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 16 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
21. Lithium soap base grease
22. Molybdenum disulfide grease

Symbols 23 to 24 in the exploded diagrams indicate the following.
23. Apply locking agent (LOCTITE ®)
24. Replace the part
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GENERAL INFORMATION
SCOOTER IDENTIFICATION

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

MODEL CODE
The model code label 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.

⁠¹ Oil seal

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

⁠¹ Bearing

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 ¹, make sure the sharp-edged corner ² is positioned opposite the thrust ³ that the circlip receives.

⁠¹ Bearing ⁠² Circlip ⁠³ Thrust ⁠⁴ Shaft
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.

\[
\begin{align*}
\text{METRIC MULTIPLIER IMP} \\
\text{** mm } \times 0.03937 & = \text{ ** in} \\
2 \text{ mm } \times 0.03937 & = 0.083 \text{ in}
\end{align*}
\]

## CONVERSION TABLE

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<td>psi(lb/in²)</td>
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<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></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></td>
</tr>
<tr>
<td></td>
<td>This tool is used to disassembly and assembly the secondary pulley.</td>
<td></td>
</tr>
<tr>
<td>YU-90050/YU-90062</td>
<td>Crankshaft Installation set ① Adapter ②</td>
<td></td>
</tr>
<tr>
<td></td>
<td>These tools are used to install the crankshaft.</td>
<td>① ②</td>
</tr>
<tr>
<td>YU-01189</td>
<td>Flywheel puller</td>
<td></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></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></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></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></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></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><img src="image1.png" alt="Pocket tester" /></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><img src="image2.png" alt="Oil seal guide" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to install the left side crankcase oil seal.</td>
<td></td>
</tr>
<tr>
<td>YM-1410</td>
<td>Oil seal driver</td>
<td><img src="image3.png" alt="Oil seal driver" /></td>
</tr>
<tr>
<td></td>
<td>This tool is used to install the left side crankcase oil seal.</td>
<td></td>
</tr>
<tr>
<td>YM-34487</td>
<td>Dynamic spark tester</td>
<td><img src="image4.png" alt="Dynamic spark tester" /></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><img src="image5.png" alt="Quick Gasket®" /></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><img src="image6.png" alt="Locknut wrench" /></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</td>
<td>Front fork seal driver</td>
<td><img src="image7.png" alt="Front fork seal driver" /></td>
</tr>
<tr>
<td>-1400</td>
<td>Weight ①</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Adapter ②</td>
<td></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 / Damper rod holder ②</td>
<td><img src="image8.png" alt="T-handle / Damper rod holder" /></td>
</tr>
<tr>
<td>YM-01326</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Holder</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YM-01300-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>②</td>
<td></td>
<td></td>
</tr>
<tr>
<td>YM-01312-A</td>
<td>Fuel level gauge</td>
<td><img src="image9.png" alt="Fuel level gauge" /></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><strong>Model code:</strong></td>
<td>5PJ1</td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions:</strong></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><strong>Basic weight:</strong></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><strong>Engine:</strong></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>49cm³ (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><strong>Oil Type or Grade:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engine Oil</td>
<td>For YAMAHA brand: 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>Yamalube 4 SAE 10W/30 SE or GL gear oil</td>
<td></td>
</tr>
<tr>
<td><strong>Oil Capacity:</strong></td>
<td></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>
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<tr>
<td><strong>Air Filter:</strong></td>
<td>Wet type element</td>
<td></td>
</tr>
<tr>
<td><strong>Fuel:</strong></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><strong>Carburetor:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type / Manufacturer</td>
<td>Y14P/1/ TEIKEI</td>
<td></td>
</tr>
</tbody>
</table>
### GENERAL SPECIFICATION

<table>
<thead>
<tr>
<th>Model</th>
<th>YW50A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Spark Plug:</strong></td>
<td></td>
</tr>
<tr>
<td>Type/Manufacturer</td>
<td>BPR7HS/NGK</td>
</tr>
<tr>
<td>Gap</td>
<td>0.6 ~ 0.7 mm (0.02 ~ 0.03 in)</td>
</tr>
<tr>
<td><strong>Clutch Type</strong></td>
<td>Dry, Centrifugal automatic</td>
</tr>
<tr>
<td><strong>Transmission:</strong></td>
<td></td>
</tr>
<tr>
<td>Primary Reduction System</td>
<td>Helical gear</td>
</tr>
<tr>
<td>Primary Reduction Ratio</td>
<td>4.000</td>
</tr>
<tr>
<td>Secondary Reduction System</td>
<td>Supur gear</td>
</tr>
<tr>
<td>Secondary Reduction Ratio</td>
<td>3.666</td>
</tr>
<tr>
<td>Transmission Type</td>
<td>V-belt</td>
</tr>
<tr>
<td>Operation</td>
<td>Automatic</td>
</tr>
<tr>
<td><strong>Chassis:</strong></td>
<td></td>
</tr>
<tr>
<td>Frame type</td>
<td>Steel tube underbone</td>
</tr>
<tr>
<td>Caster angle</td>
<td>26.5˚</td>
</tr>
<tr>
<td>Trail</td>
<td>93mm (3.7 in)</td>
</tr>
<tr>
<td><strong>Tire:</strong></td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>Tubeless</td>
</tr>
<tr>
<td>Size</td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>120/90-10</td>
</tr>
<tr>
<td>rear</td>
<td>130/90-10</td>
</tr>
<tr>
<td>Manufacturer</td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>CHENG SHIN</td>
</tr>
<tr>
<td>rear</td>
<td>CHENG SHIN</td>
</tr>
<tr>
<td>Type</td>
<td></td>
</tr>
<tr>
<td>front</td>
<td>56J</td>
</tr>
<tr>
<td>rear</td>
<td>59J</td>
</tr>
<tr>
<td><strong>Maximum load</strong></td>
<td>143 kg (315 lb)</td>
</tr>
<tr>
<td><strong>Cold tire Pressure:</strong></td>
<td></td>
</tr>
<tr>
<td>Up to 90 kg</td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>200kpa (2.0 kg/cm², 29 psi)</td>
</tr>
<tr>
<td>Rear</td>
<td>200kpa (2.0 kg/cm², 29 psi)</td>
</tr>
<tr>
<td>90 kg load ~ Maximum load</td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>200kpa (2.0 kg/cm², 29 psi)</td>
</tr>
<tr>
<td>Rear</td>
<td>200kpa (2.0 kg/cm², 29 psi)</td>
</tr>
<tr>
<td><strong>Brake:</strong></td>
<td></td>
</tr>
<tr>
<td>Front brake type</td>
<td>Single disc brake</td>
</tr>
<tr>
<td>operation</td>
<td>Right hand operation</td>
</tr>
<tr>
<td>Rear brake type</td>
<td>Drum brake</td>
</tr>
<tr>
<td>operation</td>
<td>Left hand operation</td>
</tr>
<tr>
<td><strong>Suspension:</strong></td>
<td></td>
</tr>
<tr>
<td>Front suspension</td>
<td>Telescopic fork</td>
</tr>
<tr>
<td>Rear suspension</td>
<td>Unit swing</td>
</tr>
<tr>
<td><strong>Shock absorber:</strong></td>
<td></td>
</tr>
<tr>
<td>Front shock absorber</td>
<td>Coil spring/oil damper</td>
</tr>
<tr>
<td>Rear shock absorber</td>
<td>Coil spring/oil damper</td>
</tr>
<tr>
<td><strong>Wheel travel:</strong></td>
<td></td>
</tr>
<tr>
<td>Front wheel travel</td>
<td>65 mm (2.56 in)</td>
</tr>
<tr>
<td>Rear wheel travel</td>
<td>60 mm (2.36 in)</td>
</tr>
<tr>
<td><strong>Electrical:</strong></td>
<td></td>
</tr>
<tr>
<td>Ignition system</td>
<td>C.D.I</td>
</tr>
<tr>
<td>Generator system</td>
<td>Flywheel Magneto</td>
</tr>
<tr>
<td>Battery type</td>
<td>YTX5L-BS</td>
</tr>
<tr>
<td>Battery capacity</td>
<td>12V 4AH</td>
</tr>
</tbody>
</table>
### Model Specifications

<table>
<thead>
<tr>
<th>Light Type</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Headlight</td>
<td>YW50A</td>
</tr>
<tr>
<td>Tail/brake light</td>
<td></td>
</tr>
<tr>
<td>Flasher light</td>
<td></td>
</tr>
<tr>
<td>Licence plate light</td>
<td></td>
</tr>
<tr>
<td>Meter light</td>
<td></td>
</tr>
<tr>
<td>High beam indicator light</td>
<td></td>
</tr>
<tr>
<td>Oil indicator light</td>
<td></td>
</tr>
<tr>
<td>Turn indicator light</td>
<td></td>
</tr>
</tbody>
</table>

#### Bulb Wattage x Quantity

- **Headlight**: 12V 35W/35W x 2
- **Tail/brake light**: 12V 5W/21W x 1
- **Flasher light**: 10W x 4
- **Licence plate light**: 5W x 1
- **Meter light**: 3.4W x 1/1.7W x 1
- **High beam indicator light**: 1.7W x 1
- **Oil indicator light**: 1.7W x 1
- **Turn indicator light**: 1.7W x 1

---

**GENERAL SPECIFICATION**
## MAINTENANCE SPECIFICATION
### ENGINE

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder head:</td>
<td></td>
<td></td>
</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>
<td></td>
<td></td>
</tr>
<tr>
<td>Cylinder:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bore size</td>
<td>40.000~40.014mm</td>
<td>40.10 mm</td>
</tr>
<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>
</tr>
<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>
</tr>
<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>
<td>10.045 mm</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.4 in)</td>
</tr>
<tr>
<td>Piston pin bore inside diameter</td>
<td>10.004~10.015 mm</td>
<td>9.975 mm</td>
</tr>
<tr>
<td></td>
<td>(0.3939~0.3943 in)</td>
<td>(0.39 in)</td>
</tr>
<tr>
<td>Piston pin outside diameter</td>
<td>9.996~10.000 mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.3935~0.3937 in)</td>
<td></td>
</tr>
<tr>
<td>Piston Ring:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sectional Sketch (B × T)/Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Ring</td>
<td>1.2 × 1.6 mm/ keystone</td>
<td>0.6 mm(0.02 in)</td>
</tr>
<tr>
<td></td>
<td>(0.05 × 0.06 in)</td>
<td></td>
</tr>
<tr>
<td>2nd Ring</td>
<td>1.2 × 1.6 mm/ keystone</td>
<td>0.6 mm(0.02 in)</td>
</tr>
<tr>
<td></td>
<td>(0.05 × 0.06 in)</td>
<td></td>
</tr>
<tr>
<td>End Gap (Installed):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Ring</td>
<td>0.15~0.35 mm</td>
<td>0.03~0.05 mm</td>
</tr>
<tr>
<td></td>
<td>(0.005~0.01 in)</td>
<td>(0.0012~0.0020 in)</td>
</tr>
<tr>
<td>2nd Ring</td>
<td>0.15~0.35 mm</td>
<td>0.03~0.05 mm</td>
</tr>
<tr>
<td></td>
<td>(0.005~0.01 in)</td>
<td>(0.0012~0.0020 in)</td>
</tr>
<tr>
<td>Side Clearance ( Installed):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Top Ring</td>
<td>0.03~0.05 mm</td>
<td>0.03~0.05 mm</td>
</tr>
<tr>
<td></td>
<td>(0.0012~0.0020 in)</td>
<td>(0.0012~0.0020 in)</td>
</tr>
<tr>
<td>Item</td>
<td>Standard</td>
<td>Limit</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Crankshaft:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crank Width “A”</td>
<td>37.90<del>37.95 mm(1.49</del>1.49 in)</td>
<td>...</td>
</tr>
<tr>
<td>Run Out Limit “C”</td>
<td>0.03 mm(0.0012 in)</td>
<td>...</td>
</tr>
<tr>
<td>Connecting Rod Big End Side Clearance “D”</td>
<td>0.2<del>0.5 mm (0.008</del>0.020 in)</td>
<td>1.0 mm(0.04 in)</td>
</tr>
<tr>
<td>Small End Free Play “F”</td>
<td>0.4<del>0.8 mm (0.016</del>0.031 in)</td>
<td>...</td>
</tr>
<tr>
<td>Automatic centrifugal clutch:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clutch shoe thickness</td>
<td>4.0 mm(0.16 in)</td>
<td>2.5 mm(0.1 in)</td>
</tr>
<tr>
<td>Clutch housing inside diameter</td>
<td>105 mm</td>
<td>105.5 mm</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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<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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<td>Kick Starter:</td>
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<tr>
<td>Type</td>
<td>Ratchet type</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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<td>Carburetor:</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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<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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<tr>
<td>Pilot Jet (P.J.)</td>
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<tr>
<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>
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<tr>
<td>Float Height</td>
<td>15<del>17 mm(0.59</del>0.67 in)</td>
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<td>Fuel level height</td>
<td>3.0<del>4.0 mm(0.12</del>0.16 in)</td>
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<tr>
<td>Engine Idling Speed</td>
<td>1,750~1,850 r/min</td>
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<tr>
<td>Reed Valve:</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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<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>
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<tr>
<td>Cylinder head and cylinder</td>
<td>Nut</td>
<td>M 7</td>
<td>4</td>
<td>20</td>
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<tr>
<td>Cylinder</td>
<td>Stud bolt</td>
<td>M 7</td>
<td>4</td>
<td>10</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>
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<tr>
<td>Air shroud 1×2</td>
<td>Screw</td>
<td>6.0</td>
<td>1</td>
<td>2</td>
<td>0.2</td>
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<td>Fan</td>
<td>Screw</td>
<td>M 6</td>
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<td>Autolube pump</td>
<td>Screw</td>
<td>M 5</td>
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<td>0.4</td>
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<tr>
<td>Reed valve</td>
<td>Bolt</td>
<td>M 6</td>
<td>4</td>
<td>11</td>
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<td>Air filter</td>
<td>Screw</td>
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<td>0.9</td>
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<td>Carburetor cap</td>
<td>Screw</td>
<td>M 4</td>
<td>2</td>
<td>2</td>
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<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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<td>Muffler</td>
<td>Bolt</td>
<td>M 8</td>
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<td>26</td>
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<td>Exhaust protector</td>
<td>Bolt</td>
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<td>3</td>
<td>11</td>
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<tr>
<td>Protector</td>
<td>Screw</td>
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<tr>
<td>Crankcase 1×2</td>
<td>Bolt</td>
<td>M 6</td>
<td>6</td>
<td>12</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>
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<tr>
<td>Bolt(case2)</td>
<td>Screw</td>
<td>M 6</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>
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<td>Oil plug</td>
<td>Plug</td>
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<tr>
<td>Idle gear plate</td>
<td>Screw</td>
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<td>Kick crank</td>
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<td>Starter motor</td>
<td>Bolt</td>
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<td>Clutch housing</td>
<td>Nut</td>
<td>M 10</td>
<td>1</td>
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<td>Clutch weight</td>
<td>Nut</td>
<td>M 10</td>
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<td>30</td>
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<td>Magnet base</td>
<td>Screw</td>
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<td>2</td>
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<td>C.D.I. rotor</td>
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# Maintenance Specification

## Chassis

<table>
<thead>
<tr>
<th>Item</th>
<th>Standard</th>
<th>Limit</th>
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<tr>
<td><strong>Steering system:</strong></td>
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<tr>
<td>Steering bearing type</td>
<td>Ball and race bearing</td>
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</tr>
<tr>
<td>No /size of steel balls:</td>
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<tr>
<td>Upper</td>
<td>22 pcs</td>
<td></td>
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<tr>
<td>Lower</td>
<td>19 pcs</td>
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<tr>
<td><strong>Front suspension:</strong></td>
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<tr>
<td>Front fork travel</td>
<td>70 mm (2.8 in)</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>
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<tr>
<td>Fork length (Installed)</td>
<td>212.1 mm (8.35 in)</td>
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<tr>
<td>Spring rate (K1)</td>
<td>15.68 N/mm (1.6 kg/mm, 90lb/in)</td>
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<tr>
<td>(K2)</td>
<td>23.5 N/mm (2.43 kg/mm, 136lb/in)</td>
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<tr>
<td>Inner tube vend limit</td>
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<td>0.2 mm (0.008 in)</td>
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<tr>
<td><strong>Rear suspension:</strong></td>
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<tr>
<td>Shock absorber stroke</td>
<td>55 mm (2.2 in)</td>
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<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, 407lb/in)</td>
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<td><strong>Front wheel:</strong></td>
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<tr>
<td>Type</td>
<td>Cast wheel</td>
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<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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<tr>
<td>Rim runout limit</td>
<td>...</td>
<td>1 mm (0.04 in)</td>
</tr>
<tr>
<td>radial</td>
<td></td>
<td></td>
</tr>
<tr>
<td>lateral</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rear wheel:</strong></td>
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<td></td>
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<tr>
<td>Type</td>
<td>Cast wheel</td>
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</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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<tr>
<td>Rim runout limit</td>
<td>...</td>
<td>1 mm (0.04 in)</td>
</tr>
<tr>
<td>radial</td>
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<tr>
<td>lateral</td>
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<td><strong>Front disc brake:</strong></td>
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<tr>
<td>Type</td>
<td>Single</td>
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<tr>
<td>Disc outside diameter × thickness</td>
<td>180×4.0 mm (7.1×0.16 in)</td>
<td>180×3.5 mm (7.1×0.14 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>
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<td><strong>Rear drum brake:</strong></td>
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<tr>
<td>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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<td><strong>Brake lever:</strong></td>
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<tr>
<td>Brake lever free play (front at lever side)</td>
<td>2<del>5 mm (0.08</del>0.20 in)</td>
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<tr>
<td>Brake lever free play (rear)</td>
<td>10<del>20 mm (0.39</del>0.79 in)</td>
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<tr>
<td>Throttle cable free play</td>
<td>3<del>5 mm (0.12</del>0.20 in)</td>
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# MAINTENANCE SPECIFICATION

## TIGHTENING TORQUES

### CHASSIS

<table>
<thead>
<tr>
<th>Part to be tightened</th>
<th>Thread size</th>
<th>Tightening torque</th>
<th>Remarks</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Nm</td>
<td>m•kg</td>
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<tr>
<td>Frame and engine bracket</td>
<td>M 12</td>
<td>84</td>
<td>8.4</td>
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<tr>
<td>Engine bracket, compression rod and engine</td>
<td>M 10</td>
<td>45</td>
<td>4.5</td>
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<tr>
<td>Rear carrier</td>
<td>M 6</td>
<td>13</td>
<td>1.3</td>
</tr>
<tr>
<td>Rear shock absorber and frame</td>
<td>M 10</td>
<td>30</td>
<td>3.0</td>
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<tr>
<td>Rear shock absorber and engine</td>
<td>M 8</td>
<td>16</td>
<td>1.6</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>
<td>4.3</td>
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<tr>
<td>Brake hose and master cylinder</td>
<td>M 8</td>
<td>20</td>
<td>2.0</td>
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<tr>
<td>Fuel tank</td>
<td>M 6</td>
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<td>Fuel cock</td>
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<td>Fuel sender</td>
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<td>Box</td>
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<td>Seat lock assembly</td>
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<td>Plastic parts &amp; cover</td>
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<td>Footrest board</td>
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<td>Rear brake cam lever</td>
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<td>Front brake caliper and front fork</td>
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<td>23</td>
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<td>Brake disc and hub</td>
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<td>2.0</td>
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<tr>
<td>Brake hose and caliper</td>
<td>M 8</td>
<td>23</td>
<td>2.3</td>
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<tr>
<td>Brake caliper and bleed screw</td>
<td>M 5</td>
<td>6</td>
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See “page3-18”
# ELECTRICAL

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<td><strong>Ignition timing:</strong></td>
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<tr>
<td>Advanced type</td>
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<tr>
<td><strong>C.D.I.:</strong></td>
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<tr>
<td>Pickup coil resistance/color</td>
<td>248 ~ 372Ω at 20˚C (68˚F)</td>
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<td></td>
<td>(W/R-W/L)</td>
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<td>Source coil resistance/color</td>
<td>640 ~ 960 Ω at 20˚C (68˚F)</td>
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<td>(B/-R-G/W)</td>
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<tr>
<td>C.D.I. unit model/manufacturer</td>
<td>5PJ/TIIC</td>
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<td><strong>Ignition coil:</strong></td>
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<td>Model/manufacturer</td>
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<td>Minimum spark gap</td>
<td>6 mm (0.24 in)</td>
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<td>Primary winding resistance</td>
<td>0.32~0.48 Ω at 20˚C (68˚F)</td>
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<td>Secondary winding resistance</td>
<td>5.68~8.52kΩ at 20˚C (68˚F)</td>
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<td><strong>Spark plug cap:</strong></td>
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<td>Type</td>
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<td>Resistance</td>
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<td><strong>C.D.I. Magneto:</strong></td>
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<td>Model/Manufacturer</td>
<td>5PJ/TIIC</td>
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<td>Nominal output</td>
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<td>Charging current</td>
<td>0.6A at 3,000r/min</td>
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<td></td>
<td>1.2A at 8,000r/min</td>
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<tr>
<td>Charging voltage</td>
<td>13~14V at 4,000 rpm</td>
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<tr>
<td>Charging Coil Resistance (Color)</td>
<td>0.48~0.72 Ω (White-Black)</td>
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<tr>
<td>Lighting Coil Resistance (Color)</td>
<td>0.4~0.6 Ω (Yellow/Red- Black)</td>
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<tr>
<td>Lighting Voltage</td>
<td>12<del>15V (3,000</del>8,000 rpm)</td>
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</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><strong>Battery:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specific gravity</td>
<td>1.320</td>
<td></td>
</tr>
<tr>
<td><strong>Electric starter system:</strong></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>400g</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><strong>Starter relay:</strong></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>(Nut)</td>
<td>(Bolt)</td>
<td>Nm</td>
</tr>
<tr>
<td>10 mm</td>
<td>6 mm</td>
<td>6</td>
</tr>
<tr>
<td>12 mm</td>
<td>8 mm</td>
<td>15</td>
</tr>
<tr>
<td>14 mm</td>
<td>10 mm</td>
<td>30</td>
</tr>
<tr>
<td>17 mm</td>
<td>12 mm</td>
<td>55</td>
</tr>
<tr>
<td>19 mm</td>
<td>14 mm</td>
<td>85</td>
</tr>
<tr>
<td>22 mm</td>
<td>16 mm</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>LS</td>
</tr>
<tr>
<td>O-rings</td>
<td>LS</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>LS</td>
</tr>
<tr>
<td>Starter wheel gear</td>
<td>LS</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>LS</td>
</tr>
<tr>
<td>Drive axle</td>
<td>M</td>
</tr>
<tr>
<td>Pump drive gear</td>
<td>LS</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>

**CHASSIS**

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS

LS
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.
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.

Diagram:
- 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.
- Align the clip with the white brand.
- 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.
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
7. Flange bolt
8. Bolt
9. Brake hose holder
10. Flange bolt

A Pass the brake hose through the holder.
1. 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.
1. Handlebar switch (right)
2. Speedometer
3. Wire brake
4. Handlebar switch (left)
5. Wire harness
6. Brake hose
7. Speedometer cable
8. Throttle cable 1
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 cable 1, 3 through between handlebar and wire harness.
D. Hang the wire harness bind on to the bracket.
**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></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1,000 km (600 mi)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>or 6 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(whichever comes first)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3,000 km (2,000 mi)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>or 12 months</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(whichever comes first)</td>
<td></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, fluide 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>Every 12,000 km (8,000 mi) or 24 months (whichever occurs first).</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>
<tr>
<td>11</td>
<td>Centerstand</td>
<td>• Check operation.</td>
<td>Same as engine oil</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Lubricate with lithium soap base grease (all purpose grease).</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Front fork</td>
<td>• Check operation and for oil leakage.</td>
<td>–</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>13</td>
<td>Rear shock absorber assembly</td>
<td>• Check operation and shock absorber for oil leakage.</td>
<td>–</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace shock absorber assembly if necessary.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Carburetor</td>
<td>• Check engine idling speed.</td>
<td>–</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adjust if necessary.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Autolube pump</td>
<td>• Check operation.</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></td>
<td></td>
<td>• Bleed if necessary.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Final transmission oil</td>
<td>• Check oil level and vehicle for oil leakage.</td>
<td>–</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Replace.</td>
<td>Yamalube 4 SAE 10W 30 SE or GL gear oil</td>
<td>○</td>
<td>Every 12,000 km (8,000 mi) or 24 months (whichever occurs first).</td>
</tr>
<tr>
<td>17</td>
<td>V-belt</td>
<td>• Replace.</td>
<td>–</td>
<td></td>
<td>Every 9,000 km (6,000 mi)</td>
</tr>
</tbody>
</table>

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.
Remove the parts in order.

**NOTE:**
Insert the (-) screwdriver into the slot of battery cover and pickup then remove.

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

<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>

**T  R.** 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>Mirrors</td>
<td>2</td>
<td>Remove the part in order.</td>
</tr>
<tr>
<td>2.</td>
<td>Front handlebar cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Rear handlebar cover</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>4.</td>
<td>Flasher light (Left/Right)</td>
<td>1/1</td>
<td></td>
</tr>
</tbody>
</table>
ENGINE IDLE SPEED ADJUSTMENT

1. Remove
   • Battery box cover ①

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.

   | Turn in | Idle speed becomes higher. |
   | Turn out | Idle speed becomes lower. |
THROTTLE CABLE FREE ADJUSTMENT

1. Check:
   - Throttle cable free play ③
     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 ③ 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.

   "OIL" indicator light

---

Engine oil level visual inspection steps:

1. Turn main switch to "*" position.
2. "OIL" indicator light does not come on.
   - Inspect faulty electrical circuit, light bulbs etc.
3. "OIL" indicator light comes on.
   - Turn main switch to "ON" position.
4. "OIL" indicator light does not come on.
   - Engine oil level and electrical circuit are OK.
5. "OIL" indicator light comes on.
   - Supply engine oil.
6. "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

    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.
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.
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 ①
   - Screws ②
   - Crankcase cover 2(left) ③
   - Screws(Air cleaner and left crankcase cover ④
   - Crankcase cover 1(left) ⑤

2. Inspect
   - V-belt ①
     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 ⑧
     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)
     12Nm(1.2m.kg, 8.4 ft.lb)
   - Air cleaner 9Nm(0.9m.kg, 6.5 ft.lb)
   - Crankcase cover 2 (left)
     7Nm(0.7m.kg, 5.1 ft.lb)
   - Kick crank
     9Nm(0.9m.kg, 6.5 ft.lb)
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)

Rear brake lever free play adjustment steps:
• Turn the adjuster in or out until the correct free play is obtained.

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 steps:

1. Add proper brake fluid to the reservoir.
2. Install the diaphragm. Be careful not to spill any fluid or allow the reservoir to overflow.
3. Connect the clear plastic tube to the caliper bleed screw.
4. Place the other end of the tube into a container.
5. Slowly apply the brake lever several times.
6. Pull the lever in. Hold the lever in position.
7. Loosen the bleed screw and allow the lever to travel towards its limit.
8. Tighten the bleed screw when the limit has been reached, then release the lever.
9. Repeat steps (e) to (h) until the air bubbles have been removed from the system.
10. 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

- Tighten the ring nut 3 using nut wrench.
  22 Nm(2.2 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 1/4 turn.
- Install rubber ring 2 and ring nut 2, 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

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

- Install ring nut 1
  66Nm(6.6 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.

***********************************************************************
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.

### TIRE INSPECTION

#### 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.

<table>
<thead>
<tr>
<th>Basic weight (with oil and a full fuel tank)</th>
<th>94 kg (207 lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum load*</td>
<td>143 kg (315 lb)</td>
</tr>
<tr>
<td>Cold tire pressure</td>
<td></td>
</tr>
<tr>
<td>Front</td>
<td>200 kpa (2.0 kgf/cm², 29 psi)</td>
</tr>
<tr>
<td>Rear</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 ① (front and rear):
   1.6 mm (0.06 in)

   - Tread depth
   - Side wall
   - Wear indicator
CHECKING THE TIRES

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.
**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.

**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 re- placed, 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 / LEVERS LUBRICATING / CENTERSTAND LUBRICATING

EAS00170

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.

Recommended lubricant
Engine oil or a suitable cable lubricant

NOTE:

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

EAS00171

LEVERS LUBRICATING

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

Recommended lubricant
Lithium soap base grease

EAS00173

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.
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

Battery condition checking steps:
- Connect a digital volt meter to the battery terminals.

Tester (+) lead Battery (+) terminal.
Tester (-) lead Battery (-) terminal.

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).
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 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.
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.

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.

If current does not exceed standard charging current after 5 minutes, replace the battery.

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.
Charging method using a constant-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.

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

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.

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

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

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

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

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

5. Install
   • Battery
   • Battery box cover
HEAD LIGHT BEAM ADJUSTMENT

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

HEADLIGHT BULB REPLACEMENT

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

2. Disconnect:
   - Headlight coupler

3. Remove:
   - Bulb holder cover

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

5. Remove:
   - Bulb(defective)

WARNING
Since the headlight bulb gets extremely hot, keep flammable products and your hands away from the bulb until it has cooled down.
HEADLIGHT BULB / TURN SIGNAL BULB REPLACEMENT

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.
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
#### WIREHARNESS AND CABLES

**Order** | **Job name/Part name** | **Q'ty** | **Remarks**
--- | --- | --- | ---
1 | *Wireharness and cables removal*  
Rear carrier  
Tail cover  
Left side panel  
Right side panel  
Battery box cover  
Center cowling  
Air filter case  
Carburetor |  | Remove the parts in order.  
Refer to “COVER AND PANEL” section in CHAPTER 3.
Refer to “CARBURETOR” section in CHAPTER 6.
2 | Air shroud 1  
Autolube delivery hose | 1 |  
1 |  
2 |  |
### ENGINE REMOVAL

**Order** | **Job name/Part name** | **Q'ty** | **Remarks**
---|---|---|---
3 | Spark plug cap | 1 | 
4 | Battery (-) lead | 1 | 
5 | C.D.I magneto leads coupler | 1 | 
6 | Starter motor leads coupler | 1 | 
7 | Rear wheel nut | 1 | 
8 | Rear brake adjuster | 1 | 
9 | Rear brake cable | 1 | 
10 | Pin | 1 | 
11 | Bolt | 1 | 
12 | Engine mount bolt | 1 | 
13 | Engine | 1 | 

**NOTE:**

Loosen the rear wheel nut.

Reverse the removal procedure for installation.

---

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

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

- R.
- T.

---

4-2
### CYLINDER HEAD, CYLINDER AND PISTON

**Job name/Part name**

- Cylinder head, Cylinder and piston removal
- Engine
- Muffler/Gasket
- Air shroud 2
- Spark plug
- Cylinder head/Cylinder head gasket
- Cylinder
- Piston pin clip
- Piston pin/ Bearing
- Piston
- Piston ring set
- Cylinder gasket

**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>Muffler/Gasket</td>
<td>1/1</td>
<td>Remove the parts in the order.</td>
</tr>
<tr>
<td>2</td>
<td>Air shroud 2</td>
<td>1</td>
<td>Refer to the “ENGINE REMOVAL” section</td>
</tr>
<tr>
<td>3</td>
<td>Spark plug</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Cylinder head/Cylinder head gasket</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Cylinder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Piston pin clip</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Piston pin/ Bearing</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Piston</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Piston ring set</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Cylinder gasket</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Torque Specifications**

- 26Nm (2.6 m.kg, 18.2 ft.lb) [T  R.]
- 14Nm (1.4 m.kg, 10 ft.lb) [T  R.]
- 9Nm (0.9 m.kg, 6.5 ft.lb) [T  R.]
- 14Nm (1.4 m.kg, 10 ft.lb) [T  R.]

**New**

- Parts marked as "New" must be replaced with new parts.

---

4-3
PISTON PIN AND PISTON REMOVAL

1. Remove:
   • Piston pin clip ①

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 ①
   • Piston ②
   • Piston pin bearing ③

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

CYLINDER HEAD INSPECTION

1. Eliminate:
   • Carbon deposits  
     Use a rounded scrapper ①.

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

Warpage measurement and re-surfacement steps:
   • Attach a straight edge ① and a thickness gauge ② 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.
CYLINDER AND PISTON INSPECTION

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 bore
“C”
40.000~40.014mm
(1.5748~1.5754 in)
0.10 mm
(0.004 in)

Taper “T”
–
0.05 mm
(0.0020 in)

Out of round
“R”
–
0.03 mm
(0.0012 in)

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 cylin-
der, 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 pis-
ton 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 cylin-
der, 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 (piston pin): 
   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.

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 ① 11 Nm (1.1 m·kg, 8 ft·lb)
3. Install:
   - Small end bearing
   - Piston ①
   - Piston pin ②
   - Piston pin clip ③ New

NOTE: 
- The arrow ③ 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 ① are properly fitted around the ring locating pins ③ in the piston grooves.

---

3. Install:
   - Cylinder ①

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.
### Kick Starter and Crankcase Cover (Left)

<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</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Crankcase cover 2 (left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Crankcase cover 1 (left)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Gasket</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Pin</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Ordering Information**

- **Kick starter and crankcase cover (left) removal**
  - **Order**
  - **Q’ty**
  - **Remarks**

---

**Torque Specifications**

- **Kick Starter**
  - **Job name/Part name**: Kick starter
  - **Torque**: 12Nm (1.2 m.kg, 8.4 ft.lb)
  - **Order**: 1

- **Knee Cover**
  - **Job name/Part name**: Crankcase cover 2 (left)
  - **Torque**: 7Nm (0.7 m.kg, 5.1 ft.lb)
  - **Order**: 2

- **Crankcase Cover**
  - **Job name/Part name**: Crankcase cover 1 (left)
  - **Torque**: 90Nm (0.9 m.kg, 6.5 ft.lb)
  - **Order**: 1

- **Gasket**
  - **Job name/Part name**: Gasket
  - **Torque**: 7Nm (0.7 m.kg, 5.1 ft.lb)
  - **Order**: 3

- **Pin**
  - **Job name/Part name**: Pin
  - **Torque**: 7Nm (0.7 m.kg, 5.1 ft.lb)
  - **Order**: 5

**New**
## V-BELT, CLUTCH AND SECONDARY/PRIMAR 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>1/1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Circlip/Plain washer</td>
<td>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></td>
</tr>
<tr>
<td>8</td>
<td>Collar</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

New
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

Order | Job name/Part name                                      | Q'ty | Remarks                                                                                                                                 |
---|---------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------|
1   | V-belt, clutch and secondary/primary sheave removal     |      | Remove the parts in order.                                                                                                              |
2   | Lower cowling                                          |      | Refer to “COVER AND PANEL” section in chapter 3.                                                                                      |
3   | Air shroud 3                                           |      | Refer to “ENGINE REMOVAL” section.                                                                                                      |
4   | Crankcase cover (left)                                 |      | Refer to “SECONDARY SHEAVE AND V-BELT REMOVAL” section.                                                                               |
5   | Clutch housing                                         | 1    | Refer to “PRIMARY SHEAVE REMOVAL ASSEMBLY” section.                                                                                     |
6   | Secondary sheave assembly                              | 1    |                                                                                                                                          |
7   | V-belt                                                 | 1    |                                                                                                                                          |
8   | Conical washer/One-way clutch                          | 1/1  | Reverse the removal procedure for installation                                                                                         |
9   | Crow washer                                            | 1    |                                                                                                                                          |
10  | Primary fixed sheave                                   | 1    |                                                                                                                                          |
11  | Collar/Washer                                          | 1/1  |                                                                                                                                          |
12  | Primary sliding sheave                                 | 1    |                                                                                                                                          |
13  | Cam/ Slider                                            | 1/3  |                                                                                                                                          |
14  | Weight                                                 | 6    |                                                                                                                                          |
SECONDARY 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>Secondary sheave disassembly</td>
<td>1</td>
<td>Disassemble the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Nut</td>
<td>1</td>
<td>Refer to “SECONDARY SHEAVE DISASSEMBLY” section.</td>
</tr>
<tr>
<td>3</td>
<td>Clutch carrier</td>
<td>1</td>
<td>Refer to “SECONDARY SHEAVE INSTALLATION” section.</td>
</tr>
<tr>
<td>4</td>
<td>Clutch shoe spring</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Compression spring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Spring seat</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Guide pin</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Secondary sliding sheave</td>
<td>1</td>
<td>Refer to “SECONDARY SHEAVE INSTALLATION” section.</td>
</tr>
<tr>
<td>9</td>
<td>O-ring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oil seal</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Secondary fixed sheave</td>
<td>1</td>
<td>Reverse the disassembly procedure for assembly.</td>
</tr>
</tbody>
</table>

**Remarks:**
- Disassemble the parts in order.
- Refer to “SECONDARY SHEAVE DISASSEMBLY” section.
- Refer to “SECONDARY SHEAVE INSTALLATION” section.

**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 2.

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.

2. Remove:
   • Clutch housing
   • Secondary sheave assembly
   • Dowel pins
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

3. Loosen:
   - Nut (Clutch carrier) ①

NOTE: ____________

Install the secondary sheave to primary drive shaft as shown, and hold the secondary sheave by Universal Roter Holder ② to loosen the nut ①.

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 ①

Clutch spring holder:
YS-28891

5. Remove:
   - Clutch securing nut ②

6. Remove:
   - Clutch assembly ①
   - Clutch spring ②
   - Spring seat ③
   - 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.
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 ①
   - Secondary sliding sheave ②
     Scratch/Crack/Damage→Replace as a set.
   - Oil seal ③
     Damage→Replace

2. Inspect:
   - Torque cam groove ①
   - Guide pin ②
     Wear/Damage→Replace as a set.
   - O-rings ③
     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 Nm (5.0 m.kg, 36 ft.lb)
   Use Flywheel holding tool ②

   **Rotor holding tool:**
   YU-01235
V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE

8. Install:
   - Secondary sheave assembly
   - Clutch housing ①
   - V-belt ②

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

9. Tighten:
   - Nut ① (secondary sheave)
     - 40 Nm (4.0 kgf, 29 ft.lb)
     - Use sheaveholder ②

   **Sheave holder:**
   YU-01701

   **PRIMANGY 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 → 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)

<table>
<thead>
<tr>
<th>Torque</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>45 Nm</td>
<td>4.5 m.kg, 31 ft.lb</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Torque</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>7 Nm</td>
<td>0.7 m.kg, 5.1 ft.lb</td>
</tr>
</tbody>
</table>
### Starter Clutch and Starter Motor

<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>Plate</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Plain washer</td>
<td>1</td>
<td><em>Remove the parts in order.</em></td>
</tr>
<tr>
<td>3</td>
<td>Idle gear</td>
<td>1</td>
<td><em>Remove the parts in order.</em></td>
</tr>
<tr>
<td>4</td>
<td>Plain washer</td>
<td>2</td>
<td><em>Remove the parts in order.</em></td>
</tr>
<tr>
<td>5</td>
<td>Starter clutch</td>
<td>1</td>
<td><em>Remove the parts in order.</em></td>
</tr>
</tbody>
</table>

### Starter Clutch and Starter Motor

- **13Nm (1.3m.kg, 9.4 ft.lb)**
- **8Nm (0.8m.kg, 5.8 ft.lb)**

### Remarks
- Refer to “COVERS AND PANEL” section in chapter 3.
- Refer to “C.D.I. MAGNETO” section.
- Refer to “REAR WHEEL” section in chapter 6.
- Refer to “KICKER STARTER” section.
- Refer to “V-BELT, PRIMARY SHEAVE” section.

---

*New*
### 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>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**

- 13Nm(1.3m.kg, 9.4 ft.lb)
- 8Nm(0.8m.kg, 5.8 ft.lb)
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.
     ***************************************
### Order

<table>
<thead>
<tr>
<th>No.</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Air shroud 1</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Fan /O-ring</td>
<td>1/1</td>
<td>Refer to “COVER AND PANEL” section in chapter 3.</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>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>8</td>
<td>Gasket (Magneto cover)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:**
- Remove the parts in order.
- 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.

Rotor holding tool:
YU-01235

2. Remove:
   - Rotor ①
   - Woodruff key
   - Use the flywheel magneto puller ②.

Flywheel puller:
YU-01189

- Stator assembly
- Gasket

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 8 Nm(0.8 m.kg, 5.8 ft.lb)

5. Install:
   - Woodruff key
   - C.D.I. magneto Rotor ②
   - Plain washer
   - Nut 38Nm(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.
## Autolube Pump Removal

### Job name/Part name

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Autolube pump removal</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>C.D.I. magneto</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Air shroud 2.</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Circlip</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Pump drive gear</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Pin</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Oil hose</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Oil delivery hose</td>
<td>1</td>
</tr>
<tr>
<td>9</td>
<td>Autolube pump ass‘y</td>
<td>1</td>
</tr>
</tbody>
</table>

### Remarks

- Remove the parts in order.
- Refer to “C.D.I. magneto” section.
- Refer to “Autolube pump installation” section
- Reverse the removal procedure for installation.
AUTOLUBE PUMP INSTALLATION

**CAUTION:**

After installing autolube pump, it must be bled.

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 Removal

### Job name/Part name
- Transmission removal
- Rear wheel
- Secondary sheave
- Drain the transmission oil.

### 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>Transmission case cover</td>
<td>1</td>
<td>Remove the parts in order. Refer to “REAR WHEEL/REAR BRAKE” section in chapter 7.</td>
</tr>
<tr>
<td>2</td>
<td>Gasket (transmission case cover)</td>
<td>1</td>
<td>Refer to “V-BELT, CLUTCH, SECONDARY/ PRIMARY SHEAVE” section</td>
</tr>
<tr>
<td>3</td>
<td>Dowel pin</td>
<td>2</td>
<td>Refer to “TRANSMISSION OIL REPLACEMENT” section in chapter 3.</td>
</tr>
<tr>
<td>4</td>
<td>Primary drive gear</td>
<td>1</td>
<td></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>

### Remarks
- Remove the parts in order.
- Refer to “REAR WHEEL/REAR BRAKE” section in chapter 7.
- 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 installation.</td>
</tr>
</tbody>
</table>

**Diagram:**

- New parts are indicated.
- Torque values are provided:
  - 18Nm (1.8 m.kg, 13ft.lb)
  - 12Nm (1.2 m.kg, 8.4ft.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><strong>Crankcase and Reed valve removal</strong></td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td></td>
<td>Engine removal</td>
<td></td>
<td>Refer to “ENGINE REMOVAL” section.</td>
</tr>
<tr>
<td></td>
<td>Cylinder head, cylinder, piston</td>
<td></td>
<td>Refer to “CYLINDER HEAD CYLINDER AND PISTON” section.</td>
</tr>
<tr>
<td></td>
<td>Crankcase cover (left)</td>
<td></td>
<td>Refer to “KICK STARTER AND CRANKCASE COVER (LEFT)” section.</td>
</tr>
<tr>
<td></td>
<td>V-belt, clutch, secondary/primary sheave</td>
<td></td>
<td>Refer to “V-BELT, CLUTCH AND SECONDARY/PRIMARY SHEAVE” section.</td>
</tr>
<tr>
<td></td>
<td>C.D.I. magneto</td>
<td></td>
<td>Refer to “C.D.I. MAGNETO” section.</td>
</tr>
<tr>
<td></td>
<td>Starter clutch, starter motor</td>
<td></td>
<td>Refer to “STARTOR CLUTCH AND STARTOR MOTOR” section.</td>
</tr>
<tr>
<td></td>
<td>Autolube pump</td>
<td></td>
<td>Refer to “AUTOLUBE PUMP” section.</td>
</tr>
<tr>
<td></td>
<td>Rear wheel</td>
<td></td>
<td>Refer to “REAR WHEEL AND REAR BRAKE” section in chapter 6.</td>
</tr>
<tr>
<td></td>
<td>Transmission</td>
<td></td>
<td>Refer to “TRANSMISSION” section.</td>
</tr>
</tbody>
</table>
### CRANKCASE AND REED VALVE

#### Order | Job name/Part name | Q’ty | Remarks
--- | --- | --- | ---
1 | Intake manifold | 1 |  
2 | Reed valve | 1 |  
3 | Valve seat gasket | 1 |  
4 | Stopper | 1 |  
5 | Crankcase 2 | 1 |  
6 | Dowel pin | 2 |  
7 | Engine mount spacer | 1 |  
8 | Circlip | 1 |  
9 | Bearing | 1 |  
10 | Oil seal | 1 |  

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

1. Remove:
   - Oil seal stopper ①
   - Screws (crankcase) ②

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

2. Attach:
   - Crankcase separating tool ①

   **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 ①
     
     Out of specification → Adjust stopper/Replace valve stopper.

   ![Valve stopper height diagram](image)

   
   Valve stopper height ①
   6.0~6.4 mm (0.24~0.25 in)

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

   ![Reed valve clearance diagram](image)

   Reed valve clearance ②
   Less than 0.2 mm (0.0079 in)

**CRANKCASE (RIGHT) INSTALLATION**

1. Install:
   - Dowel pins ①
   - Engine mount spacer ②

2. Apply:
   - Sealant ③
     
     To the mating surfaces of both case halves.

   ![Sealant diagram](image)

   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 ①, ②

   ![Crankshaft installing tool diagram](image)

   Crankshaft installation set ①
   YU-90050

   Crankshaft installer adapter (M10) ②
   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
     Unsmoothen 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

**Remarks**
- 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 removal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Right crankcase removal</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Crankshaft</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bearing</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Oil seal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Crankcase cover (left)</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

---

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CRANKSHAFT REMOVAL
1. Attach:
   - Crankcase separating tool

   ![Crankcase separating tool: YU-01135-A](image)

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)](image)

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 ①
     - YU-90050
   - Crankshaft installer adapter
     (M10) ②
     - YU-90062

2. Install:
   - Crankshaft ③
     (to the crankcase ④)

CAUTION:

To avoid scratching the crankshaft and to ease the installation procedure, lubricate the oil seal lips with grease and each bearing with engine oil.

NOTE:

Hold the connecting rod at top dead center (TDC) with one hand while turning the nut of the crankshaft installing tool with the other. Turn the crankshaft installing tool until the crankshaft assembly bottoms against the bearing.

3. Install:
   - Oil seal ①*New*
   - Apply lithium soap base grease onto the oil seal lip.
   - Use the guide ② and seal driver ③ to install the oil seal

*Oil seal driver
  - YM-1410
*Oil seal guide
  - YM-1409
### Carburetor 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>Carburetor removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Battery box cover</td>
<td></td>
<td>Refer to “COVER AND PANEL” section in CHAPTER 3.</td>
</tr>
<tr>
<td>3</td>
<td>Grip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>End cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Left/Right cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Center cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Air cleaner case assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Auto choke lead coupler</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Fuel hose/vacuum hose</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Oil delivery pipe assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Carburetor</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Throttle cable</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Remark:**
- **T** R.
- 9Nm (0.9 m.kg, 6.5 ft.lb)
### CABURETOR DISASSEMBLY

#### Job name/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>①</td>
<td>Carburetor disassembly</td>
<td>1</td>
<td>Disassemble the parts in order.</td>
</tr>
<tr>
<td>②</td>
<td>Throttle cable</td>
<td>1</td>
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</tr>
<tr>
<td>③</td>
<td>Throttle valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>④</td>
<td>Needle set</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑤</td>
<td>Carburetor top cover/o-ring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑥</td>
<td>Throttle stop screw</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑦</td>
<td>Auto choke unit assembly</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑧</td>
<td>Float chamber/Seal ring</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>⑨</td>
<td>Float pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑩</td>
<td>Float/Needle valve</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑪</td>
<td>Main jet</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑫</td>
<td>Pilot jet</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>⑬</td>
<td>Main nozzle</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
<tr>
<td>⑭</td>
<td>Carburetor body</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
CABURETOR 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 ①
  - Main nozzle ②
  - Main jet ③
  - Pilot jet ④
    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 ⑨
    Out of specification → Inspect needle valve, float and valve seat.

  **Float height:**
  15 ~ 17 mm (0.59 ~ 0.67 in)

  **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.
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. Measure:
   - Fuel level a
   Out of specifications → Adjust.

   **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.

   **Fuel level gauge:**
   YM-01312-A

   - Loosen the drain screw 3.
   - Measure the fuel level a 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.

2. Install:
   - Carburetor assembly

   **NOTE:**
   Align the projection a with the projections b.

---

1. Install:
   - Throttle cable 1

2. Install:
   - Carburetor assembly
**CARBURETOR**

- Install the carburetor.
- Recheck the fuel level.

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

**AUTO CHOKE INSPECTION**

(Ambient temperature lower than 45°C)

1. Remove:
   - Carburetor

2. Inspect:
   - Autochoke unit
     Connect a suitable hose ② to the starter ①, 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 ④ to the starter ③, and blow it with the mouth etc.
  Possible→Replace auto choke unit.
  Impossible→Good condition.

******************************************************************************
CARBURETOR

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
### CHASSIS
### FRONT WHEEL AND BRAKE DISC

#### Job name/Part name

<table>
<thead>
<tr>
<th>Order</th>
<th>Job name/Part name</th>
<th>Q’ty</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speedometer cable</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Front brake hose holder</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>Brake caliper</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Wheel axle</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Front wheel assembly</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Gear unit assembly</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Collar</td>
<td>1</td>
</tr>
<tr>
<td>8</td>
<td>Brake disc</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Remarks

- Remove the parts in order.

**WARNING**

Securely support the scooter so there is no danger of it falling over.

- Refer to “FRONT WHEEL INSTALLATION” section.
- Refer to “FRONT WHEEL ASSEMBLY” section.
- Reverse the removal procedure for installation.
## 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</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Oil seal</td>
<td>1</td>
<td>Refer to “FRONT WHEEL DISASSEMBLY/ASSEMBLY” section.</td>
</tr>
<tr>
<td>3</td>
<td>Bearing</td>
<td>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></td>
<td>Bearing</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

Remarks:
- Remove the parts in order.
- Refer to “FRONT WHEEL DISASSEMBLY/ASSEMBLY” section.
- 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.

YP/00020
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

   ![Diagram of brake disc](image)

   **Maximum deflection:**
   0.15 mm (0.0059 in)

   Out of specification→Replace.

2. Measure:
   - Brake disc thickness

   ![Diagram of brake disc thickness](image)

   **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 ①
   - Collar ②
   - Spacer ③
   - Bearing ④
   - Oil seal ⑤

**NOTE:**
- Apply the lithium soap base grease on the bearing and oil seal lip when installing.
- Use a socket that matches the outside diameter 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 bearing. Contact should be made only with the outer race.
FRONT WHEEL AND BRAKE DISC

2. Install:
   • Brake disc \( \text{\textbullet} \) 20 Nm(2.0 m.kg, 14 ft.lb)

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

Recommended lubricant:
Lithium soap base grease

**EB700030**

FRONT WHEEL INSTALLATION
Reverse the “REMOVAL” procedure.
Note the following points.
1. Lubricate:
   • Front wheel axle
   • Bearings
   • Oil seal (lips)
   • Drive/driven gear (speedometer)

2. Install:
   • Speedometer gear unit \( \text{\textbullet} \)

**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 \( \text{\textbullet} \)
   • Axle nut (front wheel axle) \( \text{\textbullet} \) 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>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Caliper support bolt</td>
<td>1</td>
<td>Refer to “BRAKE PAD REPLACEMENT” 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>4</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)
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 (a): 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**
--- | --- | --- | ---
1 | Master cylinder removal | 1 | Remove the parts in order. Refer to “BRAKE FLUID REPLACE-MENT” section in CHAPTER 3.
2 | Drain the brake fluid | 1/1 |  |
3 | Brake lever/compression spring | 1 |  |
4 | Brake switch | 1 |  |
5 | Union bolt | 2 | Refer to “MASTER CYLINDER INSTALLATION” section.
6 | Copper washer | 1 |  |
7 | Brake hose | 1 | Reverse the removal procedure for installation.
8 | Master cylinder bracket | 1 |  |
9 | Master cylinder | 1 |  |

**Torque Specifications**
- **Master cylinder removal**: 9Nm (0.9 m.kg, 6.5 ft.lb)
- **New parts**: 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 “MASTER CYLINDER ASSEMBLY” 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>
MASTER CYLINDER INSPECTION

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

2. Inspect:
   - Master cylinder (1)
     - Scratches/wear/damage → Replace the master cylinder assembly.

3. Inspect:
   - Diaphragm (1)
     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 (1)
   - Master cylinder piston (2)
     Install cylinder cup (1) by using cylinder cup installer (3).

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

---

**MASTER CYLINDER INSTALLATION**

1. Install:
   - Master cylinder ①
   - Master cylinder bracket ②

**CAUTION:**

- Install the master cylinder bracket ② with the “UP” mark ③ 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

<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>Union bolt</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Copper washer</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Brake hose</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Caliper support bolt</td>
<td>1</td>
<td>Refer to “CALIPER INSTALLATION” section.</td>
</tr>
<tr>
<td>5</td>
<td>Caliper assembly</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

Remove the parts in order. Refer to “BRAKE FLUID REPLACEMENT” section in CHAPTER 3.
### CALIPER 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>Caliper disassembly</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>②</td>
<td>Caliper bracket</td>
<td>1</td>
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</tr>
<tr>
<td>③</td>
<td>Brake pad</td>
<td>2</td>
<td>Refer to “BRAKE CALIPER DISASSEMBLY/ASSEMBLY” section.</td>
</tr>
<tr>
<td>④</td>
<td>Pad spring</td>
<td>2</td>
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<tr>
<td>⑤</td>
<td>Caliper piston</td>
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<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>Reverse the disassembly procedure for assembly.</td>
</tr>
</tbody>
</table>

**Remarks:**
- 6Nm (0.6 m.kg, 4.3 ft.lb)
- New: [Diagram showing new parts]
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 ① 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></td>
<td>Rear wheel and rear brake removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>1</td>
<td>Muffler assembly/Gasket</td>
<td>1/1</td>
<td><strong>NOTE:</strong> Place the scooter on a suitable stand so that the rear wheel is elevated.</td>
</tr>
<tr>
<td>2</td>
<td>Nut/Plain washer</td>
<td>1</td>
<td>Reverse the disassembly procedure for installation.</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>
# REAR BRAKE

<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>Adjuster</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Brake cable</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Pin</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Return spring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Brake shoe</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Camshaft lever</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Wear indicator</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Brake camshaft</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Reverse the removal procedure for installation.

\[10\text{Nm}(1.0 \text{ m.kg}, 7.2 \text{ ft.lb})\]
REAR WHEEL AND REAR BRAKE

EB701020

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”.

EB701021

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 ③

   Brake lining thickness ③:
   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 ④
     Out of specification → Replace the wheel.

   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:
- Cam shaft 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 ④ on the indicator plate with the camshaft notch and install.
   - Check the proper position of the brake shoe.

2. Install:
   - Camshaft lever ①
   **NOTE:** 10Nm (1.0 m.kg, 7.2 ft.lb)

   Set the camshaft with its punched mark ③ facing the direction on the cam shaft lever ⑥.
# HANDLEBAR

**HANDLEBAR**

**HANDLEBAR**

---

<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 removal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Left/Right bake mirror</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Front protector bar</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Upper cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front/Rear handlebar cover</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Left/Right flasher</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Brake master cylinder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Front brake switch</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Handlebar switch (Right)</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Throttle cable</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
| 11    | Right grip                             | 1/1  | Remove the parts in order.  
Refer to “COVERS AND PANEL” IN CHAPTER 3. |
| 12    | Brake cable                            | 1    |         |
| 13    | Rear brake switch                      | 1    |         |
| 14    | Handlebar switch (Left)                | 1    |         |
| 15    | Bind                                   | 1    |         |

---

**Notes:**

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

**HANDLEBAR LS**

- **T: R.**
  - 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

   43Nm(4.3 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

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

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

**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 ⑤
- 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

*****************************************************************************
Tighten steps:
- Tighten the ring nut 3 ② using the ring nut wrench ① 22 Nm (2.2 m.kg, 16 ft.lb)

**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 ⑥, 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.

- Install special washer ⑥

NOTE: Insert the projections of the special washer into the slots.

- Install ring nut 1 ⑦ and tighten.

\[ \text{46Nm (4.6 m.kg, 47.8 ft.lb)} \]
### FRONT FORK

#### FRONT FORK

<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 fork removal</td>
<td></td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td></td>
<td>Steering</td>
<td></td>
<td>Refer to “Steering” section.</td>
</tr>
<tr>
<td>1</td>
<td>Under fender</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Speedometer cable holder</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Cap bolt</td>
<td>2</td>
<td>Refer to “FRONT FORK REMOVAL/INSTALLATION” section.</td>
</tr>
<tr>
<td>4</td>
<td>Pinch bolt</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Front fork</td>
<td>2</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Remarks:**

- T  R. 40Nm (4.0 m.kg, 29 ft.lb)
- T  R. 38Nm (3.8 m.kg, 27 ft.lb)
FRONT FORK 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 fork disassembly</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>Fork spring</td>
<td>1</td>
<td>Refer to “FRONT FORK REMOVAL/INSTALLATION” section.</td>
</tr>
<tr>
<td>3</td>
<td>Band/Front fork boot</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Bolt/Copper washer</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Inner tube</td>
<td>1/1</td>
<td>Refer to “FRONT FORK DISASSEMBLY/ASSEMBLY” section.</td>
</tr>
<tr>
<td>6</td>
<td>Damper rod</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Rebound spring</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Oil lock piece</td>
<td>1/1</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Oil seal clip</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Oil seal</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Outer tube</td>
<td>1</td>
<td>Reverse the disassembly procedure for assembly.</td>
</tr>
</tbody>
</table>

Remarks:
- Remove the parts in order.
- Reverse the disassembly procedure for assembly.
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 ①

2. Remove:
   - Cap bolt ①
   - Pinch bolt ②

**WARNING**

Fork spring will jump out after removing cap bolt.

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

---

FRONT FORK DISASSEMBLY

1. Remove:
   - Bolt (damper rod) ①
     Loosen the bolt (damper rod) ① while holding the damper rod with T-handle ③ and holder ②.

---

T-handle
YM-1326
Holder
YM-01300-1
2. Remove:
   - Inner tube ①
   - Oil lock piece ②
   - Damper rod ③
   - Rebound spring ④

3. Remove:
   - Oil seal ① New

   **CAUTION:**
   Never reuse the oil seal.

   ② Rag

---

**FRONT FORK INSPECTION**

1. Inspect:
   - Inner tube bending

   ![Inner tube bending](image)

   **Inner tube bending limit:**
   0.2 mm (0.008 in)

   Scratches/bends/damage → Replace.

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

---

**FRONT FORK ASSEMBLY**

Reverse the “DISASSEMBLY” procedure.

Note the following points.

1. Install:
   - Damper rod ①
   - Rebound spring ②
   - Oil lock piece ③
   - Inner tube ④
2. Install:
- Inner tube ①
  Into outer tube ②.

3. Install:
- Plain washer ① New
- Bolt (damper rod) ②

4. Tighten:
- Bolt (damper rod) ①

**NOTE:**
Tighten the damper rod bolt ① while holding the damper rod with a T-handle ② and holder ③.

- T-handle
  YM-01326-A
- Holder
  YM-01300-1

5. Install:
- Oil seal ① New
- Retaining clip
  Use the fork seal driver weight ② and the attachment ③.

**NOTE:**
- Before installing the oil seal 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 → Disassembly and recheck.

7. Fill:
   - Fork oil

   ![Diagram of fork oil filling](image)

   **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 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
   - Pinch bolts

   ![Torque values](image)
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
CIRCUIT 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. magneto
9. C.D.I. unit
10. Ignition coil
11. Spark plug
12. Rear brake switch
13. Front brake switch
14. Tail/Brake light
15. Rear flasher light(left)
16. Rear flasher light(right)
17. Licence light
18. Front flasher light(right)
19. Front flasher light(left)
20. Head light(for low beam)

COLOR CODE

<table>
<thead>
<tr>
<th>B</th>
<th>Black</th>
<th>Gy</th>
<th>Gray</th>
<th>L/R</th>
<th>Blue/Red</th>
</tr>
</thead>
<tbody>
<tr>
<td>Br</td>
<td>Brown</td>
<td>Y</td>
<td>Yellow</td>
<td>R/B</td>
<td>Red/Black</td>
</tr>
<tr>
<td>Ch</td>
<td>Chocolate</td>
<td>W</td>
<td>White</td>
<td>R/Y</td>
<td>Red/Yellow</td>
</tr>
<tr>
<td>Dg</td>
<td>Dark Green</td>
<td>B/R</td>
<td>Black/Red</td>
<td>R/W</td>
<td>Red/white</td>
</tr>
<tr>
<td>G</td>
<td>Green</td>
<td>Br/W</td>
<td>Brown/White</td>
<td>Y/R</td>
<td>Yellow/White</td>
</tr>
<tr>
<td>L</td>
<td>Blue</td>
<td>G/R</td>
<td>Green/Red</td>
<td>W/G</td>
<td>White/Green</td>
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<tr>
<td>Or</td>
<td>Orange</td>
<td>G/Y</td>
<td>Green/Yellow</td>
<td>G/W</td>
<td>Green/White</td>
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<td>Sb</td>
<td>Sky blue</td>
<td>L/B</td>
<td>Blue/Black</td>
<td>W/R</td>
<td>White/Red</td>
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<td>P</td>
<td>Pink</td>
<td>L/Y</td>
<td>Blue/Yellow</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>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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:
1. Turn the switch to the “ON”, “OFF” positions several times.
2. Adjust the pocket tester to correct “0” position before checking switches.
3. Set the pocket tester selector to “Ω×1”.

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.

“〇—〇” 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.

- Rear brake switch
- Horn switch
- Dimmer switch
- Turn switch
- Main switch
- Front brake switch
- Start switch
- Engine stop switch
- Fuse
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 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.

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
8 C.D.I. magneto
9 C.D.I. unit
10 Ignition coil
11 Spark plug
12 Engine stop switch
# IGNITION SYSTEM

## 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</th>
<th>Part Number</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>
</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.
- 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**

Spark plug is faulty, replace it or repair plug gap.

**INCORRECT**

Spark plug is good.

---

**MEETS SPECIFICATION**

Ignition system is good.

---

**OUT OF SPECIFICATION OR NO SPARK**

*
3. Spark plug cap resistance

- Remove the spark plug cap.
- Connect the pocket tester (Ω x 1k) to the spark plug cap.
- Check the spark plug cap for specified resistance.

Spark plug cap resistance:
5kΩ at 20°C (68°F)

OUT OF SPECIFICATION

4. Ignition coil resistance

- Disconnect the ignition coil leads from the ignition coil.
- Connect the pocket tester (Ω x 1) to the ignition coil.

Ignition coil:
Tester (+) lead→Terminal ①
Tester (−) lead→Coil base ②

- Check the primary coil for specification resistance.

Primary coil resistance:
0.32~0.48 Ω at 20°C (68°F)

- Connect the pocket tester (Ω x 1 k) to the ignition coil.

Tester (+) lead→Spark plug lead ①
Tester (−) lead→Coil base ②

- Check the secondary coil for specified resistance.

Secondary coil resistance:
5.68 ~ 8.52 kΩ at 20°C (68°F)
(Spark plug lead - Coil base)

OUT OF SPECIFICATION

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 (Ω × 100) to the pickup coil terminal.

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

- Check the pickup coil for specified resistance.

| Pickup coil resistance: |
| 248~372 Ω at 20°C (68°F) |
| (White/Red-White/Blue) |

6. Source resistance
- Disconnect the source coil coupler from the wireharness.
- Connect the pocket tester (Ω × 100) to the source coil terminal.

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

- Check the source coil for specified resistance.

| Source coil resistance: |
| 640 ~ 960 Ω at 20°C (68°F) |
| (Black/Red - Green/White) |

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

**CONTINUITY**

**MAIN SWITCH**

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

   NO CONTINUITY
   Engine stop switch is faulty, replace it.

   CONTINUITY

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

   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
- Use the following special tool(s) in this troubleshooting.

<table>
<thead>
<tr>
<th>Inductive tachometer:</th>
<th>Pocket tester:</th>
</tr>
</thead>
<tbody>
<tr>
<td>YU-8036-A</td>
<td>YU-03112</td>
</tr>
</tbody>
</table>

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

- NO CONTINUITY
  - Fuse is faulty, replace it.

- CONTINUITY

2. Battery
- Check the battery condition
  Refer to the “BATTERY INSPECTION” section in the CHAPTER 3.

- INCORRECT
  - Clean battery terminals.
  - Recharge or replace battery.

- CORRECT

Open circuit voltage:
12.8V or more at 20°C (68°F)
3. Charging voltage

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

| Tester (+) lead → Battery (+) terminal |
| Tester (-) lead → Battery (–) terminal |

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

Charging voltage:
13 ~ 14 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 × 1” to the charging coils.
- Measure the charging coil and lighting coil resistance.

**Charging coil resistance:**
- Tester (+) lead → White lead ①
- Tester (–) lead → Earth

**Lighting coil resistance:**
- Tester (+) lead → Yellow/Red ②
- Tester (–) lead → Earth

Charging coil resistance:
0.48~0.72 Ω at 20°C (68°F)

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

**NOTE:**
MEET SPECIFICATION
Charging circuit is good.

---

If the coil resistance is outside the specified range, replace it.

---

CDI Magneto

---

*MEETS SPECIFICATION*
5. Wiring connection
Check the entire ignition system for connections.
Refer to the “WIRING DIAGRAM” section.

Replace rectifier regulator.

POOR CONNECTION
Correct.

OK
1 Main switch
2 Main fuse
3 Battery
4 Starter relay
5 Starter motor
6 Rear brake switch
7 Front brake switch
8 Engine stop switch
9 Starter switch
10
11
12

12V 7A
12V 3.4W
12V 1.7W
12V 1.7W
12V 1.7W

Electrical Starting System
Circuit Diagram
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 × 1) to the fuse.
   - Check the fuse for continuity.

   ![Fuse Continuity Diagram]

   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)

   ![Battery Check Diagram]

   CORRECT

   INCORRECT

   - Clean battery terminals.
   - Recharge or replace battery.

   WARNING
   - 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.

3. Starter motor
   - Connect the battery 1 positive terminal and starter motor cable 2 using a jumper lead 3.*
   - Check the starter motor for operation.

   ![Starter Motor Wiring Diagram]

   MOVES

   * STARTER MOTOR DOES NOT OPERATE.

   NOTE:
   - 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.

   ![Starter Motor Failure Diagram]

   DOES NOT MOVE

   Starter motor is faulty, repair or replace it.
4. Starter relay
- Disconnect the relay unit coupler from the wire harness.
- Connect the pocket tester ($\Omega \times 1$) and battery (12V) to the relay unit coupler terminals.

| Battery(+) lead → Blue/White terminal ① |
| Battery(−) lead → Green/Yellow terminal ② |

- Check the starter relay for continuity.

| Tester (+) lead → ③ terminal |
| Tester (-) lead → ④ terminal |

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

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

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

* NO CONTINUITY
Replace the starter relay.

* NO CONTINUITY
Main switch is faulty, replace it.

* NO CONTINUITY
“START” switch is faulty, replace handlebar switch (right).

* NO CONTINUITY
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>○</td>
<td>×  ×</td>
</tr>
<tr>
<td>Brake is not applied</td>
<td>×</td>
<td>○  ×</td>
</tr>
</tbody>
</table>

○: Continuity  ❌: No continuity

BAD CONDITION

Replace brake switch(es).

GOOD CONDITION

POOR CONNECTION

Correct.
# Electrical Starting System

## Starter Motor

**Order**

<table>
<thead>
<tr>
<th>Job name/Part name</th>
<th>Q’ty</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter motor removal</td>
<td>1</td>
<td>Remove the parts in order.</td>
</tr>
<tr>
<td>Rear carrier</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tail cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery box cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Left/Right side cover</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Center cowling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Muffler</td>
<td></td>
<td>Refer to “COVER PANEL” section in CHAPTER 3.</td>
</tr>
<tr>
<td>Rear wheel</td>
<td></td>
<td>Refer to “REAR WHEEL AND REAR BRAKE” section in CHAPTER 6.</td>
</tr>
<tr>
<td>Air shroud 3</td>
<td></td>
<td>Refer to “ENGINE REMOVAL” section chapter 4.</td>
</tr>
<tr>
<td>Starter motor coupler</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Starter motor</td>
<td>1</td>
<td>Reverse the removal procedure for installation.</td>
</tr>
</tbody>
</table>

**Tightening Torque:**

- 13 Nm (1.3 kg, 9.4 ft.lbf)
### Starter Motor 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>Starter motor disassembly</td>
<td>1</td>
<td>Disassembly the parts in order.</td>
</tr>
<tr>
<td>2</td>
<td>O-ring</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Rear bracket</td>
<td>1</td>
<td>Refer to “Starter motor assembly”</td>
</tr>
<tr>
<td>4</td>
<td>Armature ass’y</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Ring</td>
<td>1</td>
<td>Reverse the disassembly procedure for</td>
</tr>
<tr>
<td></td>
<td>Brush holder set</td>
<td>1</td>
<td>assembly.</td>
</tr>
</tbody>
</table>

13Nm(1.3 m.kg, 9.4 ft.lb)
INSPECTION AND REPAIR

1. Inspect:
   - Commutator
     Dirt $\rightarrow$ Clean it with #600 grit sandpaper.

2. Measure:
   - Commutator diameter \( a \)

   - Commutator wear limit: 15.1 mm (0.59 in)
     Out of specification $\rightarrow$ Replace the starter motor

3. Measure:
   - Mica undercut \( a \)

   - Mica undercut: 1.05 mm (0.04 in)
     Out of specification $\rightarrow$ 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 $\rightarrow$ Replace the starter motor.
     If commutator is dirty, clean it with sandpaper.

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

O: Continuity
x: No continuity
Bad condition $\rightarrow$ Replace.
5. Measure:
- Brush length @
  Out of specification → Replace.

<table>
<thead>
<tr>
<th>Brush length wear limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.0 mm (0.012 in)</td>
</tr>
</tbody>
</table>

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

1. Main switch
2. Fuse
3. Battery
8. C.D.I. magneto
14. Tail light
17. Licence light
20. Head light (for high beam)
21. Head light (for low beam)
27. Light dimmer switch
31. Meter light
39. 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

YP___
1. Fuse
   Refer to “Checking switches” section
   NO CONTINUITY
   Replace the fuse.

YP___
2. Battery
   • Check the battery condition.
   • Refer to “Battery inspection” section in Chapter 3.
   • Correct
   • Incorrect
   • Clean battery terminals.
   • Recharge or replace battery.

YP___
3. Main switch
   Refer to “Checking switches” section
   NO 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.

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

**Lighting coil resistance:**

- 0.4 ~ 0.6 Ω at 20°C (68°F)

---

**Diagram:**

- Replace the left handlebar switch.
- Lighting coil is faulty, replace it.
6. Wiring connection

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

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.

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

*
• 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.

This circuit is not faulty.

YP905021

2. If the meter light fails to come on.

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

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.

   The wiring circuit from main switch to bulb socket is faulty. Repair.

   MEETS SPECIFICATION
   This circuit is not faulty.
3. Licence light does not come on.

1. Bulb and bulb socket
   - Check the bulb and bulb socket for continuity

2. Voltage
   - Connect the pocket tester (DC20V) to the bulb socket connector.
   
   Tester (+) lead → Brown ① lead.
   Tester (-) lead → Black ② lead.

   - Turn the main switch to on.
   - Check the voltage (12V) on the “Brown” lead at the bulb socket connector.

   MEETS SPECIFICATION (12V)

   This circuit is not faulty.

   NO CONTINUITY

   Bulb and/or bulb socket are faulty, replace.

   OUT OF SPECIFICATION

   Wiring circuit from main switch to bulb socket connector is faulty. Repair.
3. The taillight fails to come on.

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

2. Voltage
   - Connect the pocket tester (DC20V) to the bulb socket connector.

   Tester (+) lead → Brown terminal ①
   Tester (-) lead → Black terminal ②

   - Turn the main switch to on.
   - Check the voltage (12V) on the bulb socket connector.

   MEETS SPECIFICATION

   This circuit is not faulty.

   OUT OF SPECIFICATION

   The wiring circuit from main switch to bulb connector is faulty. Repair.

   NO CONTINUITY

   Replace the bulb and/or bulb socket.
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. Rear flasher light(left)  
9. Front flasher light(right)  
10. Front flasher light(left)  
11. Flasher relay  
12. Horn  
13. Handlebar switch (Left)  
14. Horn switch  
15. Turn switch  
16. Fuel sender  
17. Fuel meter  
18. Oil indicator light  
19. Turn indicator light  
20. Oil level gauge
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) 3. Main switch
2. Battery 4. Wiring connection (entire signal system)

NOTE:
- Remove the following parts before troubleshooting.
  1) Battery box cover 5) Tail cover
  2) Front protector bar 6) Side covers (Left/Right)
  3) Upper cover 7) Center cover
  4) Rear carrier
- Use the special tools in the troubleshooting section.

Pocket tester:
YU-03112

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

2. Battery
   • Check the battery condition.
     Refer to “BATTERY INSPECTION” section in CHAPTER 3.
   NO CONTINUITY
   • Clean battery terminals.
   • Recharge or replace battery.
   IN CORRECT
   CORRECT

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

*
4. Wireharness

- Check the connections of the entire signal system.
  Refer to “CIRCUIT SYSTEM WIRING DIAGRAM” section.

* POOR CONNECTION

Correct.

Check condition of each of the signal system’s circuits.
Refer to “SIGNAL SYSTEM CHECK” section.
SIGNAL SYSTEM CHECK

1. If the horn fails to sound.

1. HORN switch
   Refer to “CHECKING SWITCHES” section.

   NO CONTINUITY

   CONTINUITY

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.

   OUT OF SPECIFICATION

   MEETS SPECIFICATION

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.

   NO CONTINUITY

   CONTINUITY

   Adjust or replace horn.

NO CONTINUITY

Replace the left handlebar switch.

OUT OF SPECIFICATION

The wiring circuit from the main switch to the horn is faulty. Repair.

OUT OF SPECIFICATION

The wiring circuit from the main switch to the horn is faulty. Repair.

Replace the horn.
2. If the brake light fails to come on:

1. Bulb and bulb socket
   Refer to “CHECKING SWITCHES” section.
   - NO CONTINUITY
   - Replace the bulb and/or bulb socket.
   - CONTINUITY

2. Brake switch (Front/Rear)
   Refer to “CHECKING SWITCHES” section.
   - NO CONTINUITY
   - Replace brake switch.

3. Voltage
   - Connect the pocket tester (DC20V) to the bulb socket connector.
   - Tester (+) lead ➔ Green/Yellow terminal ①
   - Tester (-) lead ➔ Black terminal ②
   - 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.
   - OUT OF SPECIFICATION
   - MEETS 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”.
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
     Replace the bulb and/or bulb socket.
   - CONTINUITY

2. Turn switch
   Refer to “CHECKING SWITCHES” section.
   - NO CONTINUITY
     Replace the left handlebar switch.
   - CONTINUITY

3. Voltage
   - Connect the pocket tester (DC20V) to the flasher relay coupler.
     Tester (+) lead → Brown lead 1.
     Tester (-) lead → Black lead 2.
   - Turn the main switch to on.
   - Check for voltage (12V) of the “Brown” lead at the flasher relay terminal.
   - MEETS 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.
     Tester (+) lead → Brown/White lead 1.
     Tester (-) lead → Black lead 2.
   - Turn the main switch to on.
   - Check for voltage (12V) on the “Brown/White” lead at the flasher relay terminal.
   - MEETS 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.

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><strong>A</strong> Upright position</td>
<td>×</td>
<td>○</td>
</tr>
<tr>
<td><strong>B</strong> Upside down position</td>
<td>○</td>
<td>×</td>
</tr>
</tbody>
</table>

○: Continuity  ×: No continuity

OUT OF SPECIFICATION

MEETS SPECIFICATION

This circuit is not faulty.

CONTINUITY

GOOD CONDITION

NO CONTINUITY

BAD CONDITION

Replace bulb and/or bulb socket.

Replace oil level switch.
3. Voltage
- Connect the Pocket Tester (DC20V) to the bulb socket connector.
  - Tester (+) Lead → Gray lead ①
  - Tester (-) Lead → Black lead ②
- Turn the main switch to “*”
- Check for voltage (12V) on the “Gray” lead at bulb socket connector.

**MEETS SPECIFICATION (12V)**

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.
  - Tester (+) lead → Green terminal ①
  - Tester (-) lead → Black terminal ②
- 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>

**BOTH MEET SPECIFICATION**

Replace the fuel sender.
2. Voltage
- Connect the pocket tester (DC20V) to the fuel gauge coupler.

Tester (+) lead → Brown terminal ①
Tester (-) lead → Frame ground

- Turn the main switch to “ON”.
- Check for voltage (12V) of the “Brown” lead on the fuel sender lead.

OUT OF SPECIFICATION

MEETS SPECIFICATION

3. Fuel gauge
- Connect the fuel sender to wireharness.
- Move the float to “UP” ① or “DOWN” ②.
- Turn the main switch to “ON”.
- Check the fuel gauge needle moves “F” or “E”.

<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>

NOTE: 
Before reading the meter, stay put the float for more than three minutes respectively at “UP” or “DOWN”.

Check the connection of the entire signal system.
Refer to “CHECKING OF CONNECTIONS”.
Refer to “CIRCUIT DIAGRAM”.

DOES NOT MOVE

Replace the fuel gauge.

This circuit is not faulty.
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)

OUT OF SPECIFICATION

Replace the lighting coil

MEETS SPECIFICATION
2. Auto choke unit resistance

- Disconnect the auto choke unit coupler from the wireharness.
- Connect the pocket tester (Ωx1) to the auto choke unit coupler lead.

| Tester (+) lead → Black terminal ① |
|Tester (-) lead → Black terminal ② |

Auto choke unit resistance: 8~12Ω at 20°C (68°F)

3. Wiring connection

- Check the connection of the entire auto choke system.
  Refer to “CIRCUIT DIAGRAM” section.

* OUT OF SPECIFICATION
  Replace the auto choke unit.

* MEETS SPECIFICATION

* POOR CONNECTION
  Correct.
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

PROBABLE CAUSE

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
### 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 reed valve
  - Loose intake manifold
  - Broken gasket
  - Broken reed valve
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

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

FAULTY AUTOMATIC (V-BELT TYPE)

SCOOTER DOES NOT MOVE WHILE ENGINE IS OPERATING

- V-belt
  - Worn, damaged or slipped V-belt

- Cam, slider
  - Worn, damaged

- Compression spring
  - Damaged

- Transmission
  - Damaged

CLUTCH OUT FAILURE

- Clutch weight spring
  - Damaged

- Clutch shoe
  - Pealed lining

- Primary sheave
  - Seized primary sliding sheave and collar

POOR STANDING START (LOW CLIMBING ABILITY)

- V-belt
  - Worn or slipped V-belt

- Primary sheave
  - Improper operation
  - Damaged

- Compression spring
  - Damaged

- Secondary sheave
  - Improper operation
  - Worn guide pin

- Clutch shoe
  - Pealed lining

POOR ACCELERATION (POOR HIGH SPEED)

- V-belt
  - Worn
  - Greasy

- Weight
  - Worn
  - Improper operation
  - Worn

- Primary/Secondary sheave
OVER HEAT

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 pimp
- Faulty oil pump
- Faulty oil quality
- Drag

Brake
- Fan damaged

POOR SPEED

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
- Transmission oil

**PROBABLE CAUSE**
- Low tension of kick clip
- Worn kick axle
- Worn or damaged kick gear
- Damaged kick clip
- Kick clip coming off
- Damaged kick clip stopper
- Improper quality (Low viscosity)
- Deterioration

**HARD KICKING**
- Kick axle assembly
- Cylinder, piston and piston ring
- Crankcase and crankshaft

**PROBABLE CAUSE**
- High tension of kick clip
- Seized kick gear
- Damaged or seized cylinder
- Damaged or seized piston
- Damaged or seized piston ring
- Improperly seated crankcase
- Improperly seated crankshaft
- Damaged or seized crankshaft
- Damaged or seized crankshaft bearing

**KICK CRANK NOT RETURNING**
- Kick axle assembly

**PROBABLE CAUSE**
- 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

- Improperly installed or bent
- Improperly installed steering column (Improperly tightened ringnut)
- Bent steering column
- Damaged ball bearing or bearing race
- Broken spring
- Bonded front forks
- Uneven tire pressures on both sides
- Incorrect tire pressure
- Unevenly worn tires
- Damaged bearing
- Bent or loose wheel axle
- Excessive wheel run-out
- Twisted
- Damaged head pipe
- Improperly installed bearing race
- Bent or damaged
- Fatigued spring
- Oil leakage
FAULTY SIGNAL AND LIGHTING SYSTEM

HEADLIGHT DARK

PROBABLE CAUSE

- 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

PROBABLE CAUSE

- Improper bulb
- Improperly grounded
- Faulty main and/or light switch
- Bulb life expires

FLASHER DOES NOT BLINK

PROBABLE CAUSE

- Improperly grounded
- Discharged battery
- Faulty flasher switch
- Faulty flasher relay
- Broken wire harness
- Loosely connected coupler
- Bulb burnt out
- Faulty fuse

FLASHER KEEPS ON

PROBABLE CAUSE

- Faulty flasher relay
- Insufficient battery capacity (nearly discharged)
- Bulb burnt out
**FAULTY SIGNAL AND LIGHTING SYSTEM**

- **FLASHER BLINKS SLOWER**
  - **PROBABLE CAUSE**
    - Faulty flasher relay
    - Insufficient battery capacity (nearly discharged)
    - Improper bulb
    - Faulty main and/or flasher switch

- **FLASHER BLINKS QUICKER**
  - **PROBABLE CAUSE**
    - Improper bulb
    - Faulty flasher relay

- **HORN DOES NOT SOUND**
  - **PROBABLE CAUSE**
    - Faulty battery
    - Faulty fuse
    - Faulty main and/or horn switch
    - Improperly adjusted horn
    - Faulty horn
    - Broken wireharness