>8,000 rpm)</td>
<td>...</td>
</tr>
<tr>
<td>Rectifier:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/Manufacturer</td>
<td>3GF/Taichung</td>
<td>...</td>
</tr>
<tr>
<td>Capacity</td>
<td>8A</td>
<td>...</td>
</tr>
<tr>
<td>Withstand voltage</td>
<td>18V</td>
<td>...</td>
</tr>
<tr>
<td>Battery:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.320</td>
<td>...</td>
</tr>
<tr>
<td>Electric starter system:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Constant mesh type</td>
<td>...</td>
</tr>
<tr>
<td>Starter motor:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer/ID number</td>
<td>4WX/shulin</td>
<td>...</td>
</tr>
<tr>
<td>Output</td>
<td>0.14 kw</td>
<td>...</td>
</tr>
<tr>
<td>Armature coil resistance</td>
<td>0.0648~0.0792 Ω at 20°C (68°F)</td>
<td>...</td>
</tr>
<tr>
<td>Brush overall length</td>
<td>6.5 mm (0.26 in)</td>
<td>3 mm (0.12 in)</td>
</tr>
<tr>
<td>Spring force</td>
<td>5.49 ~ 8.24 N</td>
<td>400 g</td>
</tr>
<tr>
<td>(360<del>540 g) (12.69</del>19.04 oz)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commutator diameter</td>
<td>16.1 mm (0.63 in)</td>
<td>15.1 mm (0.59 in)</td>
</tr>
<tr>
<td>Mica undercut (depth)</td>
<td>1.05 mm (0.04 in)</td>
<td></td>
</tr>
<tr>
<td>Starter relay:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer</td>
<td>4WX/Shulin</td>
<td>...</td>
</tr>
<tr>
<td>Amperage rating</td>
<td>20A</td>
<td>...</td>
</tr>
<tr>
<td>Coil resistance</td>
<td>54~66 Ω</td>
<td>...</td>
</tr>
<tr>
<td>Item</td>
<td>Standard</td>
<td>limit</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>-------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Horn:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer</td>
<td>4KP/Asian</td>
<td></td>
</tr>
<tr>
<td>Maximum amperage</td>
<td>1.5A</td>
<td></td>
</tr>
<tr>
<td>Flasher relay:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Capacitor</td>
<td></td>
</tr>
<tr>
<td>Flasher frequency</td>
<td>60–120 Cycle/min</td>
<td></td>
</tr>
<tr>
<td>Fuel gage:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer</td>
<td>4VP/San Chu</td>
<td></td>
</tr>
<tr>
<td>Sender unit resistance - full</td>
<td>4–10 Ω</td>
<td></td>
</tr>
<tr>
<td>- empty</td>
<td>90–100 Ω</td>
<td></td>
</tr>
<tr>
<td>Oil level gauge:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Model/manufacturer</td>
<td>4VP/Lun Ping</td>
<td></td>
</tr>
<tr>
<td>Circuit breaker:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Fuse</td>
<td></td>
</tr>
<tr>
<td>MAIN</td>
<td>7Ax1pc.</td>
<td></td>
</tr>
</tbody>
</table>
GENERAL TORQUE SPECIFICATIONS

This chart specifies torque for standard fasteners with standard I.S.O. pitch threads. Torque specifications for special components or assemblies are included in the applicable sections of this book. To avoid warpage, tighten multi-fastener assemblies in a crisscross fashion, in progressive stages, until full torque is reached. Unless otherwise specified, torque specifications call for clean, dry threads. Components should be at room temperature.

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>General torque specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>mm</td>
<td>mm</td>
<td>Nm</td>
</tr>
<tr>
<td>10</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>12</td>
<td>8</td>
<td>15</td>
</tr>
<tr>
<td>14</td>
<td>10</td>
<td>30</td>
</tr>
<tr>
<td>17</td>
<td>12</td>
<td>55</td>
</tr>
<tr>
<td>19</td>
<td>14</td>
<td>85</td>
</tr>
<tr>
<td>22</td>
<td>16</td>
<td>130</td>
</tr>
</tbody>
</table>

A: Distance across flats
B: Outside thread diameter
<table>
<thead>
<tr>
<th>Lubrication Point</th>
<th>Lubricant Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil seal lips</td>
<td>L5</td>
</tr>
<tr>
<td>O-rings</td>
<td>L5</td>
</tr>
<tr>
<td>Bearings</td>
<td>E</td>
</tr>
<tr>
<td>Piston surface</td>
<td>E</td>
</tr>
<tr>
<td>Piston pin</td>
<td>E</td>
</tr>
<tr>
<td>Cylinder</td>
<td>E</td>
</tr>
<tr>
<td>Transmission case (bearing)</td>
<td>G</td>
</tr>
<tr>
<td>Autolube pump</td>
<td>L5</td>
</tr>
<tr>
<td>Starter wheel gear</td>
<td>L5</td>
</tr>
<tr>
<td>Idle gear plate</td>
<td>M</td>
</tr>
<tr>
<td>Secondary drive gear</td>
<td>G</td>
</tr>
<tr>
<td>Kickstarter pinion gear</td>
<td>L5</td>
</tr>
<tr>
<td>Drive axle</td>
<td>M</td>
</tr>
<tr>
<td>Pump drive gear</td>
<td>L5</td>
</tr>
<tr>
<td>Main axle</td>
<td>G</td>
</tr>
<tr>
<td>Main axle (bearing)</td>
<td>G</td>
</tr>
<tr>
<td>Lubrication Point</td>
<td>Lubricant Type</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Oil seal lips</td>
<td></td>
</tr>
<tr>
<td>O-rings</td>
<td></td>
</tr>
<tr>
<td>Bearings</td>
<td></td>
</tr>
<tr>
<td>Speedometer drive gear</td>
<td></td>
</tr>
<tr>
<td>Front brake camshaft</td>
<td></td>
</tr>
<tr>
<td>Front brake cable</td>
<td></td>
</tr>
<tr>
<td>Throttle cable</td>
<td></td>
</tr>
<tr>
<td>Tube guide (throttle grip) inner surface</td>
<td></td>
</tr>
<tr>
<td>Upper steering stem ring nut</td>
<td></td>
</tr>
<tr>
<td>Upper bearing outer race</td>
<td></td>
</tr>
<tr>
<td>Lower bearing outer race</td>
<td></td>
</tr>
<tr>
<td>Rear brake camshaft</td>
<td></td>
</tr>
<tr>
<td>Centerstand</td>
<td></td>
</tr>
</tbody>
</table>
CABLE ROUTING

1. Horn
2. Rectifier regulator
3. Main switch
4. Headlight leads
5. Speedometer cable
6. Ignition coil
7. Throttle cable 1
8. Throttle cable 3
9. Battery negative (-)
10. Wire brake
11. Fuel sender lead
12. Seat lock cable
13. Oil tank hose
14. C.D.I. unit

15. Wire harness
   A. Pass the speedometer cable through the right hole of front fender, then through the guide.
   B. Pass the wire harness through the inside of ignition coil.
   C. Secure the ground lead and the ignition coil base to the ignition coil stay.
   D. Pass the wire harness through the inside of oil tank.
   E. Pass the seat cable through the inside of frame.
   F. Align the clip with the white brand.

16. Clamp the wire harness.
17. Insert the seat cable through the frame tube.
18. Clamp wire harness, rear brake cable throttle cable 1,3.
19. Position the cylinder between the supporter and main switch.

20. Align the clip with the white brand.

Pass the speedometer cable through the right hole of front fender, then through the guide.
Pass the wire harness through the inside of ignition coil.
Secure the ground lead and the ignition coil base to the ignition coil stay.
Pass the wire harness through the inside of oil tank.
Pass the seat cable through the inside of frame.
Clamp the wire harness.
Insert the seat cable through the frame tube.
Clamp wire harness, rear brake cable throttle cable 1,3.
Position the cylinder between the supporter and main switch.
Pass the brake hose through the holder.

Insert the fuel overflow hose bottom.

Pass the fuel overflow hose through the rear fender hole.

Pass the fuel overflow hose through the holder.

Hold the fuel overflow hose with a clamp.

Pass the brake cable through the holder.
1. Brake hose
2. Front fender
3. Front fork assembly
4. Nut
5. Plate washer
6. Brake hose holder
7. Flange bolt
8. Bolt
9. Brake hose holder
10. Flange bolt

Pass the brake hose through the holder.
Ignition coil
2 Spark plug lead
3 Starter relay leads
4 Auto choke leads
5 Starter relay
6 Bind
7 C.D.I. unit
8 Autolube hose
9 Seat lock cable
10 Bracket
11 Fuel tank breather hose
12 Bind 2
13 Battery(−)lead
14 Battery(+)lead

(a) Pass battery leads through the slot of footrestboard.
(b) Cover them after securing starter relay leads.
(c) Pass the seat lock cable through the hole of bracket.
(d) Pass the fuel tank breath hose over seat lock cable.
(e) Clamp carburetor vacuum hose, fuel hose and fuel cock vacuum hose.
(f) Clamp autochoke leads and autolube hose on to carburetor throttle cable.
(g) Pass the battery leads over frame member.
(h) Put fuse box on to footrest board holder.
(i) Pass throttle cable 1, 3 wireharness, autolube pump cable, brake cable through the outside of battery box.
CABLE ROUTING

① Handlebar switch(right)
② Speedometer
③ Wire brake
④ Handlebar switch(left)
⑤ Wire harness
⑥ Brake hose
⑦ Speedometer cable
⑧ Throttle cable1
⑨ Throttle cable 3
⑩ Front flasher leads

A Pass brake cable through the slot of bracket.
B Avoid clamping front flasher leads when installing handlebar covers.
C Pass throttle cable1,3 through between handlebar and wireharness.
D Hang the wireharness bind on to the bracket.
PERIODIC INSPECTIONS AND ADJUSTMENTS

INTRODUCTION

This chapter includes all information necessary to perform recommended inspections and adjustments. These preventive maintenance procedures, if followed, will ensure more reliable vehicle operation and a longer service life. The need for costly overhaul work will be greatly reduced. This information applies to vehicles already in service as well as to new vehicles that are being prepared for sale. All service technicians should be familiar with this entire chapter.

PERIODIC MAINTENANCE/LUBRICATION INTERVALS

<table>
<thead>
<tr>
<th>NO.</th>
<th>ITEM</th>
<th>ROUTINE</th>
<th>TYPE</th>
<th>BREAK-IN</th>
<th>EVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Initial</td>
<td>3,000 km (2,000 mi) or 6 months (whichever comes first)</td>
</tr>
<tr>
<td>1</td>
<td>Fuel line</td>
<td>• Check fuel hoses and vacuum hose for cracks or damage.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>2</td>
<td>Spark plug</td>
<td>• Check condition.</td>
<td>Refer to SPARK PLUG INSPECTION</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Clean, regap or replace if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>3</td>
<td>Air filter element</td>
<td>• Clean or replace if necessary.</td>
<td>Same as engine oil</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>4</td>
<td>Front brake</td>
<td>• Check operation, fluid level and vehicle for fluid leakage.</td>
<td>Brake fluid DOT 4 (or DOT 3)</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace brake pads.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>5</td>
<td>Rear brake</td>
<td>• Check operation.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adjust brake lever free play.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace brake shoes.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>6</td>
<td>Wheels</td>
<td>• Check balance, runout and for damage.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>7</td>
<td>Tires</td>
<td>• Check tread depth and for damage.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Check air pressure.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Correct if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>8</td>
<td>Wheel bearings</td>
<td>• Check Bearing for looseness or damage.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace if necessary.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>9</td>
<td>Steering bearings</td>
<td>• Check bearing play and steering for roughness.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lubricate with lithium soap base grease.</td>
<td></td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>10</td>
<td>Chassis fasteners</td>
<td>• Make sure that all nuts, bolts and screws are properly tightened.</td>
<td>-</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>NO.</td>
<td>ITEM</td>
<td>ROUTINE</td>
<td>TYPE</td>
<td>BREAK-IN</td>
<td>EVERY</td>
</tr>
<tr>
<td>-----</td>
<td>------</td>
<td>---------</td>
<td>------</td>
<td>----------</td>
<td>-------</td>
</tr>
</tbody>
</table>
| 11  | Centerstand | • Check operation.  
• Lubricate with lithium soap base grease (all purpose grease). | Same as engine oil | INITIAL  
1,000 km (600 mi) | 6,000 km (4,000 mi) or 12 months (whichever comes first) |
| 12 * | Front fork | • Check operation and for oil leakage. | – | 3,000 km (2,000 mi) or 6 months (whichever comes first) |  |
| 13 * | Rear shock absorber assembly | • Check operation and shock absorber for oil leakage.  
• Replace shock absorber assembly if necessary. | – | 6,000 km (4,000 mi) or 12 months (whichever comes first) |  |
| 14 * | Carburetor | • Check engine idling speed.  
• Adjust if necessary. | – |  |  |
| 15 * | Autolube pump | • Check operation.  
• Correct if necessary.  
• Bleed if necessary. | – |  |  |
| 16 * | Final transmission oil | • Check oil level and vehicle for oil leakage.  
• Replace. | Yamalube 4 SAE 10W-30 SE or GL 5 gear oil | Every 12,000 km (8,000 mi) or 24 months (whichever occurs first) |  |
| 17 * | V-belt | • Replace. | – |  | Every 9,000 km (6,000 mi) |

Items marked with an asterisk (*) require special tools, data and technical skills for servicing. Take the scooter to a Yamaha dealer.

**NOTE:**

- The air filter needs more frequent service if you are riding in unusually wet or dusty areas.
- **Brake fluid replacement:**
  1. Replace the brake fluid after disassembling the master cylinder or caliper cylinder. Check the brake fluid level and add fluid as required.
  2. Replace the master cylinder and caliper cylinder oil seals every two years.
  3. Replace the brake hoses every four years, or if cracked or damaged.

**NOTE:**

From 6,000 mi (9,000 km) or 18 months, repeat the maintenance intervals starting 2,000 mi (3,000 mi) or 6 months.
### COVER AND PANEL

#### SIDECOVER AND SEAT

**Order** | **Job name/Part name** | **Q'ty** | **Remarks**
---|---|---|---
1. | Sidecover and seat removal  
    Battery box cover | 1 | Remove the parts in order.  
**NOTE:**
Insert the (-) screwdriver into the slot of battery cover and pickup then remove.
2. | Seat | 1 |
3. | Seat hange | 1 |
4. | Rear carrier | 1 |
5. | Rear cover | 1 |
6. | Left side cover | 1 |
7. | Right side cover | 1 |
8. | Center cover | 1 |

Reverse the removal procedure for installation.
## LOWER COWLING, UPPER COVER, LEG SHIELD 1, 2 AND FOOTREST BOARD

### Table

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/ part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Lower cowling</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2.</td>
<td>Upper cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Leg shield 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Main switch cover/ leg shield 2</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Battery</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>6.</td>
<td>Footrest board</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Note:**
7Nm(0.7m.kg, 5.1ft.lb)
## HANDLEBAR COVER (FRONT AND REAR)

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name / Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Handlebar cover (Front and Rear) removal.</td>
<td>2</td>
<td>Remove the part in order.</td>
</tr>
<tr>
<td>2.</td>
<td>Mirrors</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Front handlebar cover</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>4.</td>
<td>Rear handlebar cover</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Flasher light (Left/Right)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
ENGINE IDLE SPEED ADJUSTMENT

1. Remove
   - Battery box cover (1)

2. Tighten:
   - Pilot air screw (2)
     Turn the pilot air screw in until lightly seated.

3. Loosen:
   - Pilot air screw
     Back it out from its lightly seated position.

   Pilot air screw turn out:
   load 1-1/4

2. Start the engine and let it warm up.

**WARNING**

Before starting the engine, be sure to use the centerstand for safety.

3. Attach:
   - Inductive tachometer (1)
     To the spark plug lead

   Inductive tachometer:
   YU-8036-A

4. Check:
   - Engine idle speed
     Out of specification → Adjust.

   Engine idle speed:
   1,750~1,850 r/min

5. Adjust:
   - Engine idle speed

   Adjustment steps.
   • Turn the throttle stop screw (1) in or out until specified idle speed is obtained.

<table>
<thead>
<tr>
<th>Turn</th>
<th>Idle speed becomes higher.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Out</td>
<td>Idle speed becomes lower.</td>
</tr>
</tbody>
</table>

3-6
THROTTLE CABLE FREE ADJUSTMENT

THROTTLE CABLE FREE ADJUSTMENT

1. Check:
   • Throttle cable free play ⑧
     Out of specification → Adjust.

   Free play:
     3 ~ 5 mm (0.12 ~ 0.20 in)

Throttle cable free play adjustment steps:

NOTE:

Before adjusting the throttle cable free play, the engine idle speed should be adjusted.

• Remove the adjuster cover ①
• Loosen the locknut ② on the throttle cable.
• Turn the adjuster ⑧ in or out until the specified free play is obtained.

Turning in → Free play is increased.
Turning out → Free play is decreased.

• Tighten the locknuts.
• Install the adjuster cover

WARNING

After adjusting the throttle cable free play, start the engine and turn the handlebar to the right and to the left to ensure that this does not cause the engine idling speed to change.
AUTOLUBE PUMP AIR BLEEDING

1. Remove
   - Lower cowling
   - Air shroud 1

2. Air bleeding:
   - Pump case and/or oil hose.

Air bleeding steps:
- Place a rag under the autolube pump to catch the oil.
- Remove the bleed screw ①.
- Keep the oil running out until air bubbles disappear.
- When air bubbles are expelled completely, tighten the bleed screw.

NOTE:
Check the bleed screw gasket. If damaged, replace with a new one.
Place a oil pan under the autolube pump to catch oil.

3. Air bleeding:
   - Pump distributor and/or delivery hose

Air bleeding steps:
- Start the engine.
- Run the engine for 2-3 minutes at 2000 r/min. This will completely remove autolube pump system of air.
SPARK PLUG INSPECTION

1. Remove:
   • Battery box cover

2. Inspect:
   • Spark plug type
     Incorrect→Replace.

   Standard spark plug: BPR7HS/NGK

3. Inspect:
   • Electrode ①
     Wear/Damage→Replace.
   • Insulator ②
     Abnormal color→Replace.
     Normal color is a medium-to-light tan color.

4. Clean the spark plug with a spark plug cleaner or wire brush.

5. Measure:
   • Plug gap ③
     Use a wire gauge or feeler gauge.
     Out of specification→Regap.

   Spark plug gap: 0.6 ~ 0.7 mm (0.02 ~ 0.03 in)

6. Tighten:
   • Spark plug 20 Nm (2.0 m·kg, 14 ft·lb)

7. Install:
   • Battery box cover.
ENGINE OIL LEVEL INSPECTION

1. Inspect:
   • Engine oil level Oil level low—Add sufficient oil by the following inspection steps.

   ① “OIL” indicator light

   Engine oil level visual inspection steps:

   Turn main switch to “×” position.

   "OIL" indicator light does not come on.

   Inspect faulty electrical circuit, light bulbs etc.

   "OIL" indicator light comes on.

   Turn main switch to “ON” position.

   "OIL" indicator light does not come on.

   Inspect faulty electrical circuit, light bulbs etc.

   Engine oil level and electrical circuit are OK.

   "OIL" indicator light comes on.

   Supply engine oil.

   "OIL" indicator light comes on.

Recommended oil:
For Yamaha:
Yamalube 2 or 2-stroke engine oil
(ISO EG-C, EG-D grade)
Total:
1.4L (1.23 Imp.qt, 1.48 US.qt)

NOTE:
Install the oil tank filler cap ① and push it fully into the filler.
TRANSMISSION OIL REPLACEMENT

1. Warm up the engine for several minutes, then stop the engine.
2. Place a container under the drain hole.
3. Remove:
   - Oil filler plug
   - Drain bolt (with gasket)

**NOTE:**
Drain the transmission oil completely. While draining, slightly tilt the scooter to the right and to the left.

4. Inspect:
   - Gasket (drain bolt)
   - O-ring (oil filler plug)
   - Damage—Replace.

5. Install:
   - Drain bolt 18 Nm (1.8 m.kg, 13 ft.lb)

6. Fill:
   - Transmission case

7. Install:
   - Oil filler plug (with O-ring)

8. Inspect:
   - Oil leaks
   - Oil level

**NOTE:**
Wipe off any oil spilt on the transmission, tire or wheel.

Recommended oil:
Yamalube 4 SAE 10W 30SE or GL gear oil

Oil capacity:
Total amount 0.13 L (0.11 Imp.qt, 0.13 US.qt)
Periodic oil change 0.11 L (0.096 Imp.qt, 0.12 US qt)

**CAUTION:**
- Always use the same type of oil; mixing oils may result in a harmful chemical reaction and lead to poor performance.
- Do not allow foreign material to enter the transmission case.

---

Recommended oil:
Yamalube 4 SAE 10W 30SE or GL gear oil

Oil capacity:
Total amount 0.13 L (0.11 Imp.qt, 0.13 US.qt)
Periodic oil change 0.11 L (0.096 Imp.qt, 0.12 US qt)

**CAUTION:**
- Always use the same type of oil; mixing oils may result in a harmful chemical reaction and lead to poor performance.
- Do not allow foreign material to enter the transmission case.

7. Install:
   - Oil filler plug (with O-ring)

8. Inspect:
   - Oil leaks
   - Oil level

**NOTE:**
Wipe off any oil spilt on the transmission, tire or wheel.
AIR FILTER ELEMENT CLEANING

1. Remove:
   - Battery box cover

2. Remove:
   - Caburetor joint clamp

3. Remove:
   - Screw
   - Air filter

4. Remove:
   - Air filter case
   - Air filter element

**CAUTION:**

Never operate the engine with the air filter element removed. This will allow unfiltered air to enter, causing rapid wear and possible engine damage. Additionally, operation without the cleaner element will affect carburetor jetting with subsequent poor performance and possible engine overheating.

Be careful not to have rags or the like blocking the intake area of the air filter.

5. Inspect:
   - Element
     - Damage → Replace.

6. Clean:
   - Air filter element

Air filter element cleaning steps:
   - Wash the element gently, but thoroughly in solvent.
**WARNING**

Never use low flash point solvents such as gasoline to clean the element. Such solvent may lead to a fire or explosion.

- Squeeze the excess solvent out of the element and let dry.

**CAUTION:**

Do not twist the element when squeezing the element.

- Apply the foam - air filter oil or engine oil.
- Squeeze out the excess oil.

**NOTE:**

The element should be wet but not dripping.

7. Install:
- Air filter
- Battery box cover
V-BELT INSPECTION

1. Remove:
   • Kick crank
   • Screws
   • Crankcase cover 2(left)
   • Screws(Air cleaner and left crankcase cover)
   • Crankcase cover 1(left)

2. Inspect
   • V-belt
     Cracks/Wear/Damage→Replace.
     Oil or grease adhere to the V-belt→Check the primary and secondary sheaves.
     Refer to “ENGINE OVERHAUL - INSPECTION AND REPAIR” section in the CHAPTER 4.

3. Measure:
   • V-belt width
     Out of specification→Replace.
     Refer to “ENGINE OVERHAUL” section in the CHAPTER 4.

   V-belt width:
   16.6 mm (0.65 in)
   <Limit> 14.6 mm (0.57 in)

   NOTE:
   Measure the V-belt width on several points.

4. Install:
   • Crankcase cover 1 (left)
   • Air cleaner
   • Crankcase cover 2 (left)
   • Kick crank
CHASSIS

FRONT BRAKE LEVER FREE PLAY CHECK

1. Check:
   • Front brake lever free play
   2~5 mm (0.08~0.20 in)

WARNING

A soft or spongy feeling in the brake lever can indicate the presence of air in the brake system. This air must be removed by bleeding the brake system before the motorcycle is operated. Air in the system will cause greatly diminished braking capability and can result in loss of control and an accident. Inspect and bleed the system if necessary.

REAR BRAKE LEVER FREE PLAY CHECK

1. Check:
   • Rear brake lever free play
   Out of specification → Adjust.
   10 ~ 20 mm (0.39~0.79 in)

BRAKE PAD INSPECTION

1. Activate the brake lever.
2. Inspect:
   • Brake pad
     Wear indicator ① nearly contacting brake disc → Replace brake pads as a set.
     Refer to the “BRAKE PAD replacement” section in the CHAPTER 6.
   ② Brake disc
   ③ Brake pads
BRAKE SHOE INSPECTION

1. Activate the brake lever.
2. Inspect:
   • Wear indicator (1)
     Indicator at wear limit line (2) → Replace brake shoes.

BRAKE FLUID LEVEL INSPECTION

NOTE:
Position the scooter straight up when inspecting the fluid level.

1. Inspect:
   • Fluid level is under “LOWER” level line (1) → Fill to proper level.

Recommended fluid:
DOT#4 (or DOT#3)

CAUTION:
The fluid may corrode painted surfaces or plastic parts. Always clean up spilled fluid immediately.

WARNING
• Use only the designated quality fluid. Otherwise, the rubber seals may deteriorate causing leakage and poor brake performance.
• Refill with the same type of fluid. Mixing fluids may result in a harmful chemical reaction leading to poor brake performance.
• Be careful that water does not enter the master cylinder when refilling. Water will significantly lower the boiling point of the fluid and may result in vapor lock.
AIR BLEEDING (HYDRAULIC BRAKE SYSTEM)

1. Bleed:
   - Brake fluid

Air bleeding steps:
   a. Add proper brake fluid to the reservoir.
   b. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
   c. Connect the clear plastic tube (1) tightly to the caliper bleed screw.
   d. Place the other end of the tube into a container.
   e. Slowly apply the brake lever several times.
   f. Pull the lever in. Hold the lever in position.
   g. Loosen the bleed screw and allow the lever to travel towards its limit.
   h. Tighten the bleed screw when the limit has been reached, then release the lever.
   i. Repeat steps (e) to (h) until the air bubbles have been removed from the system.
   j. Add brake fluid to proper level.

**WARNING**

Check the operation of the brake after bleeding the brake system.
STEERING ADJUSTMENT

1. Check:
   - Steering assembly bearings
     Gap the bottom of the forks and gently rock the fork assembly back and forth. Loosen→Adjust.

Adjustment steps:
- Remove upper cover, lower cowling, leg shield 1,2. refer to “COVER AND PANEL” section.
- Remove all ringnuts using ringnut wrench.

![Ring nut wrench: YU-33975](image)

- Tighten the ring nut 3 \( \text{①} \) using nut wrench.
  \[ \approx 22 \text{Nm}(2.2 \text{m.kg, 16 ft.lb}) \]

**NOTE:**
Set the torque wrench to the ring nut wrench so that they form a right angle.

- Loosen the ring nut 3 \( \text{①} \) 1/4 turn.
- Install rubber ring \( \text{②} \) and ring nut 2 \( \text{③} \), then tighten the ring nut 2 until it contacts with rubber ring.

**CAUTION:**
Aligning the slot of ring nut 2 with the slot of ring nut 3. If not, slightly tighten ring nut 2 until the slots alignment.

- Install special washer \( \text{④} \)

**NOTE:**
Insert the projections of special washer into the slots of ring nut 3, 2

- Install ring nut 1 \( \text{⑤} \) \[ \approx 66\text{Nm}(6.6 \text{m.kg, 47.8 ft.lb}) \]
- Move the handlebar up and down, and/or back and forth. If handlebar play is excess, remove the front fork assembly and check the balls/ball races. Refer to chapter 6.

**************************************************
# TIRE INSPECTION

## FRONT

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Size</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG SHIN</td>
<td>120/90-10</td>
<td>56J</td>
</tr>
</tbody>
</table>

## REAR

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Size</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHENG SHIN</td>
<td>130/90-10</td>
<td>59J</td>
</tr>
</tbody>
</table>

---

## WARNING

- The tire pressure should only be checked and regulated when the tire temperature equals the ambient air temperature.
- The tire pressure must be adjusted according to the total weight (including cargo, rider passenger and accessories) and the anticipated riding speed.
- Operation of an overloaded scooter could cause tire damage, an accident or an injury. **NEVER OVERLOAD THE SCOOTER.**

### Basic weight

<table>
<thead>
<tr>
<th>Description</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic weight (with oil and a full fuel tank)</td>
<td>94 kg (207 lb)</td>
</tr>
</tbody>
</table>

### Maximum load

<table>
<thead>
<tr>
<th>Type</th>
<th>Front</th>
<th>Rear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold tire pressure</td>
<td>200 kpa (2.0 kgf/cm², 29 psi)</td>
<td>200 kpa (2.0 kgf/cm², 29 psi)</td>
</tr>
</tbody>
</table>

* Total of cargo, rider, passenger and accessories.

---

## WARNING

It is dangerous to ride with a worn-out tire. When the tire tread reaches the wear limit, replace the tire immediately.

2. Inspect:

- Tire surfaces
  - Wear/Damage → Replace.

### Minimum tire tread depth

- Tread depth:
- Side wall:
- Wear indicator:
  - 1.6 mm (0.06 in)
**WARNING**

- Do not use a tubeless tire on a wheel designed only for tube tires to avoid tire failure and personal injury from sudden deflation.
- When using tube tires, be sure to install the correct tube.
- Always replace a new tube tire and a new tube as a set.
- To avoid pinching the tube, make sure the wheel rim band and tube are centered in the wheel groove.
- Patching a punctured tube is not recommended. If it is absolutely necessary to do so, use great care and replace the tube as soon as possible with a good quality replacement.

![A] Tire  
![B] Wheel

<table>
<thead>
<tr>
<th>Tube wheel</th>
<th>Tube tire only</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tubeless wheel</td>
<td>Tube or tubeless tire</td>
</tr>
</tbody>
</table>

- After extensive tests, the tires listed below have been approved by Yamaha Motor Co., Ltd. for this model. The front and rear tires should always be by the same manufacturer and of the same design. No guarantee concerning handling characteristics can be given if a tire combination other than one approved by Yamaha is used on this scooter.
\textbf{WARNING}

New tires have a relatively low grip on the road surface until they have been slightly worn. Therefore, approximately 100 km should be traveled at normal speed before any high-speed riding is done.

\textbf{NOTE:}

For tires with a direction of rotation mark ①:
- Install the tire with the mark pointing in the direction of wheel rotation.
- Align the mark ② with the valve installation point.
WHEEL INSPECTION

1. Inspect:
   • wheels
     Damage/Bends→Replace.

WARNING

Never attempt to make any repairs to the wheel.

NOTE:

After a tire or wheel has been changed or replaced, always balance the wheel.

FRONT FORK INSPECTION

1. Inspect:
   • Front fork
     Bends/Damage→Replace inner tube comp, fork ass’y.
     Grease leakage→Replace inner tube comp. fork ass’y.
     Unsmooth operation→Replace fork ass’y.

REAR SHOCK ABSORBER INSPECTION

1. Inspection:
   • Rear shock absorber
     Oil leaks/Damage→Replace.

2. Check
   • Tightening torque

   | Upper (nut)   | 30Nm (3.0 m.kg, 22ft.lb) |
   | Lower (bolt) | 16 Nm (1.6 m.kg, 12ft.lb) |

SEAT LOCK CABLE ADJUSTMENT

1. Remove:
   • Upper cover
     Refer to “COVER AND PANEL” section.

2. Adjust:
   • Seat cable
     **************************
     Seat cable adjustment steps:
     • Loosen lock nut
     • Turn adjuster in or out to adjust the seat lock cable.
     • Tighten the lock nut.
     **************************

3. Install:
   • Upper cover
CABLE CHECKING AND LUBRICATING

The following procedure applies to all of the cable sheaths and cables.

**WARNING**

Damaged cable sheaths may cause the cable to corrode and interfere with its movement. Replace damaged cable sheaths and cables as soon as possible.

1. Check:
   - cable sheath
     Damage → Replace.

2. Check:
   - cable operation
     Rough movement → Lubricate.

**NOTE:**

Hold the cable end upright and pour a few drops of lubricant into the cable sheath or use a suitable lubricating device.

---

LEVERS LUBRICATING

Lubricate the pivoting point and metal-to-metal moving parts of the levers.

**Recommended lubricant**

Lithium soap base grease

---

CENTERSTAND LUBRICATING

Lubricate the pivoting point and metal-to-metal moving parts of the centerstand.

**Recommended lubricant**

Lithium soap base grease
ELECTRICAL
BATTERY INSPECTION
NOTE: 

Since the MF battery is of a sealed-type construction, it is impossible to measure the specific gravity of the electrolyte in order to check the state of charge in the battery. Therefore, to check the state of charge in the battery, voltage must be measured at the battery terminals.

CAUTION: 

CHARGING METHOD

- This battery is sealed type. Never remove sealing caps even when charging. With the sealing cap removed, this balancing will not be maintained, and battery performance will lower gradually.
- Never add water. If distilled water is added, chemical reaction in the battery will not proceed in the normal way, thus making it impossible for the battery to operate regularly.
- The charging time, charging current and charging voltage for the MF battery is different than general type batteries. The MF battery should be charged as instructed in the “Charging method”. Should the battery be overcharged, the electrolyte level will lower extremely. Therefore, use special care when charging the battery.
- Avoid using any electrolyte other than specified. The specific gravity of the MF battery electrolyte is 1.32 at 20°C (68°F). (The specific gravity of the general type battery electrolyte is 1.28.) If the electrolyte whose specific gravity is less than 1.32, the sulfuric acid will decrease and thus low battery performance will result. Should any electrolyte, whose specific gravity is 1.32 or more, be used, the battery plates will corrode and battery life will shorten.

1. Remove:
   • Battery box cover
     Refer to “COVER AND PANEL” section.
2. Remove:
   • Battery

NOTE: 

Remove the (-) lead first.
**WARNING**

Batteries generate explosive hydrogen gas and contain electrolyte which is made of poisonous and highly caustic sulfuric acid. Therefore, always follow these preventive measures:

- Wear protective eye gear when handling or working near batteries.
- Charge batteries in a well-ventilated area.
- Keep batteries away from fire, sparks or open flames (e.g., welding equipment, lighted cigarettes).
- DO NOT SMOKE when charging or handling batteries.
- KEEP BATTERIES AND ELECTROLYTE OUT OF REACH OF CHILDREN.
- Avoid bodily contact with electrolyte as it can cause severe burns or permanent eye injury.

**FIRST AID IN CASE OF BODILY CONTACT:**

**EXTERNAL**

- Skin — Wash with water.
- Eyes — Flush with water for 15 minutes and get immediate medical attention.

**INTERNAL**

- Drink large quantities of water or milk followed with milk of magnesia, beaten egg or vegetable oil. Get immediate medical attention.

---

3. Check:

- Battery condition

**NOTE:**

The state of a discharged MF battery can be checked by measuring open circuit voltage (the voltage measured with the positive terminals being disconnected).
BATTERY INSPECTION

<table>
<thead>
<tr>
<th>Condition of charge in battery(%)</th>
<th>Ambient temperature 20°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>14.0</td>
</tr>
<tr>
<td>75</td>
<td>13.0</td>
</tr>
<tr>
<td>50</td>
<td>12.0</td>
</tr>
<tr>
<td>30</td>
<td>11.0</td>
</tr>
<tr>
<td>25</td>
<td>10.0</td>
</tr>
<tr>
<td>20</td>
<td>9.0</td>
</tr>
<tr>
<td>10</td>
<td>8.0</td>
</tr>
</tbody>
</table>

- Check the battery condition using figures.
  EXAMPLE:
  Open circuit voltage = 12.0v
  Charging time = 6.5 hours
  Condition of charge in battery = 20 ~ 30%

2. Charging method of MF battery

CAUTION:

- If it is impossible to set the standard charging current, be careful not to overcharge.
- When charging the battery, be sure to remove it from the motorcycle. (If charging has to be done with the battery mounted on the motorcycle for some reason, be sure to disconnect the wire at the negative terminal.)
- Never remove the sealing plug from the MF battery.
- Use special care so that charging clips are in a full contact with the terminal and that they are not shorted. (A corroded clip of the charger may cause the battery to generate heat at the contact area. A weak clip spring may cause sparks.)
- Before removing the clips from the battery terminals, be sure to turn off the power switch of the charger.
- Change in the open-circuit voltage of the MF battery after being charged is shown below. As shown in the figure, the open circuit voltage is stabilized 30 minutes after charging has been completed. Therefore, to check the condition of the battery, measure the open-circuit voltage 30 minutes after has been completed.

<table>
<thead>
<tr>
<th>Open circuit voltage</th>
<th>Charging time</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.8 v or more</td>
<td>No charging is necessary.</td>
</tr>
</tbody>
</table>
Charging method using a variable-current (voltage) type charger

Measure the open-circuit voltage prior to charging.

Connect a charger and AMP meter to the battery and start charging.

Make sure the current is higher than the standard charging current written on the battery.

Adjust the voltage so that current is at standard charging level.

By turning the charging voltage adjust dial, set the charging voltage at 20 - 25 V.

Monitor the amperage for 3-5 minutes to check if the standard charging current is reached.

Set the timer according to the charging time suitable for the open-circuit voltage. Refer to “Battery condition checking steps”.

In case that charging requires more than 5 hours, it is advisable to check the charging current after a lapse of 5 hours. If there is any change in the amperage, readjust the voltage to obtain the standard charging current.

Measure the battery open-circuit voltage after having left the battery unused for more than 30 minutes.

12.8 V or more --- Charging is complete.
12.7 V or less --- Recharging is required.
Under 12.0 V --- Replace the battery.

NOTE: Voltage should be measured 30 minutes after the machine is stopped.

NOTE: Set the changing voltage at 16-17 V. (If the setting is lower, charging will be insufficient. If too high, the battery will be over-charged.)
Charging method using a constant-voltage type charger

**Measure the open-circuit voltage prior to charging.**

**NOTE:** Voltage should be measured 30 minutes after the machine is stopped.

Connect a charger and AMP meter to the battery, and start charging.

Make sure the current is higher than the standard charging current written on the battery.

**YES**

Charge the battery until the battery's charging voltage is 15 volts.

**NOTE:** Set the charging time at 20 hours (maximum).

Check the open-circuit voltage after having left the battery for 30 minutes after charging.
- 12.8 V or more --- Charging is complete.
- 12.7 V or less --- Recharging is necessary.
- Under 12 V --- Replace the battery.

**NO**

This type of battery charger cannot charge the MF battery. A variable voltage charger is recommended.

Charging method using a constant current type charger

This type of battery charger cannot charge the MF battery.
FUSE INSPECTION

4. Inspect:
   • Battery terminal
     Dirty terminal → Clean with wire brush.
     Poor connection → Correct.

   NOTE:
   After cleaning terminals, apply lightly to the terminals.

5. Install
   • Battery
   • Battery box cover

FUSE INSPECTION

1. Remove:
   • Battery box cover
     Refer to “COVER AND PANEL” section.

2. Remove:
   • Fuse

3. Inspect:
   • Fuse
     defective → Replace

Blown fuse procedure steps:
   • Turn off ignition and the circuit.
   • Install a new fuse of proper amperage.
   • Turn on switches to verify operation of electrical device.
   • If fuse blows immediately again, check circuit in question.

WARNING

Never use a fuse with an amperage rating other than that specified. Improvising or using a fuse with the wrong amperage rating may cause extensive damage to the electrical system, cause the lighting and ignition systems to malfunction and could possibly cause a fire.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amperage</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main</td>
<td>7A</td>
<td>1</td>
</tr>
</tbody>
</table>

4. Install:
   • Fuse
   • Battery box cover
HEADLIGHT BEAM ADJUSTMENT

1. Adjust:
   • Head light (vertically)
     Turn the adjusting screw ① in or out to adjust headlight beam.
   • Head light (Horizontal)
     Turn the adjusting screw ② in or out to adjust headlight beam.

HEADLIGHT BULB REPLACEMENT

1. Remove:
   • Upper cover
     Refer to “COVER AND PANEL” section.

2. Disconnect:
   • Headlight coupler ①

3. Remove:
   • Bulb holder cover ②

4. Remove:
   • Headlight bulb holder ①
     Turn the bulb holder counterclockwise to remove it.

5. Remove:
   • Bulb(defective) ②

WARNING

Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.
6. Install:
   • Bulb (new)

   **CAUTION:**
   Avoid touching the glass part of the head-light bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

7. Install:
   • Bulb holder
   • Turn the bulb holder clockwise to install it.

8. Install:
   • Bulb holder cover

9. Connect:
   • Headlight coupler

10. Install:
    • Upper cover

11. Adjust:
    • Headlight beam
    Refer to “HEADLIGHT BEAM ADJUSTMENT” section

---

**TURN SIGNAL BULB REPLACEMENT**

1. Remove:
   • Screw (1)
   • Lens (2)

2. Replace:
   • Bulb (defective) (3)

3. Install:
   • Lens (2)
   • Screw (1)

   **CAUTION:**
   Do not over-tighten the screws as the lens may break.
CAUTION:

Avoid touching the glass part of the head-light bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

TAILLIGHT BULB REPLACEMENT

1. Remove:
   - Screws (1)
   - Lens (2)
2. Replace:
   - Bulb (defective) (3)
3. Install:
   - Lens (2)
   - Screws (1)

LICENSE LIGHT BULB REPLACEMENT

1. Remove:
   - Screws (1)
   - Lens (2)
2. Replace:
   - Bulb (defective) (3)
3. Install:
   - Lens (2)
   - Screws (1)
ENGINE REMOVAL

ENGINE OVERHAUL

WIREHARNESS AND CABLES

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wireharness and cables removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td></td>
<td>Rear carrier</td>
<td></td>
<td>Refer to “COVER AND PANEL” section in CHAPTER 3.</td>
</tr>
<tr>
<td></td>
<td>Tail cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Left side panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right side panel</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Battery box cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Center cowlung</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Air filter case</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Carburetor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Air shroud 1</td>
<td>1</td>
<td>Refer to “CARBURETOR” section in CHAPTER 6.</td>
</tr>
<tr>
<td>2</td>
<td>Autolube delivery hose</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Engine removal:

120Nm (12.0 m.kg, 87 ft.lb)

45Nm (4.5 m.kg, 31 ft.lb)
### ENGINE REMOVAL

#### ORDER AND PART NAME

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Spark plug cap</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Battery (-) lead</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>C.D.I magneto leads coupler</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Starter motor leads coupler</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Rear wheel nut</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Rear brake adjuster</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Rear brake cable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Bolt</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Engine mount bolt</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>13</td>
<td>Engine</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

- Loosen the rear wheel nut.
- Reverse the removal procedure for installation.
### Cylinder Head, Cylinder and Piston

**Order** | **Job name/Part name** | **Q’ty** | **Remarks**
---|---|---|---
1 | Cylinder head, Cylinder and piston removal | 1/1 | Remove the parts in the order. Refer to the “ENGINE REMOVAL” section
2 | Engine | 1/1 | 
3 | Muffler/Gasket | 1 | 
4 | Air shroud 2 | 1 | 
5 | Spark plug | 1 | 
6 | Cylinder head/Cylinder head gasket | 1/1 | 
7 | Cylinder | 1 | 
8 | Piston pin clip | 2 | 
9 | Piston pin/ Bearing | 1/1 | 
10 | Piston ring set | 1 | 
11 | Piston | 1 | 
12 | Cylinder gasket | 1 | Reverse the removal procedure for installation.

4-3
PISTON PIN AND PISTON REMOVAL
1. Remove:
   • Piston pin clip

**NOTE:**
Before removing the piston pin clip, cover the crankcase with a clean rag so you will not accidentally drop the clip into the crankcase.

2. Remove:
   • Piston pin
   • Piston
   • Piston pin bearing

**CAUTION:**
Do not use a hammer to drive the piston pin out.

CYLINDER HEAD INSPECTION
1. Eliminate:
   • Carbon deposits
   Use a rounded scrapper.

2. Inspect:
   • Cylinder head warpage
   Out of specification → Re-surface.

Warpage measurement and re-surfacement steps:
• Attach a straight edge and a thickness gauge on the cylinder head.
• Measure the warpage limit.

Warpage limit:
0.03 mm (0.0012 in)

• If the warpage is out of specification, reface the cylinder head.

**NOTE:**
Rotate the head several times to avoid removing too much material from one side.
1. Eliminate:
   - Carbon deposits
     Use a rounded scraper [1].

2. Inspect:
   - Cylinder wall
     Wear/Scratches → Rebore or replace.

3. Eliminate:
   - Carbon deposits [1]
     From the piston crown and ring grooves.

4. Remove:
   - Score marks and lacquer deposits
     From the sides of piston.

5. Inspect:
   - Piston wall
     Wear/Scratches/Damage → Replace.

6. Measure:
   - Piston-to-cylinder clearance

   **Piston to cylinder clearance measurement steps: First step:**
   - Measure the cylinder bore “C” with a cylinder bore gauge.

   **NOTE:**
   Measure the cylinder bore “C” in parallel to and at right angles to the crankshaft. Then, find the average of the measurements.
CYLINDER HEAD, CYLINDER AND PISTON

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Wear limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder bore “C”</td>
<td>40.000<del>40.014mm (1.5748</del>1.5754 in)</td>
<td>40.10 mm (1.5787 in)</td>
</tr>
<tr>
<td>Taper “T”</td>
<td>–</td>
<td>0.05 mm (0.0020 in)</td>
</tr>
<tr>
<td>Out of round “R”</td>
<td>–</td>
<td>0.03 mm (0.0012 in)</td>
</tr>
</tbody>
</table>

C = Maximum D
T=( Maximum D1 or D2 ) - ( Maximum D5 or D6 )
R=( Maximum D1 D3 or D5 ) - ( Maximum D2 D4 or D6 )

- If out of specification, rebore or replace cylinder, and replace piston and piston rings as a set.

2nd step:
- Measure the piston skirt diameter “p” with a micrometer.
  @ 10 mm from the piston bottom edge.

Piston size P
39.958~39.972 mm (1.5731~1.5737 in)

- If out of specification, replace piston and piston rings as a set.

3rd step:
- Calculate the piston-to cylinder clearance with following formula:

Piston-to cylinder clearance = Cylinder bore “C” - Piston skirt diameter “p”

- If out of specification, rebore or replace cylinder, and replace piston and piston rings as a set.

Piston-to cylinder clearance:
0.035 ~ 0.040mm (0.014 ~ 0.0016 in)
Limit : 0.10 mm (0.0039 in)
PISTON RINGS INSPECTION
1. Measure:
   • Side clearance
   Out of specification → Replace piston and/or rings.
   Use a feeler gauge ①

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top ring</td>
<td>0.03 ~ 0.05 mm</td>
<td>0.1 mm</td>
</tr>
<tr>
<td></td>
<td>(0.0012 ~ 0.002 in)</td>
<td>(0.0039 in)</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.03 ~ 0.05 mm</td>
<td>0.1 mm</td>
</tr>
<tr>
<td></td>
<td>(0.0012 ~ 0.002 in)</td>
<td>(0.0039 in)</td>
</tr>
</tbody>
</table>

2. Install:
   • Piston ring
   Into the cylinder
   Push the ring with the piston crown.

3. Measure:
   • End gap
   Out of specification → Replace rings as a set.
   Use a feeler gauge ①.

<table>
<thead>
<tr>
<th></th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top ring</td>
<td>0.15 ~ 0.35 mm</td>
<td>0.6 mm</td>
</tr>
<tr>
<td></td>
<td>(0.005 ~ 0.01 in)</td>
<td>(0.02 in)</td>
</tr>
<tr>
<td>2nd ring</td>
<td>0.15 ~ 0.35 mm</td>
<td>0.6 mm</td>
</tr>
<tr>
<td></td>
<td>(0.005 ~ 0.01 in)</td>
<td>(0.02 in)</td>
</tr>
</tbody>
</table>

① Measuring Point 20 mm (0.79 in)

PISTON PIN AND PISTON PIN BEARING
1. Inspect:
   • Piston pin
     Blue discoloration/Groove → Replace, then inspect lubrication system.
2. Measure:
- Outside diameter (piston pin)
  Out of specification → Replace.

![Outside diameter measurement](image)

Out of specification limit: 9.996~10.000 mm (0.3935~0.3937 in)

3. Measure:
- Piston pin-to-piston clearance
  Out of specification → Replace piston.

Piston pin-to-piston clearance =
Bore size (piston pin)
Outside diameter (piston pin)

Piston pin-to-piston clearance:
0.004~0.019 mm (0.0016~0.00075 in)
< Limit: 0.07 mm (0.003 in)

4. Inspect:
- Bearing (piston pin)
  Pitting/Damage → Replace.

![Bearing inspection](image)

PISTON PIN AND PISTON INSTALLATION

1. Apply:
- Engine oil
  (to the crankshaft bearing, connecting rod big end bearing, small end bearing, piston pin, piston ring grooves and piston skirt areas.)

2. Install:
- Reed valve gasket
- Reed valve
- Carburetor joint

![Carburetor joint](image)

11 Nm (1.1 m.kg, 8 ft.lb)
3. Install:
   - Small end bearing
   - Piston
   - Piston pin
   - Piston pin clip

**NOTE:**
- The arrow on the piston to the exhaust side.
- Before installing the piston pin clip, cover the crankcase with a clean towel or rag so you will not accidentally drop the pin clip material into the crankcase.
- Always use a new piston pin clip.

---

**CYLINDER AND CYLINDER HEAD**

1. Install:
   - Cylinder gasket (new gasket)

2. Check:
   - Piston rings
     1. 1st ring
     2. 2nd ring

**NOTE:**
Make sure the ring ends are properly fitted around the ring locating pins in the piston grooves.

---

3. Install:
   - Cylinder

**NOTE:**
Install the cylinder with one hand while compressing the piston rings with the other hand.
4. Install:
   - Cylinder head gasket (new gasket)
5. Install:
   - Cylinder head ① 14Nm (1.4m.kg, 10ft.lb)
   - Spark plug ② 20Nm (2.0m.kg, 14ft.lb)
   - Air shroud

NOTE: Tighten the cylinder head holding nuts in stage, using a crisscross pattern.
Remove the parts in order.

Reverse the removal procedure for installation.
### V-Belt, Clutch and Secondary/Primary Sheave

#### Kick Starter

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Kick starter removal</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>②</td>
<td>Crankcase cover 1 (left) removal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>③</td>
<td>Kickstarter pinion gear</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Kickstarter pinion gear clip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Circlip/Plain washer</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Kickstarter segment gear</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑦</td>
<td>Return spring</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>⑧</td>
<td>Collar</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Remove the parts in order. Reverse the removal procedure for installation.
KICK STARTER INSTALLATION

1. Install:
   • Return spring ①
   • Kickstarter segment gear ②
   • Collar ③
   • Plain washer ④
   • Circlip ⑤

Installation steps:

a. Install return spring ⑥ and segment gear ⑦ as shown.
b. Install clip ⑤.
c. Hook the spring onto the crankcase projection ⑧.
d. Install the kick starter pinion gear ⑨ and the kick starter.

******************************************************************************
## V-Belt, Clutch and Secondary/Primary Sheave

### V-Belt, Clutch and Secondary/Primary Sheave

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V-belt, clutch and secondary/primary sheave removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Lower cowling</td>
<td></td>
<td>Refer to “COVER AND PANEL” section in chapter 3.</td>
</tr>
<tr>
<td>3</td>
<td>Air shroud 3</td>
<td></td>
<td>Refer to “ENGINE REMOVAL” section.</td>
</tr>
<tr>
<td>4</td>
<td>Crankcase cover (left)</td>
<td></td>
<td>Refer to “SECONDARY SHEAVE AND V-BELT REMOVAL” section.</td>
</tr>
<tr>
<td>5</td>
<td>Clutch housing</td>
<td>1</td>
<td>Refer to “PRIMARY SHEAVE REMOVAL ASSEMBLY” section.</td>
</tr>
<tr>
<td>6</td>
<td>Secondary sheave assembly</td>
<td>1</td>
<td>Reverse the removal procedure for installation</td>
</tr>
<tr>
<td>7</td>
<td>V-belt</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Conical washer/One-way clutch</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Crow washer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Primary fixed sheave</td>
<td>1/3</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Primary sliding sheave</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cam/ Slider</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Removal**: Refer to the appropriate sections for detailed instructions.

**Installation**: Reverse the removal procedure for installation.
SECONDARY SHEAVE

Order | Job name/Part name | Q’ty | Remarks
---|---|---|---
1 | Secondary sheave disassembly | 1 | Disassemble the parts in order.
2 | Nut | 1 | Refer to “SECONDARY SHEAVE DISASSEMBLY” section.
3 | Clutch carrier | 1 | Refer to “SECONDARY SHEAVE INSTALLATION” section.
4 | Clutch shoe spring | 2 | Refer to “SECONDARY SHEAVE INSTALLATION” section.
5 | Compression spring | 1 |
6 | Spring seat | 1 |
7 | Guide pin | 2 |
8 | Secondary sliding sheave | 1 |
9 | O-ring | 2 |
10 | Oil seal | 2 |
11 | Secondary fixed sheave | 1 |

Reverse the disassembly procedure for assembly.

50Nm (5.0m.kg, 36ft.lb)
PRIMARY SHEAVE REMOVAL
1. Remove:
   - Fan
2. Remove:
   - Nut (primary sheave)

NOTE:
When loosening the nut (primary sheave), hold the C.D.I. magneto using flywheel holding tool.

3. Remove:
   - Conical spring washer
   - One-way clutch
   - Washer
   - Primary fixed sheave
   - Shim
   - V-Belt
4. Remove:
   - Collar
   - Primary sheave assembly

SECONDARY SHEAVE REMOVAL
1. Remove:
   - Nut (secondary sheave)

NOTE:
Hold the secondary sheave using sheave holder.

2. Remove:
   - Clutch housing
   - Secondary sheave assembly
   - Dowel pins
3. Loosen:
   • Nut(Clutch carrier)

**NOTE:**
Install the secondary sheave to primary drive shaft as shown, and hold the secondary sheave by Universal Roter Holder to loosen the nut.

Roter holding tool: YU-01235

**CAUTION:**
Do not remove the clutch securing nut yet. If the nut is removed without compressing the secondary sheave, it jumps and causes injury.

4. Attach:
   • Clutch spring holder

Clutch spring holder: YS-28891

5. Remove:
   • Clutch securing nut

6. Remove:
   • Clutch assembly
   • Clutch spring
   • Spring seat
   • Guide pins
   • Secondary sliding sheave

**CLUTCH INSPECTION**
1. Inspect:
   • Clutch shoes
     Glazed parts → Sand with coarse sandpaper.

**NOTE:**
After using the sand paper, clean of the polished particles with cloth.
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

2. Measure:
   - Clutch shoe thickness
     Out of specification → Replace.

     Clutch shoe thickness:
     4 mm (0.16 in)
     < Wear limit >:
     2.5 mm (0.1 in)

V-BELT INSPECTION

1. Inspect:
   - V-belt
     Crack → Replace.

   NOTE:
   Replace the V-belt smeared with a lot of oil or grease.

2. Measure:
   - V-belt width
     Out of specification → Replace.

     V-belt width:
     16.6 mm (0.65 in)
     < Wear limit >:
     14.6 mm (0.57 in)
PRIMARY SHEAVE INSPECTION

1. Inspect:
   - Primary sliding sheave ①
   - Primary fixed sheave ②
   Wear/Cracks/Scratch/Damage → Replace.

2. Check:
   - Free movement
   Insert the collar ① into the primary sliding sheave ②, and check for free movement.
   Stick or excessive play → Replace the sheave or collar.

3. Measure:
   - Out side diameter ① (weight)
   Out of specification → Replace.

   Out side diameter (weight)
   15.0 mm (0.59 in)
   < Limit 14.5 mm > (0.57 in)
SECONDARY SHEAVE

1. Inspect:
   • Secondary fixed sheave
   • Secondary sliding sheave
     Scratch/Crack/Damage → Replace as a set.
   • Oil seal
     Damage → Replace

2. Inspect:
   • Torque cam groove
   • Guide pin
     Wear/Damage → Replace as a set.
   • O-rings
     Damage → Replace.

3. Measure:
   • Clutch spring free length
     Out of specification → Replace.

   Clutch spring free length:
   94 mm (3.7 in)
   <Limit>:
   91 mm (3.58 in)

4. Inspect:
   • Clutch housing inner surface
     Oil/Scratches → Remove.

   Oil
   Use a rag soaked in lacquer thinner or solvent.

   Scratches
   Use an emery cloth (lightly and evenly polishing).

5. Measure:
   • Clutch housing inside diameter
     Out of specification → Replace.

   Clutch housing inside diameter:
   105 mm (4.13 in)
   <Wear limit>:
   105.5 mm (4.15 in)
SECONDARY SHEAVE INSTALLATION
When assembling the secondary sheave, reverse the disassembly procedure. Note the following points.

1. Apply:
   • Lithium soap base grease
     (to the inside of the sliding/fixed sheave)

2. Install:
   • Sliding sheave ①

   **NOTE:**
   Be careful so that the oil seal ② lips are not turned over when installing the sheave.

3. Apply:
   • Lithium soap base grease
     (to the torque cam grooves and O-rings)

4. Install:
   • Guide pin ①

5. Check:
   • Sliding sheave
     Unsmooth operation → Repair.

6. Install:
   • Clutch securing nut ①
     Use clutch spring holder ②

   **Clutch spring holder:**
   YS-28891

7. Tighten:
   • Clutch securing nut ①
     \[
     50 \text{ Nm} (5.0 \text{ m.kg}, 36 \text{ ft.lb})
     \]
     Use Flywheel holding tool ②

   **Rotor holding tool:**
   YU-01235
8. Install:
- Secondary sheave assembly
- Clutch housing ①
- V-belt ②

**NOTE:**
The V-belt must be installed with the arrow forward.

9. Tighten:
- Nut ① (secondary sheave)

\[ 40 \text{ Nm (4.0 m.kg, 29 ft.lb)} \]

Use sheaveholder ②

<table>
<thead>
<tr>
<th>Sheave holder:</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU-01701</td>
</tr>
</tbody>
</table>

**PRIMARY SHEAVE**

1. Clean:
- Primary sliding sheave face ①
- Primary fixed sheave face ②
- Collar ③
- Weight ④
- Primary sliding sheave cam surface ⑤

2. Install:
- Weight ①
- Cam ②
- Slider ③
- Collar ④

3. Check:
- Cam operation
  Not smooth \(\rightarrow\) Repair.

4. Install:
- Primary sheave assembly ①
- Collar ②

5. Install:
- V-belt
6. Install:
   - Shim ①
   - Primary fixed sheave ②
   - Washer ③
   - One-way clutch ④
   - Conical spring washer ⑤
   - Nut ⑥

7. Tighten:
   - Nut ① (primary sheave)
     - 45 Nm (4.5 m.kg, 31 ft.lb)

NOTE:
When tightening the nut (primary sheave), hold the C.D.I. magneto using Flywheel Holding Tool ②.

Rotor holding tool:
YU-01235

8. Adjust:
   - V-belt ①
     Tense the V-belt by turning the primary sheave several times.

9. Install:
   - Fan
     - 7 Nm (0.7 m.kg, 5.1 ft.lb)
<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Starter clutch and starter motor removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>1</td>
<td>Plate</td>
<td>1</td>
<td>Refer to “COVERS AND PANEL” section in chapter 3.</td>
</tr>
<tr>
<td>2</td>
<td>Plain washer</td>
<td>1</td>
<td>Refer to “C.D.I. MAGNETO” section.</td>
</tr>
<tr>
<td>3</td>
<td>Idle gear</td>
<td>1</td>
<td>Refer to “REAR WHEEL” section in chapter 6.</td>
</tr>
<tr>
<td>4</td>
<td>Plain washer</td>
<td>2</td>
<td>Refer to “KICKER STARTER” section.</td>
</tr>
<tr>
<td>5</td>
<td>Starter clutch</td>
<td>1</td>
<td>Refer to “V-BELT, PRIMARY SHEAVE” section.</td>
</tr>
</tbody>
</table>
### Order List

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Gear boss</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Bearing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Starter wheel gear</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Plate washer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Starter motor</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Starter motor coupler</td>
<td>2</td>
<td>Reverse the removal procedure for installation</td>
</tr>
</tbody>
</table>

**Remarks:**

Reverse the removal procedure for installation.
STARTER CLUTCH AND STARTER MOTOR

STARTER CLUTCH AND GEARS INSPECTION

1. Inspect:
   • Starter clutch
     Push the dowel pin to arrow direction.
     Unsmooth operation→Replace starter clutch assembly.

2. Inspect:
   • Starter wheel gear teeth ①
   • Idle gear teeth ②
     Burrs/Chips/Roughness/Wear→Replace.

3. Inspect:
   • Starter clutch operation

   Clutch operation checking steps:
   • Install the starter wheel gear to the starter clutch, and hold the starter clutch.
   • When turning the wheel gear clockwise A, the starter clutch and the wheel gear should be engaged.
     If not the starter clutch is faulty. Replace it.
   • When turning the wheel gear counter clockwise B, the wheel gear should turn freely. If not, the starter clutch is faulty. Replace it.

----------------------------------------
### C.D.I. MAGNETO

#### C.D.I. MAGNETO removal

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>C.D.I. magneto removal</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Rear carrier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tail cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Left side cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Right side cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Center cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Lower cowling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Air shroud 1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Fan /O-ring</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Magneto rotor</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bind</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Couplers (magneto leads)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Stator coil</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Woodruff key</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Gasket (Magneto cover)</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

Refer to “COVER AND PANEL” section in chapter 3.
**C.D.I. MAGNETO REMOVAL**

1. Remove:
   - Nut ① (rotor)
   - Plain washer

**NOTE:**

Hold the rotor to loosen the nut by the flywheel holding tool ②.

<table>
<thead>
<tr>
<th>Rotor holding tool:</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU-01235</td>
</tr>
</tbody>
</table>

2. Remove:
   - Rotor ①
   - Woodruff key

   Use the flywheel magneto puller ②.

<table>
<thead>
<tr>
<th>Flywheel puller:</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU-01189</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Stator assembly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasket</td>
</tr>
</tbody>
</table>

**C.D.I. MAGNETO INSTALLATION**

1. Install:
   - Gasket ①

2. Apply:
   - Lithium soap base grease
     (to oil seal)

3. Pass the C.D.I. magneto lead through the crankcase hole.

4. Install:
   - Stator assembly ②
   - 8 Nm (0.8 m·kg, 5.8 ft·lb)

5. Install:
   - Woodruff key
   - C.D.I. magneto Rotor ②
   - Plain washer
   - Nut ①
   - 38 Nm (3.8 m·kg, 31.1 ft·lb)

**NOTE:**

- Clean the tapered portion of the crankshaft and the magneto rotor hub.
- When installing the magneto rotor, make sure the woodruff key is properly seated in the keyway of the crankshaft.
- Do not allow the rotor holding tool to touch the projection on the magneto rotor.
<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Autolube pump removal</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>C.D.I. magneto</td>
<td>1</td>
<td>Refer to “C.D.I. magneto” section.</td>
</tr>
<tr>
<td>3</td>
<td>Air shroud 2.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Circlip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pump drive gear</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Oil hose</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Oil delivery hose</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Autolube pump ass’y</td>
<td>1</td>
<td>Refer to “Autolube pump installation” section.</td>
</tr>
</tbody>
</table>

Removal procedure for installation:

1. Remove the parts in order.
2. Refer to “C.D.I. magneto” section.
3. Reverse the removal procedure for installation.
AUTOLUBE PUMP INSTALLATION

CAUTION:

After installing autolube pump, it must be bleeded.

1. Install
   - Pin ①
   - Pump drive gear ②
   - Circlip ③ New

2. Apply:
   - Lithium soap base grease
     (to O-ring)

3. Install:
   - Autolube pump ① ④ Nm(0.4m.kg, 2.8ft.lb)

4. Apply:
   - Lithium soap base grease
     (to autolube pump gear ②,③)

15 cc (0.92 cu • in)
### TRANSMISSION

#### Transmission Removal

<table>
<thead>
<tr>
<th>Order</th>
<th>Job Name/Part Name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Transmission case cover</td>
<td>1</td>
<td>Remove the parts in order. Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Gasket (transmission case cover)</td>
<td>1</td>
<td>Refer to “REAR WHEEL/REAR BRAKE” section in chapter 7.</td>
</tr>
<tr>
<td>3</td>
<td>Dowel pin</td>
<td>2</td>
<td>Refer to “V-BELT, CLUTCH, SECONDARY/PRIMARY SHEAVE” section</td>
</tr>
<tr>
<td>4</td>
<td>Primary drive gear</td>
<td>1</td>
<td>Refer to “TRANSMISSION OIL REPLACEMENT” section in chapter 3.</td>
</tr>
<tr>
<td>5</td>
<td>Drive gear</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Circlip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Main axle</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Drain the transmission oil.

Refer to “V-BELT, CLUTCH, SECONDARY/PRIMARY SHEAVE” section

Refer to “TRANSMISSION OIL REPLACEMENT” section in chapter 3.
<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Drive axle</td>
<td>1</td>
<td>Reverse the removal procedure for install-</td>
</tr>
</tbody>
</table>

### Diagram Notes
- New components are marked with the label "New".
- Torque values are noted as follows:
  - 12Nm (1.2 m.kg, 8.4 ft.lb)
  - 18Nm (1.8 m.kg, 13 ft.lb)
### Order | Job name/Part name | Q’ty | Remarks
---|---|---|---
**Crankcase and Reed valve removal** | | | Remove the parts in order.
Engine removal | | | Refer to “ENGINE REMOVAL” section.
Cylinder head, cylinder, piston | | | Refer to “CYLINDER HEAD CYLINDER AND PISTON” section.
Crankcase cover (left) | | | Refer to “KICK STARTER AND CRANK-CASE COVER (LEFT)” section.
V-belt, clutch, secondary/primary sheave | | | Refer to “V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE” section.
C.D.I. magneto | | | Refer to “C.D.I. MAGNETO” section.
Starter clutch, starter motor | | | Refer to “STARTOR CLUTCH AND STARTOR MOTOR” section.
Autolube pump | | | Refer to “AUTOLUBE PUMP” section.
Rear wheel | | | Refer to “REAR WHEEL AND REAR BRAKE” section in chapter 6.
Transmission | | | Refer to “TRANSMISSION” section.
### CRANKCASE AND REED VALVE

#### Order

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Intake manifold</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Reed valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Valve seat gasket</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Stopper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Crankcase 2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Dowel pin</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Engine mount spacer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Circlip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Bearing</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oil seal</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

Reverse the removal procedure for installation.
CRANKCASE (RIGHT) REMOVAL

1. Remove:
   - Oil seal stopper
   - Screws (crankcase) 9 Nm (0.9 kg, 6.5 ft.lb)

   NOTE:
   Loosen each screw 1/4 turn, and remove them after all are loosened.

2. Attach:
   - Crankcase separating tool

   NOTE:
   Fully tighten the tool holding bolts, but make sure the tool body is parallel with the case. If necessary, one screw may be backed out slightly to level tool body.

3. Remove
   - Crankcase (right)
   As pressure is applied, alternately tap on the engine mounting bosses.

CHECKING THE CRANKCASE

1. Thoroughly wash the crankcase halves in a mild solvent.
2. Thoroughly clean all the gasket surfaces and crankcase mating surfaces.
3. Check:
   - Crankcase
     Cracks/damage → Replace.
   - Oil delivery passages
     Obstruction → Blow out with compressed air.

CHECKING THE BEARINGS AND OIL SEALS

1. Check:
   - Bearings
     Clean and lubricate the bearings, then rotate the inner race with your finger.
     Rough movement → Replace.

2. Check:
   - Oil seals
     Damage/wear → Replace.
REED VALVE INSPECTION

1. Measure:
   - Valve stopper height
     Out of specification → Adjust stopper/Replace valve stopper.

   Valve stopper height
   6.0~6.4 mm (0.24~0.25 in)

2. Measure:
   - Reed valve clearance
     Out of specification → Replace reed valve.

   Reed valve clearance
   Less than 0.2 mm (0.0079 in)

CRANKCASE (RIGHT) INSTALLATION

1. Install:
   - Dowel pins
   - Engine mount spacer

2. Apply:
   - Sealant
     To the mating surfaces of both case halves.

   Quick gasket®:
   ACC-1100-15-01

NOTE:
Do not allow any sealant to come into contact with the oil galley.

3. Attach:
   - Crankshaft installing tool

   Crankshaft installation set
   YU-90050
   Crankshaft installer adapter
   (M10) YU-90062
4. Tighten:
   - Crankcase holding screws
     \[12 \text{Nm}(1.2 \text{m.kg}, 8.4 \text{ft.lb})\]

**NOTE:**
Tighten the crankcase holding screws in stage, using a crisscross pattern.

5. Check:
   - Crankshaft operation
     Unsmooth operation  Repair.

6. Install:
   - Oil seal (right crank case) ① New
     Apply grease on to oil seal lip.

7. Install:
   - Oil seal stopper plate ①
     \[9 \text{Nm}(0.9 \text{m.kg}, 6.5 \text{ft.lb})\]

8. Install:
   - Gasket
   - Reed valve
   - Intake manifold ①
     \[11 \text{Nm}(1.1 \text{m.kg}, 8 \text{ft.lb})\]
### CRANKSHAFT

#### CRANKSHAFT

Remove the parts in order. Refer to “CRANK CASE AND REED VALVE” section.

Reverse the removal procedure for installation.

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Crankshaft</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bearing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Oil seal</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Crankcase cover (left)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Right crankcase removal
CRANKSHAFT REMOVAL
1. Attach:
   • Crankcase separating tool

2. Remove:
   • Crankshaft

NOTE:
Make sure the crankcase separating tool is centered over the crankshaft assembly.

CRANKSHAFT INSPECTION
1. Measure:
   • Runout limit "C"
   • Connecting rod big end side clearance "D"
   • Small end free play limit "F"

Out of specification→Replace.
Use V-blocks, dial gauge and thickness gauge.

Runout limit "C":
0.03 mm(0.0012 in)

Connecting rod big end side clearance "D":
0.2 ~ 0.5 mm(0.0079 ~ 0.020 in)

Small end free play "F":
0.4 ~ 0.8 mm(0.016 ~ 0.031 in)

2. Inspect:
   • Bearings (crankshaft)
   Spin the bearing inner race.
   Excessive play/Roughness→Replace.
   Pitting/Damage→Replace.
CRANKSHAFT INSTALLATION

1. Attach:
   - Crankshaft Installing Tool

   ![Crankshaft installation set](image)
   - Crankshaft installation set
     YU-90050
   - Crankshaft installer adapter (M10)
     YU-90062

2. Install:
   - Crankshaft
     (to the crankcase)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

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   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Crankshaft installation](image)

   ![Cranksha...
Carburetor removal
Battery box cover
Grip
End cover
Left/Right cover
Center cover
1 Air cleaner case assembly
2 Auto choke lead coupler
3 Fuel hose/vacuum hose
4 Oil delivery pipe assembly
5 Carburetor
6 Throttle cable

Q’ty
1
1
1
1
1
1

Remarks
Remove the parts in order.
Refer to “COVER AND PANEL” section in CHAPTER 3.
Reverse the removal procedure for installation.
## CABURETOR DISASSEMBLY

### Order

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q'ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Carburetor disassembly</td>
<td>1/1</td>
<td>Disassemble the parts in order.</td>
</tr>
<tr>
<td>1</td>
<td>Throttle cable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Throttle valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Needle set</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Carburetor top cover/o-ring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Throttle stop screw</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Auto choke unit assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Float chamber/Seal ring</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Float pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Float/Needle valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Main jet</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Pilot jet</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Main nozzle</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Carburetor body</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

Ordered: 1-13; Reverse removal for installation.
CARBURETOR INSPECTION

1. Check:
   • Carburetor body
   • Float chamber
   • Jet housing
     Cracks/damage → Replace.

2. Check:
   • Fuel passages
     Obstruction → Clean.

   a. Wash the carburetor in a petroleum-based solvent. Do not use any caustic carburetor cleaning solution.
   b. Blow out all of the passages and jets with compressed air.

3. Check:
   • Float chamber body
     Dirt → Clean.

4. Check:
   • Float chamber rubber gasket
     Cracks/damage/wear → Replace.

5. Check:
   • Float
     Damage → Replace.

6. Check:
   • Needle valve ①
     Damage/obstruction/wear → Replace the needle valve.

7. Check:
   • Throttle valve ①
     Damage/scratches/wear → Replace.
8. Check:
- Jet needle kit
- Main nozzle
- Main jet
- Pilot jet
  Bends/damage/wear → Replace.
  Obstruction → Clean.
  Blow out the jets with compressed air.

9. Check:
- Throttle valve movement
  Insert the throttle valve into the carburetor
  Body and move it up and down.
  Tightness → Replace the piston valve.

10. Check:
- Vacuum hose
- Fuel hose
  Cracks/damage/wear → Replace.
  Obstruction → Clean.
  Blow out the hoses with compressed air.

11. Measure:
- Float height
  Out of specification → Inspect needle valve, float and valve seat.

**Float height measurement steps:**
- Install the needle valve, float and float pin to the carburetor body.
- Hold the carburetor in an upside down position.
- Measure the distance between the mating surface of the float chamber (gasket removed) and top of the float using a gauge.
CARBURETOR

NOTE: The float arm should be resting on the needle valve, but not compressing the needle valve.

- If the float height is not within specification, inspect the needle valve, float and valve seat.
- If it is worn, replace it.

NOTE: The float height is properly adjusted at the Yamaha factory. Never attempt to adjust it.

CARBURETOR ASSEMBLY
To assemble the carburetor, reverse the disassembly procedures. Note the following points.

CAUTION:
- Before reassembling, wash all parts in clean gasoline.
- Always use a new gasket.
1. Install:
   • Throttle cable

2. Install:
   • Carburetor assembly

**NOTE:** 
Align the projection ③ with the projections ①.

**FUEL LEVEL ADJUSTMENT**

1. Measure:
   • Fuel level ③
     Out of specifications → Adjust.

   **Fuel level ③:**
   \[3.0\text{~}4.0 \text{~mm (0.12~0.16 in)}}\]
   (Below the float chamber line)

**Measurement steps:**
- Place the scooter on a level surface.
- Use a garage jack under the engine to ensure that the carburetor is positioned vertically.
- Connect the fuel level gauge ① to the drain pipe ②.
- Loosen the drain screw ③.
- Measure the fuel level ③ with the gauge.
- If the fuel level is incorrect, adjust the fuel level:
  • Remove the float chamber float and the needle valve.
  • Inspect the needle valve.
  • If it is worn, replace it.
AUTO CHOKE INSPECTION
(Ambient temperature lower than 45°C)

1. Remove:
   - Carburetor

2. Inspect:
   - Autochoke unit
     Connect a suitable hose to the starter, and blow it with the mouth etc.
     Possible→Good condition.
     Impossible→Replace auto choke unit.

3. Inspect:
   - Auto choke unit (with battery)

Inspection and adjustment steps:
- Connect auto choke unit leads to the 12 V battery for 5 minutes.
  Black terminal→12 V battery (+) ①
  Black terminal→12 V battery (−) ②
- Connect a suitable hose to the starter, and blow it with the mouth etc.
  Possible→Replace auto choke unit.
  Impossible→Good condition.
FUEL COCK INSPECTION

1. Stop the engine.

2. Remove:
   - Rear carrier
   - Tail cover
   - Left side cover
   - Battery box cover
   Refer to “COVER AND PANEL” section in chapter 3.

3. Inspect:
   - Fuel cock

Fuel cock inspection steps:
- Disconnect the fuel hose (①).
- Place the receptacle under the fuel hose end.
- If fuel stops flowing out in a few seconds, the fuel cock is in good condition. If not, clean or replace the fuel cock.
- Disconnect the vacuum hose (②) and breathe in the vacuum hose with the mouth etc. for vacuum.
- If fuel flows out of the fuel hose under vacuum and stops under non-vacuum, the fuel cock is in good condition. If not, clean or replace the vacuum hose, fuel hose and fuel cock.

4. Install:
   - Battery box cover
   - Left side cover
   - Tail cover
   - Rear carrier
## FRONT WHEEL AND BRAKE DISC

### CHASSIS

#### FRONT WHEEL AND BRAKE DISC

![Diagram of front wheel and brake disc](image)

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speedometer cable</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Front brake hose holder</td>
<td>1</td>
<td>Securely support the scooter so there is no danger of it falling over.</td>
</tr>
<tr>
<td>3</td>
<td>Brake caliper</td>
<td>1</td>
<td>Refer to “FRONT WHEEL INSTALLATION” section.</td>
</tr>
<tr>
<td>4</td>
<td>Wheel axle</td>
<td>1</td>
<td>Refer to “FRONT WHEEL ASSEMBLY” section.</td>
</tr>
<tr>
<td>5</td>
<td>Front wheel assembly</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>6</td>
<td>Gear unit assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Collar</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Brake disc</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
## FRONT WHEEL DISASSEMBLY

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Front wheel disassembly</td>
<td>1 1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>②</td>
<td>Oil seal</td>
<td>1 1</td>
<td>Refer to “FRONT WHEEL DISASSEMBLY/ASSEMBLY” section.</td>
</tr>
<tr>
<td>③</td>
<td>Bearing</td>
<td>1 1</td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Collar</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Spacer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Bearing</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Reverse the removal procedure for installation.
FRONT WHEEL AND BRAKE DISC

FRONT WHEEL DISASSEMBLY

1. Remove:
   • Bearing ①
   • Spacer
     Remove the bearing using a general bearing puller ②.

CAUTION:

Handle the wheel with care not to damage the brake disc. If the brake disc is damaged, replace.

FRONT WHEEL INSPECTION

1. Inspect:
   • Front wheel axle
     (by rolling it on a flat surface)
     Bends⇒Replace.

   WARNING

Do not attempt to straighten a bent wheel axle.

   Wheel axle bending limit:
   0.25 mm (0.0098 in)

2. Inspect:
   • Front tire
     Wear/damage⇒Replace.
     Refer to “TIRE INSPECTION” in CHAPTER 3.
   • Front wheel
     Refer to “WHEEL INSPECTION” in CHAPTER 3.

3. Measure:
   • Front wheel runout
     Over the specified limits⇒Replace.

   Front wheel runout limits:
   Radial ①: 1.0 mm (0.04 in)
   Lateral ②: 1.0 mm (0.04 in)

4. Inspect:
   • Front wheel bearings
     Bearings allow free play in the wheel hub or the wheel does not turn smoothly⇒Replace.
   • Oil seals
     Wear / damage⇒Replace.
4. Inspect:
   • Collar
     Grooved wear→Replace the collar and
     the oil seal as a set.

BRAKE DISC INSPECTION
1. Measure:
   • Brake disc deflection

   ![Measurement Diagram]

   Maximum deflection:
   0.15 mm (0.0059 in)

   Out of specification→Replace.

2. Measure:
   • Brake disc thickness

   ![Measurement Diagram]

   Brake disc thickness:
   4.0 mm (0.16 in)
   Minimum thickness:
   3.5 mm (0.14 in)

   Out of specification→Replace.

FRONT WHEEL ASSEMBLY
1. Install:
   • Bearing
   • Collar
   • Spacer
   • Bearing
   • Oil seal

   ![Assembly Diagram]

   NOTE:
   • Apply the lithium soap base grease on the
   bearing and oil seal lip when installing.
   • Use a socket that matches the outside diam-
   eter of the race of the bearing.
   • Always use a new oil seal.
   • Install the oil seal with its manufacturer’s
   marks or numbers facing outward.

   CAUTION:
   Do not strike the inner race of balls of the bear-
   ing. Contact should be made only with the
   outer race.
2. Install:
   • Brake disc ① [20 Nm (2.0 m.kg, 14 ft.lb)]

   **NOTE:**
   Tighten the bolts (brake disc) in stage using a crisscross pattern.

---

**FRONT WHEEL INSTALLATION**

Reverse the "REMOVAL" procedure.

Note the following points.

1. Lubricate:
   • Front wheel axle
   • Bearings
   • Oil seal (lips)
   • Drive/driven gear (speedometer)

   **Recommended lubricant:**
   Lithium soap base grease

2. Install:
   • Speedometer gear unit ①

   **NOTE:**
   Make sure that the wheel hub and the speedometer gear unit are installed with the three projections meshed into the two slots.

3. Install:
   • Front wheel

   **NOTE:**
   Make sure that the slot in the speedometer gear unit fits over the stopper on the front fork outer tube.

4. Tighten:
   • Front wheel axle ①
   • Axle nut (front wheel axle) [70 Nm (7.0 m.kg, 51 ft.lb)]

   **CAUTION:**
   Before tightening the axle nut, stroke the front fork several times to check for proper fork operation.

   **WARNING**
   Make sure that the brake hose is routed properly.
WHEEL STATIC BALANCE ADJUSTMENT

NOTE:
• After replacing the tire and/or rim, the wheel static balance should be adjusted.
• Adjust the front wheel static balance with the brake disc installed.

1. Remove:
   • Balancing weight

2. Set:
   • Wheel
     (on a suitable stand)

3. Find:
   • Heavy spot

Procedure:
   a. Spin the wheel and wait for it to rest.
   b. Put an “X1” mark on the wheel’s bottom spot.
   c. Turn the wheel so that the “X1” mark is 90° up.
   d. Release the wheel and wait for it to rest. Put an “X2” mark on the wheel’s bottom spot.
   e. Repeat the above b., c., and d. several times until all marks come to the same spot.
   f. This spot is the wheel’s heavy spot “X”.

4. Adjust:
   • Wheel static balance

Adjusting steps:
• Install a balancing weight ① on the rim exactly opposite to the heavy spot “X”.

NOTE:  
Start with the smallest weight.

• Turn the wheel so that the heavy spot is 90° up.
• Check that the heavy spot is at rest there. If not, try another weight until the wheel is balanced.
5. Check:
   • Wheel static balance

Checking steps:
   • Turn the wheel so that it comes to each point as shown.
   • Check that the wheel is at rest at each point. If not, readjust the front wheel static balance.
### FRONT BRAKE

#### BRAKE PAD

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brake pad removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Caliper support bolt</td>
<td>1</td>
<td>Refer to &quot;BRAKE PAD REPLACEMENT&quot; section.</td>
</tr>
<tr>
<td>3</td>
<td>Caliper</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Brake pad</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pad spring</td>
<td>2</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

23Nm (2.3 m.kg, 16.6 ft.lb)

Remove the parts in order. Refer to "BRAKE PAD REPLACEMENT" section. Reverse the removal procedure for installation.
CAUTION: 

Disc brake components rarely require disassembly. DO NOT:

• Disassemble components unless absolutely necessary.
• Use solvents in internal brake component.
• Use contaminated brake fluid for cleaning.
• Use only clean fluid.
• Allow brake fluid to come in contact with the eyes otherwise eye injury may occur.
• Allow brake fluid to contact painted surfaces or plastic parts otherwise damage may occur.
• Disconnect any hydraulic connection otherwise the entire system must be disassembled, drained, cleaned, and then properly filled and bled after reassembly.

BRAKE PAD REPLACEMENT

NOTE:

It is not necessary to disassemble the brake caliper and brake hose to replace the brake pads.

1. Loosen:
   • Retaining bolt ①
2. Remove:
   • Brake caliper ②
   • Holder (brake hose) ③
3. Remove:
   • Retaining bolt
   • Pads ①
   • Pad spring ②

NOTE:

• Replace the pad spring if the pad replacement is required.
• Replace the pads as a set if either is found to be worn to the wear limit.

Wear limit ③:
0.8 mm (0.03 in)
4. Install:
   • Pad springs
   • Brake pads (new)

Installation steps:
- Connect a suitable hose ① tightly to the caliper bleed screw ②. Then, place the other end of this hose into an open container.
- Loosen the caliper bleed screw and push the piston ③ into the caliper by your finger.
- Tighten the caliper bleed screw.
  \[6 \text{ Nm (0.6 m.kg, 4.3 ft.lb)}\]
- Install the pad spring (new) and brake pad (new) ④
- Tighten retaining bolt ⑤
  \[23 \text{ Nm (2.3 m.kg, 16.6 ft.lb)}\]
- Install brake hose holder ⑥
  \[7 \text{ Nm (0.7 m.kg, 5.15 ft.lb)}\]
- Install caliper ⑦
  \[23 \text{ Nm (2.3 m.kg, 16.6 ft.lb)}\]

5. Inspect:
- Brake fluid level
  Refer to the “BRAKE FLUID INSPECTION” section in the CHAPTER 3.
  ① “LOWER” level line
6. Check:
   • Brake lever operation
     A softy or spongy feeling Bleed→brake system.
     Refer to “AIR BLEEDING” section in the CHAPTER 3.
MASTER CYLINDER

Order | Job name/Part name | Q’ty | Remarks
--- | --- | --- | ---
Master cylinder removal | 1/1 | Remove the parts in order.
Drain the brake fluid | 1 | Refer to “BRAKE FLUID REPLACEMENT” section in CHAPTER 3.
1 | Brake lever/compression spring | 1 | Refer to “MASTER CYLINDER INSTALLATION” section.
2 | Brake switch | 1 |
3 | Union bolt | 1 |
4 | Copper washer | 2 |
5 | Brake hose | 1 |
6 | Master cylinder bracket | 1 |
7 | Master cylinder | 1 |

Reverse the removal procedure for installation.

Notice:
- 9Nm(0.9 m.kg, 6.5 ft.lb)
- 20Nm(2.0 m.kg, 14 ft.lb)
### MASTER CYLINDER DISASSEMBLY

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Master cylinder disassembly</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Master cylinder boot</td>
<td>1</td>
<td>Refer to &quot;MASTER CYLINDER ASSEMBLY&quot; section.</td>
</tr>
<tr>
<td>3</td>
<td>Circlip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Master cylinder kit</td>
<td>1</td>
<td>Reverse the disassembly procedure for assembly.</td>
</tr>
<tr>
<td>5</td>
<td>Spring</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*New*
MASTER CYLINDER INSPECTION

1. Inspect:
   - Master cylinder kit
     Wear/scratches→Replace the master cylinder assembly.
   - Master cylinder boot
     Cracks/damage→Replace.

2. Inspect:
   - Master cylinder
     Scratches/wear/damage→Replace the master cylinder assembly.

3. Inspect:
   - Diaphragm
     Wear/damage→Replace.

MASTER CYLINDER ASSEMBLY

**WARNING**

- All internal brake components should be cleaned and lubricated with new brake fluid only before installation.

| Recommended brake fluid:       |
| DOT #4 (or DOT #3)             |

- Replace the piston seals and dust seals whenever a master cylinder is disassembled.

1. Install:
   - Cylinder cup
   - Master cylinder piston
     Install cylinder cup by using cylinder cup installer.

| Cylinder cup installer set:     |
| 90890-01996                    |
2. Install:
   - Spring ①
     Install the spring with its smaller diameter to the master cylinder piston.
   - Master cylinder kit ②

3. Install:
   - Circlip ① New
     Install the circlip securely into the master cylinder groove.
   - Master cylinder boot ②

**YP-6**

**MASTER CYLINDER INSTALLATION**
1. Install:
   - Master cylinder ①
   - Master cylinder bracket ②
     $\leq 9 \text{ Nm (0.9 m.kg, 6.5 ft.lb)}$

**CAUTION:**
- Install the master cylinder bracket ② with the “UP” mark ② facing upward.
- Align the end of the holder with the punch mark b on the handle bar.
2. Air bleed:
   • Brake system
     Refer to “AIR BLEEDING” section in CHAPTER 3.
   **WARNING**
   • Use only designated quality brake fluid:
     Otherwise, the rubber seals may deteriorate, causing leakage and poor brake performance.
   • Refill with the same type of brake fluid:
     Mixing fluids may result in a harmful chemical reaction and lead to poor performance.
   • Be careful that water does not enter the significantly lower the boiling point of the fluid may result in vapor lock.

3. Inspect:
   • Brake operation
CALIPER

Order | Job name/Part name | Q'ty | Remarks
--- | --- | --- | ---
1 | Caliper removal | 1 | Remove the parts in order. Refer to “BRAKE FLUID REPLACEMENT” section in CHAPTER 3.
2 | Drain the brake fluid | 1 |  
1 | Union bolt | 1 | Refer to “CALIPER INSTALLATION” section.
2 | Copper washer | 2 |  
3 | Brake hose | 1 | Reverse the removal procedure for installation.
4 | Caliper support bolt | 1 |  
5 | Caliper assembly | 1 |  

23Nm (2.3 m.kg, 16.6 ft.lb)
### CALIPER DISASSEMBLY

Remove the parts in order.

Refer to "BRAKE CALIPER DISASSEMBLY/ASSEMBLY" section.

Reverse the disassembly procedure for assembly.

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>①</td>
<td>Caliper disassembly</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>②</td>
<td>Caliper bracket</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>③</td>
<td>Brake pad</td>
<td>2</td>
<td>Refer to &quot;BRAKE CALIPER DISASSEMBLY/ASSEMBLY&quot; section.</td>
</tr>
<tr>
<td>④</td>
<td>Pad spring</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Caliper piston</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Dust seal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑦</td>
<td>Piston seal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑧</td>
<td>Bleed screw</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

6Nm (0.6 m.kg, 4.3 ft.lb)
BRAKE CALIPER DISASSEMBLY

NOTE:
Before disassembling either brake caliper, drain the brake fluid from the brake hose, master cylinder, brake caliper and reservoir tank.

1. Remove:
   • Brake caliper piston

Removal steps:
• Blow compressed air into the hose joint opening to force out the caliper piston from the brake caliper body.

⚠️ WARNING
• Never try to pry out the caliper piston.
• Cover the caliper piston with a rag. Be careful not to get injured when the piston is expelled from the master cylinder.

CAUTION:
Carefully remove the caliper piston to prevent damage.

2. Remove:
   • Dust seal ①
   • Piston seal ②

When removing, push the seals by your finger.

CAUTION:
• Do not use a sharp instrument. Remove seals by your finger.
• Do not re-use removed parts.

CALIPER INSPECTION
1. Inspect:
   • Caliper cylinder ①
   • Caliper piston ②
   Scratches, wear→Replace caliper assembly.
BRAKE CALIPER ASSEMBLY

**WARNING**

- All internal brake components should be cleaned and lubricated with new brake fluid only before installation.

**Recommended brake fluid:**
DOT #4 (or DOT #3)

- Replace the caliper piston seals whenever a brake caliper is disassembled.

1. Install:
   - Piston seal ① **New**
   - Dust seal ② **New**

2. Install:
   - Caliper piston ①
     Apply brake fluid to the outer surface and install.

**CAUTION:**
- Do not force.
- Use care to prevent damage on caliper piston.

BRAKE CALIPER INSTALLATION

1. Install:
   - Caliper ①
   - Caliper support bolt [23Nm (2.3 m.kg, 16.6 ft.lb)]
   - Brake hose ②
   - Copper washer ③ **New**
   - Union bolt ④ [25Nm (2.5 m.kg, 18 ft.lb)]

**CAUTION:**
When installing the brake hose to the caliper, lightly touch the brake hose with the stopper ③ on the caliper.
### Rear Wheel and Rear Brake

#### Rear Wheel

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Muffler assembly/Gasket</td>
<td>1/1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Nut/Plain washer</td>
<td>1</td>
<td>Place the scooter on a suitable stand so that the rear wheel is elevated.</td>
</tr>
<tr>
<td>3</td>
<td>Rear wheel assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Plain washer</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**

Reverse the disassembly procedure for installation.

- **120Nm (12 m.kg, 87 ft.lb)**
- **26Nm (2.6 m.kg, 18.2 ft.lb)**
- **9Nm (0.9 m.kg, 6.5 ft.lb)**

**New**
REAR BRAKE

10Nm (1.0 m.kg, 7.2 ft.lb)

Order | Job name/Part name       | Q’ty | Remarks

1     | Adjuster                  | 1    | Reverse the removal procedure for installation.
2     | Brake cable               | 1    |
3     | Pin                       | 1    |
4     | Return spring             | 1    |
5     | Brake shoe                | 1    |
6     | Camshaft lever            | 1    |
7     | Wear indicator            | 1    |
8     | Brake camshaft            | 1    |
REAR WHEEL AND REAR BRAKE

REAR WHEEL INSPECTION
1. Inspect:
   • Rear wheel axle
   • Rear wheel
   • Rear wheel bearings
   • Oil seals
     Refer to "FRONT WHEEL".
2. Measure:
   • Rear wheel runout
     Refer to "FRONT WHEEL".

REAR BRAKE INSPECTION
1. Inspect:
   • Brake lining surface
     Glazed areas→Polish.
     Use coarse sand paper.

   NOTE:
   After polishing, wipe the polished particles with a cloth.

2. Measure:
   • Brake lining thickness (a)

   Brake lining thickness (a):
   Standard:
   4 mm (0.16 in)
   Limit:
   2 mm (0.08 in)

   Out of specification→Replace.
   Measuring points “↑”

   NOTE:
   Replace the brake shoes as a set, if either is worn to the wear limit.

3. Measure:
   • Brake drum inside diameter (a)

   Brake drum inside diameter:
   Standard:
   130 mm (5.12 in)
   Limit:
   131 mm (5.16 in)
4. Inspect:
   • Brake drum inner surface
   • Oil/scratches→Repair.
   • Oil
     Use a rag soaked in lacquer thinner or solvent.
   • Scratches
     Use an emery cloth (lightly and evenly polishing)
5. Inspect:
   • Camshaft face.
     Wear→Replace.

**WARNING**

When inspecting the brake lining, do not spill oil or grease on the brake lining.

---

**REAR BRAKE INSTALLATION**

1. Install:
   • Camshaft ①
   • Indicator plate ②

**Installation steps:**
   • Set the camshaft with its punched mark ③ facing the direction as shown.
   • Align the projection ⑤ on the indicator plate with the camshaft notch and install.
   • Check the proper position of the brake shoe.

2. Install:
   • Camshaft lever ①

**NOTE:**

Set the camshaft with its punched mark ③ facing the direction on the cam shaft lever ⑥.
<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Handlebar removal</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>1</td>
<td>Left/Right bake mirror</td>
<td>1</td>
<td>Refer to “COVERS AND PANEL” IN CHAPTER 3.</td>
</tr>
<tr>
<td>2</td>
<td>Front protector bar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Front/Rear handlebar cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Upper cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Left/Right flasher</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Brake master cylinder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Front brake switch</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Handlebar switch (Right)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Handlebar switch (Left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Throttle cable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Right grip</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Brake cable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Rear brake switch</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Handlebar switch (Left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Bind</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Order</td>
<td>Job name/Part name</td>
<td>Q’ty</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------</td>
<td>----------------------------</td>
<td>------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>10</td>
<td>Wire harness strap</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Brake hose</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Handlebar comp.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Left grip</td>
<td>1/1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Tightening Torque:***

- 9Nm (0.9 m.kg, 6.5 ft.lb)
- 43Nm (4.3 m.kg, 37 ft.lb)
HANDLEBAR INSTALLATION

1. Clean:
   • Steering shaft

**WARNING**
Proper cables and leads routing is essential to issue safe scooter operation.

2. Install:
   • Handlebar
   • Bolt
   • Nut
   \[43\text{Nm}(4.3\text{ m.kg, 37ft.lb})\]

**NOTE:** Match the bolt on to the steering column dent.

**CAUTION:**
There must be a space after tightening bolt.

3. Install:
   • Band

**NOTE:**
Clamp the wire harness.

4. Apply:
   • Lithium soap base grease (to throttle cable end and handlebar right end).

5. Install:
   • Handlebar switch (right)

**NOTE:**
Insert the projection into the hole on the handlebar comp.
6. Install:
   • Handlebar switch (left) ①

   **NOTE:**
   Insert the projection ① into the hole ② on the handlebar comp.

7. Install:
   • Master cylinder

   **NOTE:**
   Match the slot with the punched mark ② on the handlebar comp.
# Steering

## Torque Specifications

- **38Nm (3.8 m.kg, 27 ft.lb)**
- **22Nm (2.2 m.kg, 16 ft.lb)**
- **66Nm (6.6 m.kg, 47.8 ft.lb)**
- **40Nm (4.0 m.kg, 29 ft.lb)**

## Order and Part List

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Steering removal</td>
<td></td>
<td>Remove the parts in order</td>
</tr>
<tr>
<td>1</td>
<td>Ring nut 1/ Special washer</td>
<td>1/1</td>
<td>Refer to “HANDLEBAR” section.</td>
</tr>
<tr>
<td>2</td>
<td>Ring nut 2/ Rubber washer</td>
<td>1/1</td>
<td>Refer to “FRONT WHEEL AND BRAKE DISC” section.</td>
</tr>
<tr>
<td>3</td>
<td>Ring nut 3</td>
<td>1</td>
<td>Refer to “STEERING REMOVAL/INSTALLATION” section.</td>
</tr>
<tr>
<td>4</td>
<td>Under bracket</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>5</td>
<td>Front fork (Left/Right)</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Bearing cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Ball race</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Ball (Upper/Lower)</td>
<td>22/19</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Ball race</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Refer to “HANDLEBAR” section.
Refer to “FRONT WHEEL AND BRAKE DISC” section.
Refer to “STEERING REMOVAL/INSTALLATION” section.
STEERING REMOVAL

**WARNING**

- Securely support the scooter so that there is no danger of it falling over.
- Stand the scooter on a level surface.

1. **Removal:**
   - Ring nut 1
   - Special washer
   - Ring nut 2
   - Rubber washer
   - Ring nut 3
   - Bearing cover
   - Ball race
   - Ball
   - Front fork assembly

**NOTE:**

- Remove the ring nuts by steering nut wrench.

![Steering nut wrench](YU-33975)

- Hold the lower bracket by hand, then remove by using the steering nut wrench.
- Do not loss the balls (Upper: 22 pcs, Lower: 19 pcs).

2. **Remove**
   - Front fork assembly
   - Refer to “FRONT FORK” section.

3. **Remove**
   - Ball race

**Ball race replacement steps:**

- Remove the ball races on the head pipe using long rod and the hammer as shown.
- Remove the ball races on the under bracket using the floor chisel and the hammer as shown.
STEERING INSPECTION

1. Wash the bearing races with a solvent.

2. Inspect:
   - Ball race
   - Ball
   Pitting/Damage → Replace.

   **NOTE:**
   Always replace bearings and races as set.

3. Inspect:
   - Under bracket ①
     Crack/Bend/Damage → Replace.

   **WARNING**
   Do not attempt to straighten a bent under bracket as this may dangerously weaken the under bracket.

STEERING INSTALLATION

1. Install:
   - Ball ①

   **NOTE:**
   Upper ...... 22 pcs
   Lower ...... 19 pcs

2. Lubricate
   - Ball
   - Ball race

   Lithium soap base grease
3. Install:
- Front fork assembly (1)
- Ball race (Upper) (2)
- Bearing cover (3)
- Ring nut 3 (4)
- Rubber washer (6)
- Ring nut 2 (6)
- Special washer (7)
- Ring nut 1 (8)

**NOTE:**
Securely support the steering shaft so that there is no danger of it falling down.

4. Tighten:
- Ring nuts

**NOTE:**
Set the torque wrench (3) to ring nut wrench (1) so that they form right angle.

**WARNING**
Do not over-tightening.

- Loosen the ring nut 3 (2) 1/4 turn.
- Check the front fork by turning it lock to lock. If there is any binding, remove the front fork assembly and inspect the steering ball bearings and ball races.
- Install rubber washer (4) and ring nut 2 (5), then turn the ring nut 2 until it contacts with rubber washer.
CAUTION: 

Slots on the ring nut 2 and ring nut 3 should be align. If not, turn the ring nut 2 towards tighten direction until slots alignment.

NOTE: 

Insert the projections of the special washer into the slots.

* Install special washer 6

* Install ring nut 1 7 and tighten.  

6Nm (6.6 m.kg, 47.8 ft.lb)
### FRONT FORK

**FRONT FORK**

#### Order | Job name/Part name | Q'ty | Remarks
--- | --- | --- | ---
1 | Front fork removal | REMOVE THE PARTS IN ORDER. | Refer to “Steering” section. |
2 | Steering | | |
3 | Under fender (1) | 1 | |
4 | Speedometer cable holder (1) | 1 | |
5 | Cap bolt (2) | 2 | |
6 | Pinch bolt (2) | 2 | Refer to “FRONT FORK REMOVAL/INSTALLATION” section. |
7 | Front fork (2) | 2 | Reverse the removal procedure for installation. |

*Note:* The diagram shows the assembly with recommended torque values: 40Nm (4.0 m.kg, 29 ft.lb) and 38Nm (3.8 m.kg, 27 ft.lb).
## FRONT FORK DISASSEMBLY

### Order | Job name/Part name | Q’ty | Remarks
--- | --- | --- | ---
1 | Front fork disassembly | 1 | Remove the parts in order.
2 | Fork spring | 1 | Refer to “FRONT FORK REMOVAL/INSTALLATION” section.
3 | Band/Front fork boot | 1 | |
4 | Bolt/Copper washer | 1/1 | |
5 | Inner tube | 1 | |
6 | Damper rod | 1/1 | Refer to “FRONT FORK DISASSEMBLY/ASSEMBLY” section.
7 | Rebound spring | 1 | |
8 | Oil lock piece | 1/1 | |
9 | Oil seal clip | 1 | |
10 | Oil seal | 1 | |
11 | Outer tube | 1 | Reverse the disassembly procedure for assembly.

23Nm (2.3 m·kg, 16.6 ft·lb)
FRONT FORK REMOVAL

**WARNING**

- Securely support the scooter so there is no danger of it falling over.
- Stand the scooter on a level surface.
- Stand the scooter on its centerstand.

1. Remove:
   - Under fender

2. Remove:
   - Cap bolt
   - Pinch bolt

**WARNING**

Fork spring will jump out after removing cap bolt.

3. Remove:
   - Front fork (Left/Right)

FRONT FORK DISASSEMBLY

1. Remove:
   - Bolt (damper rod)
   
   Loosen the bolt (damper rod) while holding the damper rod with T-handle and holder.

<table>
<thead>
<tr>
<th>T-handle</th>
<th>YM-1326</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holder</td>
<td>YM-01300-1</td>
</tr>
</tbody>
</table>

6-36
2. Remove:
   - Inner tube
   - Oil lock piece
   - Damper rod
   - Rebound spring

3. Remove:
   - Oil seal

**CAUTION:**

Never reuse the oil seal.

2) Rag

YP03030
FRONT FORK INSPECTION

1. Inspect:
   - Inner tube bending

   **WARNING**
   Do not attempt to straighten a bent inner tube as this may dangerously weaken the tube.

YP----
FRONT FORK ASSEMBLY

Reverse the "DISASSEMBLY" procedure.

Note the following points.

1. Install:
   - Damper rod
   - Rebound spring
   - Oil lock piece
   - Inner tube
2. Install:
   - Inner tube \(\text{①}\) into outer tube \(\text{②}\).

3. Install:
   - Plain washer \(\text{①}\) \text{New}
   - Bolt (damper rod) \(\text{②}\)

4. Tighten:
   - Bolt (damper rod) \(\text{①}\)

   **NOTE:**
   Tighten the damper rod bolt \(\text{①}\) while holding the damper rod with a T-handle \(\text{②}\) and holder \(\text{③}\).

5. Install:
   - Oil seal \(\text{①}\) \text{New}
   - Retaining clip

   **NOTE:**
   - Before installing the oil seal \(\text{①}\), apply lithium soap base grease onto the oil seal lips.
   - Adjust the retaining clip so that it fits into the outer tube groove.

**CAUTION:**
Make sure that the oil seal numbered side faces upward.

**Fork seal driver weight:**
YM-33963
**Attachment:**
YM-01400
6. Inspect:
- Inner tube operation
  Unsmooth operation \(\rightarrow\) Disassembly and recheck.

7. Fill:
- Fork oil

![Diagram of fork filling]

Oil quantity:
- 88 cc

Recommended oil:
- Fork oil 10 W or equivalent

8. After filling up, slowly pump the fork up and down to distribute the fork oil.

9. Install:
- Front fork spring

**NOTE:**
- Install the fork spring with its smaller pitch \(\uparrow\) upward.
- Before installing the cap bolt, apply grease to the O-ring.
- Temporarily tighten the cap bolt.

EB703050
FRONT FORK INSTALLATION
Reverse the “REMOVAL” procedure.
Note the following points.
1. Install:
   - Front fork

**NOTE:**
Apply grease onto cap bolt O-ring before installing cap bolt.

2. Tighten:
   - Cap bolts \(\varnothing\)
   - Pinch bolts

- 38Nm (3.8 m.kg, 27 ft.lb)
- 40Nm (4.0 m.kg, 29 ft.lb)
ELECTRICAL COMPONENTS

1. Main switch
2. Flasher relay
3. Oil level gauge
4. C.D.I. UNIT
5. Fuel level gauge
6. Starter relay
7. Fuse
8. Battery
9. Ignition coil
10. Rectifier/Regulator
11. Horn
Main switch
Main fuse
Battery
Starter relay
Starter motor
Rectifier regulator
Auto choke
C.D.I. magneto
C.D.I. unit
Ignition coil
Spark plug
Rear brake switch
Front brake switch
Tail/Brake light
Rear flasher light(left)
Rear flasher light(right)
Licence light
Front flasher light(right)
Front flasher light(left)
Head light(for high beam)

Head light(for low beam)
Flasher relay
Horn
Handlebar switch (left)
Horn switch
Dimmer switch
Turn switch
Fuel sender
Meter
Fuel gauge
Oil indicator light
Meter light
High beam indicator light
Turn indicator light
Oil level gauge
Handlebar switch (right)
Starter switch
Engine stop switch

COLOR CODE

<table>
<thead>
<tr>
<th>Code</th>
<th>Color</th>
<th>Code</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Black</td>
<td>L/R</td>
<td>Blue/Red</td>
</tr>
<tr>
<td>Br</td>
<td>Brown</td>
<td>R/B</td>
<td>Red/Black</td>
</tr>
<tr>
<td>Ch</td>
<td>Chocolate</td>
<td>R/Y</td>
<td>Red/Yellow</td>
</tr>
<tr>
<td>Dg</td>
<td>Dark Green</td>
<td>Br/W</td>
<td>Brown/White</td>
</tr>
<tr>
<td>G</td>
<td>Green</td>
<td>Y/R</td>
<td>Yellow/White</td>
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<tr>
<td>L</td>
<td>Blue</td>
<td>W/G</td>
<td>White/Green</td>
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<tr>
<td>Or</td>
<td>Orange</td>
<td>G/W</td>
<td>Green/White</td>
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<tr>
<td>Sb</td>
<td>Sky blue</td>
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<td>White/Red</td>
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<tr>
<td>P</td>
<td>Pink</td>
<td>L/G</td>
<td>Blue/Green</td>
</tr>
<tr>
<td>R</td>
<td>Red</td>
<td>L/W</td>
<td>Blue/White</td>
</tr>
</tbody>
</table>

7-3
CHECKING SWITCHES

CHECKING STEPS
Using pocket tester, check switches for continuity between their terminals to determine whether they are correctly connected. Replace the switch component if any of the combinations does not produce the correct reading.

Pocket tester:
YU-03112

NOTE:
- Turn the switch to the “ON”, “OFF” positions several times.
- Adjust the pocket tester to correct “0” position before checking switches.
- Set the pocket tester selector to “×1Ω”.

SWITCH CONNECTION AS SHOWN IN THIS MANUAL
This manual contains connection charts, like the one shown on the left, showing the terminal connections of switches (e.g. the main switch, handlebar switch, brake switch, lighting switch etc.)

The column on the extreme left indicates the different switch positions, the top line indicates the colors of the leads connected to the terminals on the switch.

“○—○” indicates terminals between which there is continuity, i.e. a closed circuit, in the given switch position.

In this chart:
“Br and R” have continuity with the switch in the “ON” position.
Before checking a switch refer to the checking switches as shown in the left page and check for the correct terminal connections (closed circuit) according to the color combinations shown in the chart. Poor connection, fault → Repair or replace.
CHECKING THE BULBS AND BULB SOCKETS

Check each bulb and bulb socket for damage or wear, proper connections, and also for continuity between the terminals.
Damage/wear → Repair or replace the bulb, bulb socket or both.
Improperly connected → Properly connect.
No continuity → Repair or replace the bulb, bulb socket or both.

TYPES OF BULBS
The bulbs used on this scooter are shown in the illustration on the left.
• Bulbs A and B are used for the headlights and usually use a bulb holder that must be detached before removing the bulb. The majority of these types of bulbs can be removed from their respective socket by turning them counterclockwise.
• Bulbs C are used for turn signal and tail/brake lights and can be removed from the socket by pushing and turning the bulb counterclockwise.
• Bulbs D and E are used for meter and indicator lights and can be removed from their respective socket by carefully pulling them out.
CHECKING THE BULBS AND BULB SOCKETS

CHECKING THE CONDITION OF THE BULBS
The following procedure applies to all of the bulbs.

1. Remove:
   • bulb

WARNING
Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.

CAUTION:
- Be sure to hold the socket firmly when removing the bulb. Never pull the lead, otherwise it may be pulled out of the terminal in the coupler.
- Avoid touching the glass part of the headlight bulb to keep it free from oil, otherwise the transparency of the glass, the life of the bulb, and the luminous flux will be adversely affected. If the headlight bulb gets soiled, thoroughly clean it with a cloth moistened with alcohol or lacquer thinner.

2. Check:
   • bulb (for continuity)
     (with the pocket tester)
     No continuity → Replace.

Pocket tester
YU-03112

NOTE:
Before checking for continuity, set the pocket tester to “0” and to the “Ω × 1” range.

a. Connect the positive tester probe to terminal ① and the negative tester probe to terminal ②, and check the continuity.
b. Connect the positive tester probe to terminal 1 and the negative tester probe to terminal ③, and check the continuity.
c. If either of the readings indicate no continuity, replace the bulb.
CHECKING THE CONDITION OF THE BULB SOCKETS

The following procedure applies to all of the bulb sockets.

1. Check:
   - bulb socket (for continuity)
     (with the pocket tester)
   No continuity → Replace.

Pocket tester
YU-03112

NOTE:
Check each bulb socket for continuity in the same manner as described in the bulb section; however, note the following.

*******************************

a. Install a good bulb into the bulb socket.
b. Connect the pocket tester probes to the respective leads of the bulb socket.
c. Check the bulb socket for continuity. If any of the readings indicate no continuity, replace the bulb socket.

*******************************
IGNITION SYSTEM
CIRCUIT DIAGRAM

1. Main switch
2. C.D.I. magneto
3. C.D.I. unit
4. Ignition coil
5. Spark plug
6. Engine stop switch
TROUBLESHOOTING

IF IGNITION SYSTEM SHOULD BECOME INOPERATIVE
(NO SPARK OR INTERMITTENT SPARK)

NOTE:

• Remove the following parts before troubleshooting.
  1) Battery box cover
  2) Center cowling
  3) Rear carrier
  4) Tail cover
  5) Side cover (right)
  6) Handlebar cover (front)

• Use the following special tools in this troubleshooting.

<table>
<thead>
<tr>
<th>Tool Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dynamic spark tester</td>
<td>YM-34487</td>
</tr>
<tr>
<td>Pocket tester</td>
<td>YU-03112</td>
</tr>
<tr>
<td>Standard spark plug</td>
<td>BPR7HS (NGK)</td>
</tr>
<tr>
<td>Spark plug gap</td>
<td>0.6<del>0.7 mm (0.02</del>0.03 in)</td>
</tr>
</tbody>
</table>

1. Spark plug

• Check the spark plug condition.
• Check the spark plug type.
• Check the spark plug gap.
  Refer to the “SPARK PLUG INSPECTION” section in the CHAPTER 3.

2. Ignition spark gap

• Disconnect the spark plug cap from spark plug.
• Connect the dynamic spark tester ① as shown.
  ② Spark plug cap
• Check the ignition spark gap ③.
• Start engine, and increase spark gap until misfire occurs.

Minimum spark gap: 6.0 mm (0.24 in)

CORRECT

OUT OF SPECIFICATION OR NO SPARK

* Ignition system is good.
3. Spark plug cap resistance
- Remove the spark plug cap.
- Connect the pocket tester ($\Omega \times 1k$) to the spark plug cap.
- Check the spark plug cap for specified resistance.

<table>
<thead>
<tr>
<th>Spark plug cap resistance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5k\Omega$ at $20^\circ C$ (68°F)</td>
</tr>
</tbody>
</table>

**MEETS SPECIFICATION**

4. Ignition coil resistance
- Disconnect the ignition coil leads from the ignition coil.
- Connect the pocket tester ($\Omega \times 1$) to the ignition coil.

**Ignition coil:**
- Tester (+) lead $\rightarrow$ Terminal ①
- Tester (−) lead $\rightarrow$ Coil base ②
- Check the primary coil for specification resistance.

<table>
<thead>
<tr>
<th>Primary coil resistance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.32 to 0.48 $\Omega$ at $20^\circ C$ (68°F)</td>
</tr>
</tbody>
</table>

- Connect the pocket tester ($\Omega \times 1k$) to the ignition coil.
- Tester (+) lead $\rightarrow$ Spark plug lead ①
- Tester (−) lead $\rightarrow$ Coil base ②
- Check the secondary coil for specified resistance.

<table>
<thead>
<tr>
<th>Secondary coil resistance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5.68 \sim 8.52 k\Omega$ at $20^\circ C$ (68°F)</td>
</tr>
</tbody>
</table>

**BOTH MEET SPECIFICATIONS**

Ignition coil is faulty, replace it.
5. Pickup coil resistance

- Disconnect the pickup coil coupler from the wireharness.
- Connect the pocket tester ($\Omega \times 100$) to the pickup coil terminal.

Tester (+) lead → White/Red lead ①
Tester (-) lead → White/Blue ②

- Check the pickup coil for specified resistance.

<table>
<thead>
<tr>
<th>Pickup coil resistance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>248~372 $\Omega$ at 20°C (68°F)</td>
</tr>
<tr>
<td>(White/Red-White/Blue)</td>
</tr>
</tbody>
</table>

6. Source resistance

- Disconnect the source coil coupler from the wireharness.
- Connect the pocket tester ($\Omega \times 100$) to the source coil terminal.

Tester (+) lead → Black/Red lead ①
Tester (-) lead → Green/White ②

- Check the source coil for specified resistance.

<table>
<thead>
<tr>
<th>Source coil resistance:</th>
</tr>
</thead>
<tbody>
<tr>
<td>640~960 $\Omega$ at 20°C (68°F)</td>
</tr>
<tr>
<td>(Black/Red - Green/White )</td>
</tr>
</tbody>
</table>

7. Main switch
Refer to “CHECKING SWITCHES” section.

CONTINUITY

Main switch is faulty, replace it.
8. Engine stop switch
Refer to “CHECKING SWITCHES” section.

9. Wiring connection
Check the entire ignition system for connections.
Refer to the “WIRING DIAGRAM” section.

NO CONTINUITY
Engine stop switch is faulty, replace it.

CONTINUITY

POOR CONNECTION
Correct.

CORRECT
Replace CDI unit.
② Main fuse  
③ Battery  
⑥ Rectifier Regulator  
⑧ CDI magnet
TROUBLESHOOTING

THE BATTERY IS NOT CHARGED.

NOTE:

• Remove the following parts before troubleshooting.
  1) Front protector bar
  2) Upper cover
  3) Rear carrier
  4) Tail cover
  5) Right side cover

• Use the following special tool(s) in this troubleshooting.
  Inductive tachometer: YU-8036-A
  Pocket tester: YU-03112

---

1. Fuse (main)
   • Remove the fuse.
   • Connect the pocket tester ($\Omega \times 1$) to the fuse.
   • Check the fuse for continuity.

   ![CONTINUITY]

   Fuse is faulty, replace it.

2. Battery
   • Check the battery condition
     Refer to the "BATTERY INSPECTION" section in the CHAPTER 3.

   ![Open circuit voltage: 12.8V or more at 20°C (68°F)]

   ![CORRECT]

   • Clean battery terminals.
   • Recharge or replace battery.

---
### 3. Charging voltage

- Connect the inductive tachometer to the spark plug lead.
- Connect the pocket tester (DC20V) to the battery.

<table>
<thead>
<tr>
<th>Tester (+) lead</th>
<th>Battery (+) terminal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) lead</td>
<td>Battery (-) terminal</td>
</tr>
</tbody>
</table>

- Start the engine and accelerate to about 5,000 r/min.
- Check charging voltage.

**Charging voltage:**

\[
13 \text{ ~} 14 \text{ V at 4,000 r/min}
\]

**NOTE:**

Use a full charged battery.

---

### 4. Charging coil and lighting coil resistance

- Disconnect the charging coil coupler from the wireharness.
- Connect the pocket tester “Ω x 1” to the charging coils.
- Measure the charging coil and lighting coil resistance.

**Charging coil resistance:**

<table>
<thead>
<tr>
<th>Tester (+) lead</th>
<th>White lead 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) lead</td>
<td>Earth</td>
</tr>
</tbody>
</table>

**Lighting coil resistance:**

<table>
<thead>
<tr>
<th>Tester (+) lead</th>
<th>Yellow/Red 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) lead</td>
<td>Earth</td>
</tr>
</tbody>
</table>

**Charging coil resistance:**

\[
0.48 \text{ ~} 0.72 \Omega \text{ at } 20^\circ \text{C (68°F)}
\]

**Lighting coil resistance:**

\[
0.4 \text{ ~} 0.6 \Omega \text{ at } 20^\circ \text{C (68°F)}
\]

---

**OUT OF SPECIFICATION**

Charging circuit is good.

**MEETS SPECIFICATION**

Charging coil is faulty, replace it.

---

**MEETS SPECIFICATION**

Charging circuit is good.

**OUT OF SPECIFICATION**

Charging coil is faulty, replace it.
5. Wiring connection

Check the entire ignition system for connections.
Refer to the “WIRING DIAGRAM” section.

POOR CONNECTION

Correct.

Replace rectifier regulator.
ELECTRIC STARTING SYSTEM

CIRCUIT DIAGRAM

1. Main switch
2. Main fuse
3. Battery
4. Starter relay
5. Starter motor
6. Rear brake switch
7. Engine stop switch
8. Starter switch
9. Front brake switch
TROUBLESHOOTING

STARTER MOTOR DOES NOT OPERATE.

NOTE:
- Remove the following parts before troubleshooting.
  1) Battery box cover
  2) Rear carrier
  3) Tail cover
  4) Side covers (left and right)
  5) Trunk
  6) Handlebar cover (front)
- Use the following special tool in this troubleshooting.
  Pocket tester: YU-03112

1. Fuse
   - Remove the fuse.
   - Connect the pocket tester (Ω x 1) to the fuse.
   - Check the fuse for continuity.

   CONTINUITY
   NO CONTINUITY
   Fuse is faulty, replace it.

2. Battery
   - Check the battery condition.
     Refer to the “BATTERY INSPECTION” section in the CHAPTER 3.
     Open circuit voltage:
     12.8 V or more at 20°C (68°F)

   CORRECT
   INCORRECT
   • Clean battery terminals.
   • Recharge or replace battery.

3. Starter motor
   - Connect the battery positive terminal and starter motor cable using a jumper lead.*
   - Check the starter motor for operation.

   MOVES
   * Starter motor is faulty, repair or replace it.

* A wire for the jumper lead must have the equivalent capacity as that of the battery lead or more, otherwise it may cause the jumper lead to be burned.
* This check is likely to produce sparks, so be sure that no flammable gas or fluid is in the vicinity.
4. Starter relay
- Disconnect the relay unit coupler from the wire harness.
- Connect the pocket tester (Ω × 1) and battery (12V) to the relay unit coupler terminals.

<table>
<thead>
<tr>
<th>Battery(+) lead →</th>
<th>Blue/White terminal ①</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery(−) lead →</td>
<td>Green/Yellow terminal ②</td>
</tr>
</tbody>
</table>

- Check the starter relay for continuity.
  
  | Tester (+) lead → ③ terminal |
  | Tester (−) lead → ④ terminal |

5. Main switch
Refer to “CHECKING SWITCHES” section.

6. “START” switch
Refer to “CHECKING SWITCHES” section.

7. Engine stop switch
Refer to “CHECKING SWITCHES” section.

* Replace the starter relay.

* Main switch is faulty, replace it.

* “START” switch is faulty, replace handlebar switch (right).

* Engine stop switch is faulty, replace it.
8. Brake switches (front and rear)

- Disconnect the brake switch leads from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) to the brake switch leads.

<table>
<thead>
<tr>
<th>Switch Position</th>
<th>Good condition</th>
<th>Bad condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brake is applied</td>
<td>$\bigcirc$</td>
<td>$\times$</td>
</tr>
<tr>
<td>Brake is not applied</td>
<td>$\times$</td>
<td>$\bigcirc$</td>
</tr>
</tbody>
</table>

$\bigcirc$: Continuity  
$\times$: No continuity

9. Wiring connection

- Check the entire electrical starting system for connections. Refer to “WIRING DIAGRAM” section.
### STARTER MOTOR

#### Order
1. Starter motor coupler
2. Starter motor

#### Job name/Part name
- Starter motor removal
- Rear carrier
- Tail cover
- Battery box cover
- Left/Right side cover
- Center cowling
- Muffler
- Rear wheel
- Air shroud 3

#### Q’ty
- 2
- 1

#### Remarks
- Remove the parts in order.
- Refer to “COVER PANEL” section in CHAPTER 3.
- Refer to “REAR WHEEL AND REAR BRAKE” section in CHAPTER 6.
- Refer to “ENGINE REMOVAL” section chapter 4.
- Reverse the removal procedure for installation.

---

*13Nm (1.3 m·kg, 9.4 ft·lb)*
STARTER MOTOR DISASSEMBLY

**Order**  | **Job name/Part name**                     | **Q’ty** | **Remarks**                                           
------------|--------------------------------------------|----------|--------------------------------------------------------
1           | Starter motor disassembly                 | 1        | Disassembly the parts in order.                        
2           | O-ring                                     | 1        |                                                        
3           | Rear bracket                               | 1        | Refer to “Starter motor assembly”                      
4           | Armature ass’y                             | 1        |                                                        
5           | Ring                                       | 1        |                                                        
6           | Brush holder set                           | 1        | Reverse the disassembly procedure for assembly.        

- **13Nm (1.3 m.kg, 9.4 ft.lb)**

Disassembly the parts in order.
Reverse the disassembly procedure for assembly.
INSPECTION AND REPAIR

1. Inspect:
   • Commutator
     Dirt → Clean it with #600 grit sandpaper.

2. Measure:
   • Commutator diameter (a)

   ![Diagram of commutator wear limit](image)

   Commutator wear limit:
   15.1 mm (0.59 in)

   Out of specification → Replace the starter motor

3. Measure:
   • Mica undercut (a)

   ![Diagram of mica undercut](image)

   Mica undercut:
   1.05 mm (0.04 in)

   Out of specification → Scrape the mica to the proper value (a hacksaw blade can be ground to fit).

   **NOTE:**
   The mica insulation of the commutator must be undercut to ensure proper operation of commutator.

4. Inspect:
   • Armature coil resistances (installation/continuity)

   Defects → Replace the starter motor.
   If commutator is dirty, clean it with sandpaper.

   ![Diagram of armature coil resistances](image)

<table>
<thead>
<tr>
<th>Good condition</th>
<th>Bad condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>x</td>
</tr>
<tr>
<td>B</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>O</td>
</tr>
<tr>
<td></td>
<td>O</td>
</tr>
</tbody>
</table>

   O: Continuity
   x: No continuity
   Bad condition → Replace.
5. Measure:
   - Brush length ③
     Out of specification → Replace.

6. Measure:
   - Brush spring force
     Fatigue/out of specification → Replace as a set.

Brush length wear limit
3.0 mm (0.012 in)
LIGHTING SYSTEM
CIRCUIT DIAGRAM

1. Main switch
2. Fuse
3. Battery
4. C.D.I. magneto
5. Tail light
6. Licence light
7. Head light (for high beam)
8. Head light (for low beam)
9. Light dimmer switch
10. Meter light
11. High beam indicator light
TROUBLESHOOTING

IF THE HEADLIGHT, HIGH BEAM INDICATOR LIGHT, TAILLIGHT AND/OR METER LIGHT FAIL TO COME ON.

Procedure
Check:
1. Lights switch
2. Dimmer switch
3. Wiring connection (entire lighting system)

NOTE:
• Remove the following parts before troubleshooting.
  1) Front handlebar cover
  2) Rear carrier
  3) Right side cover
• Use the special tools specified in the troubleshooting section.

Pocket tester:
YU-03112

1. Fuse
   Refer to “CHECKING SWITCHES” section
   NO CONTINUITY
   CONTINUITY
   Replace the fuse.

2. Battery
   • Check the battery condition.
   • Refer to “BATTERY INSPECTION” section in CHAPTER 3.
   IN CORRECT
   CORRECT
   • Clean battery terminals.
   • Recharge or replace battery.

3. Main switch
   Refer to “CHECKING SWITCHES” section
   NO CONTINUITY
   CONTINUITY
   * Replace the main switch.
4. Dimmer switch
   Refer to "CHECKING SWITCHES" section.

5. Lighting coil resistance
   - Disconnect the lighting coil coupler from the wireharness.
   - Connect the pocket tester “Ω x 1” to the lighting coils.
   - Measure the lighting coil resistances.

   Tester (+) lead → Yellow/Red lead
   Tester (-) lead → Earth

   Lighting coil resistance:
   0.4 ~ 0.6 Ω at 20°C (68°F)

   * MEET SPECIFICATION

   NO CONTINUITY
   Replace the left handlebar switch.

   OUT OF SPECIFICATION
   Lighting coil is faulty, replace it.
6. Wiring connection

- Check the connections of the entire lighting system.
- Refer to "WIRING DIAGRAM".

POOR CONNECTIONS

Correct.

OK

Check the condition of each of the lighting system’s circuits.
- Refer to "LIGHTING SYSTEM CHECK"

LIGHTING SYSTEM CHECK

1. If the headlight and the high beam indicator light fail to come on.

1. Bulb and bulb socket
- Refer to "CHECKING SWITCHES" section.

NO CONTINUITY

CONTINUITY

2. Voltage
- Connect the pocket tester (DC20V) to the headlight and high beam indicator light couplers.

A] When the dimmer switch is on low beam.
B] When dimmer switch is on high beam.

Headlight(low beam):
- Tester (+) lead→Green ① lead
- Tester (−) lead→Black ② lead

Headlight(high beam):
- Tester (+) lead→Yellow ③ lead
- Tester (−) lead→Black ④ lead

High beam indicator light:
- Tester (+) lead→Yellow ⑤ lead
- Tester (−) lead→Black ⑥ lead

Replace the bulb and/or bulb socket.
• Turn the main switch to on.
• Start the engine.
• Turn the dimmer switch to low beam or high beam.
• Check for voltage (12V) on the lead at bulb socket connectors.

MEETS SPECIFICATION

This circuit is not faulty.

2. If the meter light fails to come on.

1. Bulb and bulb socket
   Refer to “CHECKING SWITCHES” section.

    NO CONTINUITY

    Replace the bulb and/or bulb socket.

2. Voltage
   • Connect the pocket tester (DC20V) to the bulb socket coupler.
   
   Tester (+) lead→
   Blue terminal (1)
   Tester (-) lead→
   Black terminal (2)

   • Turn the main switch to on.
   • Start the engine.
   • Check the voltage (12V) of the leads on the bulb socket connector.

    MEETS SPECIFICATION

    This circuit is not faulty.

    OUT OF SPECIFICATION

    The wiring circuit from the main switch to bulb socket connector is faulty. Repair.

    OUT OF SPECIFICATION

    The wiring circuit from main switch to bulb socket is faulty. Repair.
3. Licence light does not come on.

1. Bulb and bulb socket
   - Check the bulb and bulb socket for continuity

   NO CONTINUITY

2. Voltage
   - Connect the pocket tester (DC20V) to the bulb socket connector.

   Tester (+) lead → Brown ① lead.
   Tester (-) lead → Black ② lead.

   CONTINUITY

   Bulb and/or bulb socket are faulty, replace.

   OUT OF SPECIFICATION

   Wiring circuit from main switch to bulb socket connector is faulty. Repair.

   MEETS SPECIFICATION (12V)

   This circuit is not faulty.

   TURN THE MAIN SWITCH TO ON.
   - Check the voltage (12V) on the “Brown” lead at the bulb socket connector.
3. The taillight fails to come on.

1. Bulb and bulb socket
   Refer to “CHECKING SWITCHES” section.
   
   NO CONTINUITY

   CONTINUITY

   Replace the bulb and/or bulb socket.

2. Voltage
   • Connect the pocket tester (DC20V) to the bulb socket connector.
   Tester (+) lead → Brown terminal ①
   Tester (-) lead → Black terminal ②

   MEETS SPECIFICATION

   OUT OF SPECIFICATION

   The wiring circuit from main switch to bulb connector is faulty. Repair.

This circuit is not faulty.

- Turn the main switch to on.
- Check the voltage (12V) on the bulb socket connector.
SIGNAL SYSTEM
CIRCUIT DIAGRAM

1. Main switch
2. Main fuse
3. Battery
4. Rear brake switch
5. Front brake switch
6. Brake light
7. Rear flasher light (right)
8. Front flasher light (right)
9. Front flasher light (left)
10. Rear flasher light (left)
11. Flasher relay
12. Horn
13. Handlebar switch (Left)
14. Horn switch
15. Rear flasher light (right)
16. Turn switch
17. Fuel sender
18. Fuel meter
19. Oil indicator light
20. Turn indicator light
21. Oil level gauge

7-33
TROUBLESHOOTING

IF THE FLASHER LIGHT, BRAKE LIGHT AND/OR INDICATOR LIGHT FAIL TO COME ON. IF THE HORN FAILS TO SOUND.

Procedure
Check:
1. Fuse (Main)
2. Battery
3. Main switch
4. Wiring connection (entire signal system)

NOTE:
• Remove the following parts before troubleshooting.
  1) Battery box cover
  2) Front protector bar
  3) Upper cover
  4) Rear carrier
  5) Tail cover
  6) Side covers (Left/Right)
  7) Center cover

• Use the special tools in the troubleshooting section.

Pocket tester:
YU-03112

1. Fuse
   NO CONTINUITY
   Refer to “CHECKING SWITCHES” section.
   CONTINUITY
   Replace the fuse.

2. Battery
   IN CORRECT
   • Check the battery condition.
   • Clean battery terminals.
   • Recharge or replace battery.
   CORRECT
   Refer to “BATTERY INSPECTION” section in CHAPTER 3.

3. Main switch
   NO CONTINUITY
   Refer to “CHECKING SWITCHES” section.
   CONTINUITY
   Replace the main switch.
4. Wireharness

- Check the connections of the entire signal system.
  Refer to “CIRCUIT SYSTEM WIRING DIAGRAM” section.

CONTINUITY

Check condition of each of the signal system’s circuits.
Refer to “SIGNAL SYSTEM CHECK” section.

POOR CONNECTION

Correct.
**SIGNAL SYSTEM CHECK**

1. If the horn fails to sound.

   **1. HORN switch**
   - Refer to “CHECKING SWITCHES” section.

   **NO CONTINUITY**
   - Replace the left handlebar switch.

   **CONTINUITY**
   - MEETS SPECIFICATION
   - The wiring circuit from the main switch to the horn is faulty. Repair.

   **OUT OF SPECIFICATION**
   - Adjust or replace horn.
   - NO CONTINUITY
     - The wiring circuit from the main switch to the horn is faulty. Repair.
   - Continuity
     - Replace the horn.

2. **Voltage**
   - Connect the pocket tester (DC20V) to the horn lead.
   - Tester (+) lead → Brown terminal (1).
   - Tester (-) lead → Frame ground
   - Turn the main switch to on.
   - Check for voltage (12V) on the “Brown” lead at the horn terminal.

   **MEETS SPECIFICATION**
   - The wiring circuit from the main switch to the horn is faulty. Repair.
   - NO CONTINUITY
     - Replace the horn.

3. **Horn**
   - Connect the pocket tester (DC20V) to the horn at the “Pink” terminal.
   - Tester (+) lead → Pink (1) terminal.
   - Tester (-) lead → Frame ground
   - Turn the main switch to on.
   - Check for voltage on the “Pink” lead at the horn terminal.

   **CONTINUITY**
   - MEETS SPECIFICATION
   - The wiring circuit from the main switch to the horn is faulty. Repair.
   - NO CONTINUITY
     - Replace the horn.
2. If the brake light fails to come on:

1. Bulb and bulb socket
   Refer to “CHECKING SWITCHES” section.
   - NO CONTINUITY
   - CONTINUITY
   - Replace the bulb and/or bulb socket.

2. Brake switch (Front/Rear)
   Refer to “CHECKING SWITCHES” section.
   - NO CONTINUITY
   - CONTINUITY
   - Replace brake switch.

3. Voltage
   - Connect the pocket tester (DC20V) to the bulb socket connector.
   - Tester (+) lead ➔ Green/Yellow terminal
   - Tester (-) lead ➔ Black terminal
   - Turn the main switch to on.
   - The brake lever is pulled in.
   - Check for voltage (12V) of the “Green/Yellow” lead on the bulb socket connector.
   - MEETS SPECIFICATION
   - OUT OF SPECIFICATION
   - This circuit is not faulty.

4. Wiring connection
   - Wiring circuit from the main switch to the bulb socket connector is faulty. Repair.
   - Refer to “SIGNAL SYSTEM WIRING DIAGRAM”.

7
3. If the flasher light and/or turn indicator light fails to blink.

1. Bulb and bulb socket
   Refer to “CHECKING SWITCHES” section.
   NO CONTINUITY
   CONTINUITY
   Replace the bulb and/or bulb socket.

2. Turn switch
   Refer to “CHECKING SWITCHES” section.
   NO CONTINUITY
   CONTINUITY
   Replace the left handlebar switch.

3. Voltage
   - Connect the pocket tester (DC20V) to the flasher relay coupler.
   - Turn the main switch to on.
   - Check for voltage (12V) of the “Brown” lead at the flasher relay terminal.

   MEETS SPECIFICATION
   OUT OF SPECIFICATION
   The wiring circuit from main switch to flasher relay connector is faulty. Repair.

4. Voltage
   - Connect the pocket tester (DC20V) to the flasher relay coupler.
   - Turn the main switch to on.
   - Check for voltage (12V) on the “Brown/White” lead at the flasher relay terminal.

   MEETS SPECIFICATION
   OUT OF SPECIFICATION
   The flasher relay is faulty. Replace.
5. Voltage
- Connect the pocket tester (DC20V) to the bulb socket connector.

At flasher light (left)
Tester (+) lead → Chocolate lead ①
Tester (-) lead → Black terminal ③

At flasher light (right)
Tester (+) lead → Dark green lead ②
Tester (-) lead → Black terminal ③

- Turn the main switch to on.
- Turn the turn switch to left or right.
- Check for voltage (12V) on the “Chocolate” lead and “Dark green” at the flasher light terminal.

OUT OF SPECIFICATION
This circuit is not faulty.

6. Wiring connection
- Wiring circuit from the turn switch to bulb socket connector is fault. Repair. Refer to “CIRCUIT DIAGRAM”.

4. “OIL” indicator light does not come on.

1. Bulb and bulb socket
- Check the bulb and bulb socket for continuity.

2. Oil level switch
- Remove the oil level switch from the oil tank.
- Connect the Pocket Tester (Ω x 1) to the oil level switch.

Tester (+) Lead → Brown ①
Tester (-) Lead → Gray ②

- Check the oil level gauge for continuity.

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Good condition</th>
<th>Bad condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) Upright position</td>
<td>X</td>
<td>O</td>
</tr>
<tr>
<td>B) Upside down position</td>
<td>O</td>
<td>X</td>
</tr>
</tbody>
</table>

X: Continuity  O: No continuity

GOOD CONDITION

BAD CONDITION
Replace oil level switch.

CONTINUITY

NO CONTINUITY
Replace bulb and/or bulb socket.
3. Voltage
- Connect the Pocket Tester (DC20V) to the bulb socket connector.

<table>
<thead>
<tr>
<th>Tester (+) Lead</th>
<th>Gray lead ①</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) Lead</td>
<td>Black lead ②</td>
</tr>
</tbody>
</table>

- Turn the main switch to “*”
- Check for voltage (12V) on the “Gray” lead at bulb socket connector.

This circuit is good.

4. Wiring connection
- Check the entire signal system for connections.
- Refer to the “WIRING DIAGRAM” section.

5. If the fuel gauge fails to operate.

1. Fuel sender
- Remove the fuel sender from the fuel tank.
- Disconnect the fuel sender coupler from the wireharness.
- Connect the pocket tester (Ω×10) to the fuel sender coupler lead.

<table>
<thead>
<tr>
<th>Tester (+) Lead</th>
<th>Green terminal ①</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) Lead</td>
<td>Black terminal ②</td>
</tr>
</tbody>
</table>

- Check the fuel sender for specified resistance.

<table>
<thead>
<tr>
<th>Float position</th>
<th>Specified resistance</th>
</tr>
</thead>
<tbody>
<tr>
<td>UP ③</td>
<td>4~10Ω</td>
</tr>
<tr>
<td>DOWN ④</td>
<td>90~100Ω</td>
</tr>
</tbody>
</table>

Replace the fuel sender.
2. Voltage
- Connect the pocket tester (DC20V) to the fuel gauge coupler.

<table>
<thead>
<tr>
<th>Tester (+) lead</th>
<th>Brown terminal ①</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester (-) lead</td>
<td>Frame ground</td>
</tr>
</tbody>
</table>

- Turn the main switch to “ON”.
- Check for voltage (12V) of the “Brown” lead on the fuel sender lead.

3. Fuel gauge
- Connect the fuel sender to wireharness.
- Move the float to “UP” ① or “DOWN” ②.

<table>
<thead>
<tr>
<th>Float position</th>
<th>Needle moves</th>
</tr>
</thead>
<tbody>
<tr>
<td>Float “UP” ①</td>
<td>“F”</td>
</tr>
<tr>
<td>Float “DOWN” ②</td>
<td>“E”</td>
</tr>
</tbody>
</table>

- Turn the main switch to “ON”.
- Check the fuel gauge needle moves “F” or “E”.

This circuit is not faulty.

Check the connection of the entire signal system.
Refer to “CHECKING OF CONNECTIONS”.
Refer to “CIRCUIT DIAGRAM”.

NOTE:
Before reading the meter, stay put the float for more than three minutes respectively at “UP” or “DOWN”.

Replace the fuel gauge.
AUTO CHOKE SYSTEM

CIRCUIT DIAGRAM

7 Auto choke
8 C.D.I. magneto
TROUBLESHOOTING

IF THE AUTO CHOKE FAILS TO OPERATE.

Procedure
Check:
1. Lighting coil resistance
2. Auto choke unit resistance
3. Wiring connection (entire auto choke system)

NOTE:
• Remove the following parts before troubleshooting.
  1. Battery box cover
  2. Rear carrier
  3. Tail cover
  4. Right side cover
• Use the special tools specified in the troubleshooting section.

Pocket tester:
YU-03112

1. Lighting coil resistance
• Disconnect the CDI magneto couple from wire harness.
• Connect the pocket tester (Ω x1) to the lighting coil coupler

Tester (+) Lead → Yellow/Red ① terminal
Tester (-) Lead → Frame earth

② C.D.I. magneto
• Check the lighting coil for specified resistance

Lighting coil resistance
0.4~0.6 Ω 20°C (68°F)

MEETS SPECIFICATION

OUT OF SPECIFICATION

Replace the lighting coil
2. Auto choke unit resistance
- Disconnect the auto choke unit coupler from the wireharness.
- Connect the pocket tester ($\Omega \times 1$) to the auto choke unit coupler lead.

<table>
<thead>
<tr>
<th>Tester ($+$) lead</th>
<th>Black terminal ①</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tester ($-$) lead</td>
<td>Black terminal ②</td>
</tr>
</tbody>
</table>

Auto choke unit resistance: 8~12Ω at 20°C (68°F)

Out of specification: Replace the auto choke unit.

Poor Connection: Correct.

3. Wiring connection
- Check the connection of the entire auto choke system.
  Refer to “CIRCUIT DIAGRAM” section.
NOTE:
The following troubleshooting does not cover all the possible causes of trouble. It should be helpful, however, as a guide to troubleshooting. Refer to the relative procedure in this manual for inspection, adjustment and replacement of parts.

STARTING FAILURE/HARD STARTING

FUEL SYSTEM

- Fuel tank
  - Empty
  - Clogged fuel filter
  - Deteriorated fuel or fuel containing water or foreign material
  - Clogged fuel tank cap

- Fuel cock
  - Clogged fuel hose
  - Clogged fuel cock
  - Faulty fuel cock operation
  - Broken or disconnected fuel cock

- Carburetor
  - Deteriorated fuel, fuel containing water or foreign material
  - Clogged pilot jet
  - Clogged pilot air passage
  - Sucked-in air
  - Deformed float
  - Groove-worn needle valve
  - Improperly sealed valve seat
  - Improperly adjusted fuel level
  - Improperly set pilot jet
  - Clogged starter jet

- Auto choke
  - Starter plunger malfunction
  - Wax malfunction
  - Faulty thermister

- Air cleaner
  - Clogged air filter
STARTING FAILURE/HARD STARTING

IGNITION SYSTEM

- Spark plug
  - Improper plug gap
  - Worn electrodes
  - Wire between terminals broken
  - Improper heat range
  - Faulty spark plug cap

- Ignition coil
  - Broken or shorted primary/secondary coil
  - Faulty spark plug lead
  - Broken body

- CD I unit system
  - Faulty CD I unit
  - Faulty source coil
  - Faulty pick-up coil

- Switches and wiring
  - Faulty main switch
  - Broken or shorted wiring

COMPRESSION SYSTEM

- Cylinder and cylinder head
  - Loose spark plug
  - Loose cylinder head or cylinder
  - Broken cylinder head gasket
  - Broken cylinder gasket
  - Worn, damaged or seized cylinder

- Piston and piston rings
  - Improperly installed piston ring
  - Worn, fatigued or broken piston ring
  - Seized piston ring
  - Seized or damaged piston

- Crankcase and crankshaft
  - Improperly seated crankcase
  - Improperly sealed crankcase (Damaged oil seal)
  - Seized crankshaft

- Reed valve
  - Deformed reed valve stopper
  - Improperly seated read valve
  - Loose intake manifold
  - Broken gasket
  - Broken reed valve
POOR IDLE SPEED PERFORMANCE

POOR IDLE SPEED PERFORMANCE

PROBABLE CAUSE

- Improperly returned starter plunger
- Clogged or loose pilot jet
- Clogged pilot air jet
- Improperly adjusted idle speed
  (Throttle stop screw)
- Improper throttle cable play
- Flooded carburetor

- Starter plunger malfunction
- Wax malfunction
- Faulty thermister

- Clogged air cleaner

- Faulty spark plug
- Faulty spark plug read
- Faulty C.D.I. unit
- Faulty source coil
- Faulty ignition coil

POOR MEDIUM AND HIGH SPEED PERFORMANCE

POOR MEDIUM AND HIGH SPEED PERFORMANCE

PROBABLE CAUSE

- Refer to starting failure/Hard starting item
  (Fuel system, Ignition system, compression system)
- Clogged or loose main nozzle
- Clogged or loose main jet
- Improperly adjust fuel level
- Sucked-in air

- Clogged air filter

- Clogged
POOR MEDIUM AND HIGH SPEED PERFORMANCE

FULTY AUTOMATIC(V-BELT TYPE) SCOOTER DOES NOT MOVE WHILE ENGINE IS OPERATING

- V-belt
- Cam, slider
- Compression spring
- Transmission

PROBABLE CAUSE
- Worn, damaged or slipped V-belt
- Worn, damaged
- Damaged
- Damaged

CLUTCH OUT FAILURE

- Clutch weight spring
- Clutch shoe
- Primary sheave

PROBABLE CAUSE
- Damaged
- Pealed lining
- Seized primary sliding sheave and collar

POOR STANDING START(LOW CLIMBING ABILITY)

- V-belt
- Primary sheave
- Compression spring
- Secondary sheave
- Clutch shoe

PROBABLE CAUSE
- Worn or slipped V-belt
- Improper operation
- Damaged
- Damaged
- Improper operation
- Worn guide pin
- Plealed lining

POOR ACCELERATION(POOR HIGH SPEED)

- V-belt
- Weight
- Primary/Secondary sheave

PROBABLE CAUSE
- Worn
- Greasy
- Worn
- Improper operation
- Worn
OVER HEAT

PROBABLE CAUSE

- Ignition system
  - Improper plug gap
  - Improper spark plug heat range
  - Faulty C.D.I. unit
- Fuel system
  - Improper carburetor setting
  - Clogged air filter
- Compression system
  - Carbon accumulation of cylinder head
- Muffler, Exhaust pipe
  - Clogged
- Oil pump
  - Faulty oil pump
  - Faulty oil quality
  - Drag
- Brake
  - Fan damaged

POOR SPEED

PROBABLE CAUSE

- Ignition system
  - Faulty spark plug
  - Improper spark plug heat range
  - Faulty C.D.I. unit
  - Faulty source coil
- Fuel system
  - Clogged fuel tank cap
  - Clogged air filter
  - Clogged carburetor
- Compression system
  - Worn cylinder
  - Worn, fatigued or broken piston ring
  - Broken cylinder head gasket
  - Broken cylinder gasket
  - Carbon accumulation of cylinder head
- Muffler, Exhaust pipe
  - Clogged
- Clutch
  - Refer to “FAULTY AUTOMATIC”
- Brake
  - Drag
IMPROPER KICKING

SLIPPING

Kick axle assembly

- Low tension of kick clip
- Worn kick axle
- Worn or damaged kick gear
- Damaged kick clip
- Kick clip coming off
- Damaged kick clip stopper

Transmission oil

- Improper quality (Low viscosity)
- Deterioration

HARD KICKING

Kick axle assembly

- High tension of kick clip
- Seized kick gear

Cylinder, piston and piston ring

- Damaged or seized cylinder
- Damaged or seized piston
- Damaged or seized piston ring

Crankcase and crankshaft

- Improperly seated crankcase
- Improperly seated crankshaft
- Damaged or seized crankshaft
- Damaged or seized crankshaft bearing

KICK CRANK NOT RETURNING

Kick axle assembly

- Damaged kick return spring
- Kick return spring coming off
- Kick clip coming off
- Damaged kick return spring stopper
FAULTY BRAKE

POOR BRAKING EFFECT

- Drum brake
  - Worn brake shoe
  - Worn or rusty brake drum
  - Improperly adjusted brake free play
  - Improper brake cam lever position
  - Improper brake shoe position
  - Fatigue/Damaged return spring
  - Oily or greasy brake shoe
  - Oily or greasy brake drum
  - Broken brake cable

- Disc brake (Front)
  - Worn brake pad
  - Worn brake disc
  - Air in brake fluid
  - Leaking brake fluid
  - Faulty master cylinder kit
  - Faulty caliper seal kit
  - Loose union bolt
  - Broken brake hose
  - Oily or greasy brake pad
  - Oily or greasy brake disc

MALFUNCTION

- Bent, deformed or damaged inner tube
- Bent or deformed outer tube
- Damaged fork spring
- Worn or damaged slide metal
- Improper oil viscosity
- Improper oil level
INSTABLE HANDLING

PROBABLE CAUSE

- Handlebar
  - Improperly installed or bent

- Steering
  - Improperly installed steering column
    (Improperly tightened ringnut)
  - Bent steering column
  - Damaged ball bearing or bearing race

- Front forks
  - Broken spring
  - Bonded front forks

- Tires
  - Uneven tire pressures on both sides
  - Incorrect tire pressure
  - Unevenly worn tires

- Wheels
  - Damaged bearing
  - Bent or loose wheel axle
  - Excessive wheel run-out

- Frame
  - Twisted
  - Damaged head pipe
  - Improperly installed bearing race

- Engine bracket
  - Bent or damaged

- Rear shock absorber
  - Fatigued spring
  - Oil leakage
FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DARK
- Improper bulb
- Too many electric accessories
- Hard charging (Broken charging coil)
- Incorrect connection
- Improperly grounded
- Poor contacts (main or light switch)
- Bulb life expires

BULB BURNT OUT
- Improper bulb
- Improperly grounded
- Faulty main and/or light switch
- Bulb life expires

FLASHER DOES NOT BLINK
- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wireharness
- Loosely connected coupler
- Bulb burnt out
- Faulty fuse

FLASHER KEEPS ON
- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out
FAULTY SIGNAL AND LIGHTING SYSTEM

**FLASHER BLINKS SLOWER**

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Improper bulb
- Faulty main and/or flasher switch

**FLASHER BLINKS QUICKER**

- Improper bulb
- Faulty flasher relay

**HORN DOES NOT SOUND**

- Faulty battery
- Faulty fuse
- Faulty main and/or horn switch
- Improperly adjusted horn
- Faulty horn
- Broken wire harness