How to use this manual

A Few Words About Safety

Service Information

The service and repair information contained in this manual is intended for use by qualified, professional technicians. Attempting service or repairs without the proper training, tools, and equipment could cause injury to you or others. It could also damage the vehicle or create an unsafe condition.

This manual describes the proper methods and procedures for performing service, maintenance and repairs. Some procedures require the use of specially designed tools and dedicated equipment. Any person who intends to use a replacement part, service procedure or a tool that is not recommended by Honda, must determine the risks to their personal safety and the safe operation of the vehicle.

If you need to replace a part, use genuine Honda parts with the correct part number or an equivalent part. We strongly recommend that you do not use replacement parts of inferior quality.

For Your Customer’s Safety

Proper set-up and pre-delivery are essential to the customer’s safety and the reliability of the vehicle. Any error or oversight while servicing a vehicle can result in faulty operation, damage to the vehicle, or injury to others.

**WARNING**

Improper set-up or pre-delivery service can create an unsafe condition that can cause your customer to be seriously hurt or killed.

Follow the procedures and precautions in this manual and other service materials carefully.

For Your Safety

Because this manual is intended for the professional service technician, we do not provide warnings about many basic shop safety practices (e.g., Hot parts—wear gloves). If you have not received shop safety training or do not feel confident about your knowledge of safe servicing practice, we recommend that you do not attempt to perform the procedures described in this manual.

Some of the most important general service safety precautions are given below. However, we cannot warn you of every conceivable hazard that can arise in performing set-up and pre-delivery procedures. Only you can decide whether or not you should perform a given task.

**WARNING**

Failure to properly follow instructions and precautions can cause you to be seriously hurt or killed.

Follow the procedures and precautions in this manual carefully.

Important Safety Precautions

Make sure you have a clear understanding of all basic shop safety practices and that you are wearing appropriate clothing and using safety equipment. When performing any service task, be especially careful of the following:

- Read all of the instructions before you begin, and make sure you have the tools, the replacement or repair parts, and the skills required to perform the tasks safely and completely.
- Protect your eyes by using proper safety glasses, goggles or face shields any time you hammer, drill, grind, pry or work around pressurized air or liquids, and springs or other stored-energy components. If there is any doubt, put on eye protection.
- Use other protective wear when necessary, for example gloves or safety shoes. Handling hot or sharp parts can cause severe burns or cuts. Before you grab something that looks like it can hurt you, stop and put on gloves.
- Protect yourself and others whenever you have the vehicle up in the air. Any time you lift the vehicle, either with a hoist or a jack, make sure that it is always securely supported. Use jack stands.

Make sure the engine is off before you begin any servicing procedures, unless the instruction tells you to do otherwise. This will help eliminate several potential hazards:

- Carbon monoxide poisoning from engine exhaust. Be sure there is adequate ventilation whenever you run the engine.
- Burns from hot parts or coolant. Let the engine and exhaust system cool before working in those areas.
- Injury from moving parts. If the instruction tells you to run the engine, be sure your hands, fingers and clothing are out of the way.

Gasoline vapors and hydrogen gases from batteries are explosive. To reduce the possibility of a fire or explosion, be careful when working around gasoline or batteries.

- Use only a nonflammable solvent, not gasoline, to clean parts.
- Never drain or store gasoline in an open container.
- Keep all cigarettes, sparks and flames away from the battery and all fuel-related parts.
How To Use This Manual

This manual describes the service procedures for the CGL125 1/2/3/4/5/6 WH-A.

Sections 1 and 3 apply to the whole vehicle. Section 2 illustrates procedures for removal/installation of components that may be required to perform service described in the following sections. Section 4 through 18 describe parts of the motorcycle, grouped according to location.

Follow the Maintenance Schedule recommendations to ensure that the vehicle is in peak operating condition. Performing the first scheduled maintenance is very important. It compensates for the initial wear that occurs during the break-in period.

Find the section you want on this page, then turn to the table of contents on the first page of the section.

Most sections start with an assembly or system illustration, service information and troubleshooting for the section. The subsequent pages give detailed procedure.

If you don’t know the source of the trouble, go to Troubleshooting section.

Your safety, and the safety of others, is very important. To help you make informed decisions we have provided safety messages and other information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgement.

You will find important safety information in a variety of forms including:

• Safety Labels – on the vehicle

• Safety Messages – preceded by a safety alert symbol and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

  ▲ DANGER You WILL be KILLED or SERIOUSLY HURT if you don’t follow instructions.

  ▲ WARNING You CAN be KILLED or SERIOUSLY HURT if you don’t follow instructions.

  ▲ CAUTION You CAN be HURT if you don’t follow instructions.

• Instructions – how to service this vehicle correctly and safely.

As you read this manual, you will find information that is preceded by a symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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### SYMBOLS

The symbols used throughout this manual show specific service procedures. If supplementary information is required pertaining to these symbols, it would be explained specifically in the text without the use of the symbols.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Replace" /></td>
<td>Replace the part(s) with new one(s) before assembly.</td>
</tr>
<tr>
<td><img src="image" alt="Oil" /></td>
<td>Use the recommend engine oil, unless otherwise specified.</td>
</tr>
<tr>
<td><img src="image" alt="Oil Solution" /></td>
<td>Use molybdenum oil solution (mixture of the engine oil and molybdenum grease in a ratio of 1:1).</td>
</tr>
<tr>
<td><img src="image" alt="Grease" /></td>
<td>Use multi-purpose grease (lithium based multi-purpose grease NLGI #2 or equivalent).</td>
</tr>
</tbody>
</table>
| ![Disulfide Grease](image) | Use molybdenum disulfide grease (containing more than 3% molybdenum disulfide, NOGI #2 or equivalent). Example:  
- Molykote® BR-2 plus manufactured by Dow Corning U.S.A.  
- Multi-purpose M-2 manufactured by Mitsubishi Oil, Japan |
| ![Disulfide Paste](image) | Use molybdenum disulfide paste (containing more than 40% molybdenum disulfide, NOGI #2 or equivalent). Example:  
- Molykote® G-n Paste manufactured by Dow Corning U.S.A.  
- Honda Moly 60 (U.S.A. only)  
- Rocol ASP manufactured by Rocol Limited, U.K.  
- Rocol Paste manufactured by Sumico Lubricant, Japan |
<p>| <img src="image" alt="Silicone" /> | Use silicone grease. |
| <img src="image" alt="Lock" /> | Apply a locking agent. Use a medium strength locking agent unless otherwise specified. |
| <img src="image" alt="Seal" /> | Apply sealant. |
| <img src="image" alt="Brake Fluid" /> | Use DOT 4 brake fluid. Use the recommended brake fluid unless otherwise specified. |
| <img src="image" alt="Suspension Fluid" /> | Use fork or suspension fluid. |</p>
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<td>CYLINDER/PISTON</td>
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<td>CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER</td>
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<tr>
<td>ALTERNATOR/STARTER CLUTCH</td>
<td>10</td>
</tr>
<tr>
<td>CRANKCASE/CRANKSHAFT/TRANSMISSION</td>
<td>11</td>
</tr>
<tr>
<td>FRONT WHEEL/BRAKE/SUSPENSION/STEERING</td>
<td>12</td>
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<td>REAR WHEEL/BRAKE/SUSPENSION</td>
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<tr>
<td>HYDRAULIC DISC BRAKE</td>
<td>14</td>
</tr>
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<td>BATTERY/CHARGING SYSTEM</td>
<td>15</td>
</tr>
<tr>
<td>IGNITION SYSTEM</td>
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<td>ELECTRIC STARTER</td>
<td>17</td>
</tr>
<tr>
<td>LIGHTS/METERS/SWITCHES</td>
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<tr>
<td>WIRING DIAGRAM</td>
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</tr>
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<td>TROUBLESHOOTING</td>
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</tr>
<tr>
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</tr>
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GENERAL INFORMATION

SERVICE RULES
1. Use genuine Honda or Honda-recommended parts and lubricants or their equivalents. Parts that do not meet Honda's design specifications may cause damage to the motorcycle.
2. Use the special tools designed for this product to avoid damage and incorrect assembly.
3. Use only metric tools when servicing the motorcycle. Metric bolts, nuts and screws are not interchangeable with English fasteners.
4. Install new gaskets, O-rings, cotter pins, and lock plates when reassembling.
5. When tightening bolts or nuts, begin with the larger diameter or inner bolt first. Then tighten to the specified torque diagonally in incremental steps unless a particular sequence is specified.
6. Clean parts in cleaning solvent upon disassembly. Lubricate any sliding surfaces before reassembly.
7. After reassembly, check all parts for proper installation and operation.
8. Route all electrical wires as shown in the Cable and Harness Routing (page 1-16).

ABBREVIATION
Throughout this manual, the following abbreviations are used to identify the respective parts or systems.

<table>
<thead>
<tr>
<th>Abbrev. term</th>
<th>Full term</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICM</td>
<td>Ignition Control Module</td>
</tr>
<tr>
<td>PAIR</td>
<td>Pulsed Secondary Air Injection</td>
</tr>
</tbody>
</table>

MODEL IDENTIFICATION
This manual covers following types of CGL125WH-A models:

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Spoke Wheel</th>
<th>Cast Wheel</th>
<th>Front Drum Brake</th>
<th>Front Disc Brake</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–</td>
<td>O</td>
<td>O</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>–</td>
<td>O</td>
<td>–</td>
<td>O</td>
</tr>
<tr>
<td>3</td>
<td>O</td>
<td>–</td>
<td>O</td>
<td>–</td>
</tr>
<tr>
<td>4</td>
<td>–</td>
<td>O</td>
<td>O</td>
<td>–</td>
</tr>
<tr>
<td>5</td>
<td>–</td>
<td>O</td>
<td>–</td>
<td>O</td>
</tr>
<tr>
<td>6</td>
<td>O</td>
<td>–</td>
<td>O</td>
<td>–</td>
</tr>
</tbody>
</table>

Be sure to refer to the procedure for the appropriate version of the CGL125WH-A.

TYPE 2, 5 SHOWN:
The Vehicle Identification Number (VIN) is stamped on the right side of the steering head.

The engine serial number is stamped on the lower left side of the crankcase.

The carburetor identification number is stamped on the right side of the carburetor body.

The color label is attached on the left side of the frame under the seat. When ordering color-coded parts, always specify the designated color code.
## GENERAL SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>DIMENSIONS</strong></td>
<td></td>
</tr>
<tr>
<td>Overall length</td>
<td>2,005 mm (78.9 in)</td>
</tr>
<tr>
<td>Overall width</td>
<td>768.5 mm (30.26 in)</td>
</tr>
<tr>
<td>Overall height</td>
<td>1,064 mm (41.9 in)</td>
</tr>
<tr>
<td>Wheelbase</td>
<td>1,297 mm (51.1 in)</td>
</tr>
<tr>
<td>Seat height</td>
<td>722 mm (28.4 in)</td>
</tr>
<tr>
<td>Footpeg height</td>
<td>316 mm (12.4 in)</td>
</tr>
<tr>
<td>Ground clearance</td>
<td>145 mm (5.7 in)</td>
</tr>
<tr>
<td>Curb weight (Type 1, 3, 4, 6)</td>
<td>125 kg (276 lbs)</td>
</tr>
<tr>
<td>Curb weight (Type 2, 5)</td>
<td>126 kg (278 lbs)</td>
</tr>
<tr>
<td>Maximum weight capacity</td>
<td>153 kg (337 lbs)</td>
</tr>
<tr>
<td><strong>FRAME</strong></td>
<td></td>
</tr>
<tr>
<td>Frame type</td>
<td>Backbone type</td>
</tr>
<tr>
<td>Front suspension</td>
<td>Telescopic fork</td>
</tr>
<tr>
<td>Front wheel travel</td>
<td>116 mm (4.6 in)</td>
</tr>
<tr>
<td>Rear suspension</td>
<td>Swingarm</td>
</tr>
<tr>
<td>Rear wheel travel</td>
<td>80 mm (3.1 in)</td>
</tr>
<tr>
<td>Front tire size</td>
<td>2.75-18 42P</td>
</tr>
<tr>
<td>Rear tire size</td>
<td>90/90-18M/C 51P</td>
</tr>
<tr>
<td>Front tire brand</td>
<td>C-128 (CHENGSHIN)</td>
</tr>
<tr>
<td>Rear tire brand</td>
<td>C-907 (CHENGSHIN)</td>
</tr>
<tr>
<td>Front brake (Type 1, 3, 4, 6)</td>
<td>Mechanical drum (leading-trailing)</td>
</tr>
<tr>
<td>Front brake (Type 2, 5)</td>
<td>Hydraulic single disc</td>
</tr>
<tr>
<td>Rear brake</td>
<td>Mechanical drum (leading-trailing)</td>
</tr>
<tr>
<td>Caster angle</td>
<td>28° 00’</td>
</tr>
<tr>
<td>Trail length</td>
<td>80.0 mm (3.15 in)</td>
</tr>
<tr>
<td>Fuel tank capacity</td>
<td>10.2 liter (2.69 US gal, 2.24 lmp gal)</td>
</tr>
<tr>
<td>Fuel tank reserve capacity</td>
<td>2.7 liter (0.71 US gal, 0.59 lmp gal)</td>
</tr>
<tr>
<td><strong>ENGINE</strong></td>
<td></td>
</tr>
<tr>
<td>Cylinder arrangement</td>
<td>Single cylinder inclined 15° from vertical</td>
</tr>
<tr>
<td>Bore and stroke</td>
<td>52.4 x 57.8 mm (2.06 x 2.28 in)</td>
</tr>
<tr>
<td>Displacement</td>
<td>124.7 cm³ (7.61 cu-in)</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>9.2 : 1</td>
</tr>
<tr>
<td>Valve train</td>
<td>Chain driven OHC with rocker arm</td>
</tr>
<tr>
<td>Intake valve</td>
<td>opens</td>
</tr>
<tr>
<td>Exhaust valve</td>
<td>closes</td>
</tr>
<tr>
<td>Lubrication system</td>
<td>Pressing and spray type</td>
</tr>
<tr>
<td>Oil pump type</td>
<td>Trochoid</td>
</tr>
<tr>
<td>Cooling system</td>
<td>Air cooled</td>
</tr>
<tr>
<td>Air filtration</td>
<td>Paper filter</td>
</tr>
<tr>
<td>Engine dry weight</td>
<td>28.6 kg (63.1 lbs)</td>
</tr>
<tr>
<td><strong>CARBURETOR</strong></td>
<td></td>
</tr>
<tr>
<td>Carburetor type</td>
<td>Piston valve</td>
</tr>
<tr>
<td>Throttle bore</td>
<td>22 mm (0.9 in)</td>
</tr>
<tr>
<td><strong>DRIVE TRAIN</strong></td>
<td></td>
</tr>
<tr>
<td>Clutch system</td>
<td>Multi-plate, wet</td>
</tr>
<tr>
<td>Clutch operation system</td>
<td>Cable operating</td>
</tr>
<tr>
<td>Transmission</td>
<td>5 speeds</td>
</tr>
<tr>
<td>Primary reduction</td>
<td>3.350 (67/20)</td>
</tr>
<tr>
<td>Final reduction</td>
<td>3.214 (45/14)</td>
</tr>
<tr>
<td>Gear ratio</td>
<td>1st 3.076 (40/13)</td>
</tr>
<tr>
<td></td>
<td>2nd 1.789 (34/19)</td>
</tr>
<tr>
<td></td>
<td>3rd 1.304 (30/23)</td>
</tr>
<tr>
<td></td>
<td>4th 1.076 (28/26)</td>
</tr>
<tr>
<td></td>
<td>5th 0.928 (26/28)</td>
</tr>
<tr>
<td>Gearshift pattern</td>
<td>Left foot operated return system</td>
</tr>
<tr>
<td></td>
<td>1 - N - 2 - 3 - 4 - 5</td>
</tr>
<tr>
<td><strong>ELECTRICAL</strong></td>
<td></td>
</tr>
<tr>
<td>Ignition system</td>
<td>DC – CDI</td>
</tr>
<tr>
<td>Starting system</td>
<td>Kickstarter with electric starter motor</td>
</tr>
<tr>
<td>Charging system</td>
<td>Triple phase output alternator</td>
</tr>
<tr>
<td>Regulator/rectifier</td>
<td>SCR shorted, triple phase full-wave rectification</td>
</tr>
<tr>
<td>Lighting system</td>
<td>Battery</td>
</tr>
</tbody>
</table>
# LUBRICATION SYSTEM SPECIFICATIONS

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<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Engine oil capacity</strong></td>
<td><strong>After draining</strong></td>
<td>0.8 liter (0.8 US qt, 0.7 Imp qt)</td>
</tr>
<tr>
<td></td>
<td><strong>After disassembly</strong></td>
<td>1.0 liter (1.1 US qt, 0.9 Imp qt)</td>
</tr>
<tr>
<td><strong>Recommended engine oil</strong></td>
<td>API classification: SG or higher (except oils labeled as energy conserving on the circular API service label)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Viscosity: SAE 10W-30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>JASO T 903 standard: MA</td>
<td></td>
</tr>
<tr>
<td><strong>Oil pump rotor</strong></td>
<td><strong>Tip clearance</strong></td>
<td>0.15 (0.006)</td>
</tr>
<tr>
<td></td>
<td><strong>Body clearance</strong></td>
<td>0.15 – 0.21 (0.006 – 0.008)</td>
</tr>
<tr>
<td></td>
<td><strong>Side clearance</strong></td>
<td>0.05 – 0.10 (0.002 – 0.004)</td>
</tr>
</tbody>
</table>

# FUEL SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Carburetor identification number</strong></td>
<td>PDCBV</td>
</tr>
<tr>
<td><strong>Main jet</strong></td>
<td>#98</td>
</tr>
<tr>
<td><strong>Slow jet</strong></td>
<td>#38</td>
</tr>
<tr>
<td><strong>Pilot screw opening</strong></td>
<td>See page 5-16</td>
</tr>
<tr>
<td><strong>Float level</strong></td>
<td>14.0 mm (0.55 in)</td>
</tr>
<tr>
<td><strong>Idle speed</strong></td>
<td>1,400 ± 100 min⁻¹ (rpm)</td>
</tr>
<tr>
<td><strong>Throttle grip free play</strong></td>
<td>2.0 – 6.0 mm (0.08 – 0.24 in)</td>
</tr>
</tbody>
</table>

# CYLINDER HEAD/VALVES SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cylinder compression at 800 min⁻¹ (rpm)</strong></td>
<td>1,196 kPa (12.2 kgf/cm², 176 psi)</td>
<td>–</td>
</tr>
<tr>
<td><strong>Valve clearance</strong></td>
<td><strong>IN</strong></td>
<td>0.08 ± 0.02 (0.003 ± 0.001)</td>
</tr>
<tr>
<td></td>
<td><strong>EX</strong></td>
<td>0.12 ± 0.02 (0.005 ± 0.001)</td>
</tr>
<tr>
<td><strong>Valve, valve guide</strong></td>
<td><strong>Valve stem O.D.</strong></td>
<td>4.975 – 4.990 (0.1959 – 0.1966)</td>
</tr>
<tr>
<td></td>
<td><strong>EX</strong></td>
<td>4.955 – 4.970 (0.1951 – 0.1957)</td>
</tr>
<tr>
<td></td>
<td><strong>Valve guide I.D.</strong></td>
<td>5.000 – 5.012 (0.1969 – 0.1973)</td>
</tr>
<tr>
<td></td>
<td><strong>IN/EX</strong></td>
<td>0.010 – 0.037 (0.0004 – 0.0015)</td>
</tr>
<tr>
<td></td>
<td><strong>EX</strong></td>
<td>0.030 – 0.057 (0.0012 – 0.0022)</td>
</tr>
<tr>
<td><strong>Valve to-guide clearance</strong></td>
<td><strong>IN/EX</strong></td>
<td>0.9 – 1.1 (0.0035 – 0.0043)</td>
</tr>
<tr>
<td><strong>Valve spring</strong></td>
<td><strong>Free length</strong></td>
<td>38.76 (1.526)</td>
</tr>
<tr>
<td></td>
<td><strong>INNER</strong></td>
<td>35.95 (1.415)</td>
</tr>
<tr>
<td></td>
<td><strong>OUTER</strong></td>
<td>35.95 (1.415)</td>
</tr>
<tr>
<td><strong>Rocker arm</strong></td>
<td><strong>Arm I.D.</strong></td>
<td>10.000 – 10.015 (0.3937 – 0.3943)</td>
</tr>
<tr>
<td></td>
<td><strong>Shaft O.D.</strong></td>
<td>9.972 – 9.987 (0.3926 – 0.3932)</td>
</tr>
<tr>
<td></td>
<td><strong>Arm-to-shaft clearance</strong></td>
<td>0.013 – 0.043 (0.0005 – 0.0017)</td>
</tr>
<tr>
<td><strong>Camshaft</strong></td>
<td><strong>Cam lobe height</strong></td>
<td>32.9935 – 33.2335 (1.29895 – 1.30840)</td>
</tr>
<tr>
<td></td>
<td><strong>EX</strong></td>
<td>32.8804 – 33.1204 (1.29450 – 1.30395)</td>
</tr>
<tr>
<td><strong>Cylinder head warpage</strong></td>
<td></td>
<td>0.05 (0.002)</td>
</tr>
</tbody>
</table>
### GENERAL INFORMATION

#### CYLINDER/PISTON SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder I.D.</td>
<td>52.400 – 52.410 (2.0630 – 2.0634)</td>
<td>52.50 (2.067)</td>
</tr>
<tr>
<td>Out-of-round</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Taper</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Warpage</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Piston O.D. at 10 mm (0.4 in) from bottom</td>
<td>52.370 – 52.390 (2.0618 – 2.0626)</td>
<td>52.3 (2.059)</td>
</tr>
<tr>
<td>Piston pin hole I.D.</td>
<td>13.002 – 13.008 (0.5119 – 0.5121)</td>
<td>13.04 (0.513)</td>
</tr>
<tr>
<td>Piston pin O.D.</td>
<td>12.994 – 13.000 (0.5116 – 0.5118)</td>
<td>12.96 (0.510)</td>
</tr>
<tr>
<td>Piston-to-piston pin clearance</td>
<td>0.002 – 0.014 (0.0001 – 0.0006)</td>
<td>0.02 (0.001)</td>
</tr>
<tr>
<td>Piston ring end gap</td>
<td>Top: 0.10 – 0.25 (0.004 – 0.010)</td>
<td>0.40 (0.016)</td>
</tr>
<tr>
<td></td>
<td>Second: 0.10 – 0.25 (0.004 – 0.010)</td>
<td>0.40 (0.016)</td>
</tr>
<tr>
<td></td>
<td>Oil (side rail): 0.20 – 0.70 (0.008 – 0.028)</td>
<td>0.85 (0.033)</td>
</tr>
<tr>
<td>Piston ring-to-ring groove clearance</td>
<td>Top: 0.030 – 0.065 (0.0012 – 0.0026)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td></td>
<td>Second: 0.030 – 0.065 (0.0012 – 0.0026)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Cylinder-to-piston clearance</td>
<td>0.010 – 0.040 (0.0004 – 0.0016)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Connecting rod small end I.D.</td>
<td>13.016 – 13.034 (0.5124 – 0.5131)</td>
<td>13.04 (0.513)</td>
</tr>
<tr>
<td>Connecting rod-to-piston pin clearance</td>
<td>0.016 – 0.040 (0.0006 – 0.0016)</td>
<td>0.03 (0.001)</td>
</tr>
</tbody>
</table>

#### CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch lever free play</td>
<td>10 – 20 (0.4 – 0.8)</td>
<td>–</td>
</tr>
<tr>
<td>Clutch</td>
<td>Spring free length: 40.5 (1.59)</td>
<td>39.6 (1.56)</td>
</tr>
<tr>
<td></td>
<td>Disc thickness: 2.80 – 2.90 (0.110 – 0.114)</td>
<td>2.6 (0.10)</td>
</tr>
<tr>
<td></td>
<td>Plate warpage</td>
<td>–</td>
</tr>
<tr>
<td>Clutch outer I.D.</td>
<td>23.000 – 23.021 (0.9055 – 0.9063)</td>
<td>23.08 (0.909)</td>
</tr>
<tr>
<td>Clutch outer guide O.D.</td>
<td>22.959 – 22.980 (0.9039 – 0.9047)</td>
<td>22.93 (0.903)</td>
</tr>
<tr>
<td></td>
<td>I.D.</td>
<td>16.991 – 17.009 (0.6689 – 0.6696)</td>
</tr>
<tr>
<td>Mainshaft O.D. at clutch outer guide</td>
<td>16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.95 (0.667)</td>
</tr>
<tr>
<td>Kickstarter idle gear I.D.</td>
<td>20.500 – 20.521 (0.8071 – 0.8079)</td>
<td>20.58 (0.810)</td>
</tr>
<tr>
<td>Kickstarter idle gear bushing O.D.</td>
<td>20.459 – 20.480 (0.8055 – 0.8063)</td>
<td>20.43 (0.804)</td>
</tr>
<tr>
<td></td>
<td>I.D.</td>
<td>17.000 – 17.018 (0.6693 – 0.6700)</td>
</tr>
<tr>
<td>Countershaft O.D. at kick starter idle gear</td>
<td>16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.94 (0.667)</td>
</tr>
<tr>
<td>Kickstarter drive gear I.D.</td>
<td>16.016 – 16.034 (0.6305 – 0.6313)</td>
<td>16.06 (0.632)</td>
</tr>
<tr>
<td>Kickstarter spindle O.D. at kick starter drive gear</td>
<td>15.966 – 15.984 (0.6286 – 0.6293)</td>
<td>15.94 (0.628)</td>
</tr>
</tbody>
</table>
### ALTERNATOR/STARTER CLUTCH SPECIFICATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter driven gear boss O.D.</td>
<td>45.660 – 45.673 (1.7976 – 1.7981)</td>
<td>45.60 (1.795)</td>
</tr>
</tbody>
</table>

### CRANKCASE/CRANKSHAFT/TRANSMISSION SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Crankshaft Connecting rod big end radial clearance</td>
<td>0 – 0.008 (0 – 0.0003)</td>
<td>0.05 (0.002)</td>
</tr>
<tr>
<td>Crankshaft Connecting rod big end side clearance</td>
<td>0.10 – 0.35 (0.004 – 0.014)</td>
<td>0.80 (0.032)</td>
</tr>
<tr>
<td>Crankshaft Runout</td>
<td>0.03 (0.001)</td>
<td>0.08 (0.003)</td>
</tr>
<tr>
<td>Transmission Gear I.D.</td>
<td>M4 20.000 – 20.018 (0.7874 – 0.7881)</td>
<td>20.05 (0.789)</td>
</tr>
<tr>
<td></td>
<td>M5 17.000 – 17.018 (0.6693 – 0.6700)</td>
<td>17.04 (0.671)</td>
</tr>
<tr>
<td></td>
<td>C1 20.500 – 20.521 (0.8071 – 0.8079)</td>
<td>20.55 (0.809)</td>
</tr>
<tr>
<td></td>
<td>C2, C3 23.020 – 23.041 (0.9063 – 0.9071)</td>
<td>23.07 (0.908)</td>
</tr>
<tr>
<td>Transmission Bushing O.D.</td>
<td>C1 20.459 – 20.480 (0.8055 – 0.8063)</td>
<td>20.41 (0.804)</td>
</tr>
<tr>
<td></td>
<td>C2, C3 22.984 – 23.005 (0.9049 – 0.9057)</td>
<td>22.95 (0.904)</td>
</tr>
<tr>
<td>Transmission Gear-to-bushing clearance</td>
<td>C1 0.020 – 0.062 (0.0008 – 0.0024)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td></td>
<td>C2 0.015 – 0.057 (0.0006 – 0.0022)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td></td>
<td>C3 0.015 – 0.057 (0.0006 – 0.0022)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Transmission Bushing I.D.</td>
<td>C1 17.000 – 17.018 (0.6693 – 0.6700)</td>
<td>17.04 (0.671)</td>
</tr>
<tr>
<td></td>
<td>C2, C3 20.020 – 20.041 (0.7882 – 0.7890)</td>
<td>20.07 (0.790)</td>
</tr>
<tr>
<td>Transmission Mainshaft O.D.</td>
<td>at M4 19.968 – 19.980 (0.7861 – 0.7866)</td>
<td>19.93 (0.785)</td>
</tr>
<tr>
<td></td>
<td>at M5 16.968 – 16.980 (0.6680 – 0.6685)</td>
<td>16.93 (0.667)</td>
</tr>
<tr>
<td>Transmission Countershaft O.D.</td>
<td>at C1 16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.93 (0.667)</td>
</tr>
<tr>
<td></td>
<td>at C2 19.978 – 19.989 (0.7865 – 0.7870)</td>
<td>19.94 (0.785)</td>
</tr>
<tr>
<td></td>
<td>at C3 19.979 – 20.000 (0.7866 – 0.7874)</td>
<td>19.94 (0.785)</td>
</tr>
<tr>
<td>Transmission Bushing-to-shaft clearance</td>
<td>C1 0.016 – 0.052 (0.0006 – 0.0020)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td></td>
<td>C2 0.031 – 0.063 (0.0012 – 0.0025)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td></td>
<td>C3 0.020 – 0.062 (0.0008 – 0.0024)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Shift fork, shift fork shaft</td>
<td>Shift fork shaft O.D.</td>
<td>9.986 – 9.995 (0.3931 – 0.3935)</td>
</tr>
<tr>
<td></td>
<td>Shift fork I.D.</td>
<td>10.000 – 10.018 (0.3937 – 0.3944)</td>
</tr>
<tr>
<td></td>
<td>Shift fork claw thickness</td>
<td>4.93 – 5.00 (0.194 – 0.197)</td>
</tr>
</tbody>
</table>
# GENERAL INFORMATION

## FRONT WHEEL/BRAKE/SUSPENSION/STEERING SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum tire tread depth</td>
<td>–</td>
<td>To indicator</td>
</tr>
<tr>
<td>Cold tire pressure</td>
<td>Driver only</td>
<td>200 kPa (2.00 kgf/cm², 29 psi)</td>
</tr>
<tr>
<td></td>
<td>Driver and passenger</td>
<td>200 kPa (2.00 kgf/cm², 29 psi)</td>
</tr>
<tr>
<td>Axle runout</td>
<td>–</td>
<td>0.2 (0.01)</td>
</tr>
<tr>
<td>Wheel rim runout</td>
<td>Radial</td>
<td>1.0 (0.04)</td>
</tr>
<tr>
<td></td>
<td>Axial</td>
<td>1.0 (0.04)</td>
</tr>
<tr>
<td>Wheel hub-to-rim distance (Type 3, 6)</td>
<td>6.5 ± 1 (0.3 ± 0.04)</td>
<td>–</td>
</tr>
<tr>
<td>Front brake (Type 1, 3, 4, 6)</td>
<td>Lever freeplay</td>
<td>10 – 20 (0.4 – 0.8)</td>
</tr>
<tr>
<td></td>
<td>Drum I.D.</td>
<td>130.0 – 130.3 (5.12 – 5.13)</td>
</tr>
<tr>
<td>Fork</td>
<td>Spring free length</td>
<td>485 (19.1)</td>
</tr>
<tr>
<td></td>
<td>Tube runout</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Recommended fork fluid</td>
<td>Fork fluid</td>
</tr>
<tr>
<td></td>
<td>Fluid level</td>
<td>147 (5.8)</td>
</tr>
<tr>
<td></td>
<td>Fluid capacity</td>
<td>159 ± 2.5 cm³ (5.4 ± 0.08 US oz, 5.6 ± 0.09 Imp oz)</td>
</tr>
</tbody>
</table>

## REAR WHEEL/BRAKE/SUSPENSION SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum tire tread depth</td>
<td>–</td>
<td>To indicator</td>
</tr>
<tr>
<td>Cold tire pressure</td>
<td>Driver only</td>
<td>225 kPa (2.25 kgf/cm², 33 psi)</td>
</tr>
<tr>
<td></td>
<td>Driver and passenger</td>
<td>225 kPa (2.25 kgf/cm², 33 psi)</td>
</tr>
<tr>
<td>Axle runout</td>
<td>–</td>
<td>0.2 (0.01)</td>
</tr>
<tr>
<td>Wheel rim runout</td>
<td>Radial</td>
<td>1.0 (0.04)</td>
</tr>
<tr>
<td></td>
<td>Axial</td>
<td>1.0 (0.04)</td>
</tr>
<tr>
<td>Wheel hub-to-rim distance (Type 3, 6)</td>
<td>2.0 ± 1 (0.08 ± 0.04)</td>
<td>–</td>
</tr>
<tr>
<td>Drive chain</td>
<td>Size/link</td>
<td>428H/112</td>
</tr>
<tr>
<td></td>
<td>Slack</td>
<td>15 – 25 (0.6 – 1.0)</td>
</tr>
<tr>
<td>Rear brake</td>
<td>Pedal freeplay</td>
<td>20 – 30 (0.8 – 1.2)</td>
</tr>
<tr>
<td></td>
<td>Drum I.D.</td>
<td>130.0 – 130.3 (5.12 – 5.13)</td>
</tr>
</tbody>
</table>

## HYDRAULIC DISC BRAKE SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specified brake fluid</td>
<td>DOT 3 or DOT 4</td>
<td>–</td>
</tr>
<tr>
<td>Brake pad wear indicator</td>
<td>–</td>
<td>To the groove</td>
</tr>
<tr>
<td>Brake disc thickness</td>
<td>3.8 – 4.2 (0.15 – 0.17)</td>
<td>3.5 (0.14)</td>
</tr>
<tr>
<td>Brake disc runout</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
</tbody>
</table>
## BATTERY/CHARGING SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>12 V – 7 Ah</td>
</tr>
<tr>
<td>Current leakage</td>
<td>1 mA max.</td>
</tr>
<tr>
<td>Specific gravity (20°C/68°F)</td>
<td></td>
</tr>
<tr>
<td>Full charged</td>
<td>1.270 – 1.290</td>
</tr>
<tr>
<td>Needs charging</td>
<td>Below 1.230</td>
</tr>
<tr>
<td>Voltage (20°C/68°F)</td>
<td></td>
</tr>
<tr>
<td>Full charged</td>
<td>13.0 – 13.2 V</td>
</tr>
<tr>
<td>Needs charging</td>
<td>Below 12.3 V</td>
</tr>
<tr>
<td>Charging current</td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>0.6 A/5 – 10 h</td>
</tr>
<tr>
<td>Quick</td>
<td>3 A/1 h</td>
</tr>
<tr>
<td>Alternator</td>
<td></td>
</tr>
<tr>
<td>Capacity</td>
<td>0.16 kW/5,000 min⁻¹ (rpm)</td>
</tr>
<tr>
<td>Charging coil resistance (20°C/68°F)</td>
<td>0.1 – 1.0 Ω</td>
</tr>
</tbody>
</table>

## IGNITION SYSTEM SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spark plug</td>
<td></td>
</tr>
<tr>
<td>Standard</td>
<td>CPR7EA-9 (NGK)</td>
</tr>
<tr>
<td>For extended high speed riding</td>
<td>CPR8EA-9 (NGK)</td>
</tr>
<tr>
<td>Spark plug gap</td>
<td>0.80 – 0.90 mm (0.031 – 0.035 in)</td>
</tr>
<tr>
<td>Ignition coil primary peak voltage</td>
<td>100 V minimum</td>
</tr>
<tr>
<td>Ignition pulse generator peak voltage</td>
<td>0.7 V minimum</td>
</tr>
<tr>
<td>Ignition timing (°F mark)</td>
<td>8° BTDC at idle</td>
</tr>
</tbody>
</table>

## ELECTRIC STARTER SPECIFICATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter motor brush length</td>
<td>10.00 – 10.05 (0.394 – 0.396)</td>
<td>3.5 (0.14)</td>
</tr>
</tbody>
</table>

## LIGHTS/METERS/SWITCHES SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bulbs</td>
<td></td>
</tr>
<tr>
<td>Headlight (Hi/low beam)</td>
<td>12 V - 35/35 W</td>
</tr>
<tr>
<td>Position light</td>
<td>12 V - 3 W</td>
</tr>
<tr>
<td>Brake/tail light</td>
<td>12 V - 21/5 W</td>
</tr>
<tr>
<td>Turn signal light</td>
<td>12 V - 10 W x 4</td>
</tr>
<tr>
<td>Instrument light</td>
<td>12 V - 1.7 W x 3</td>
</tr>
<tr>
<td>Turn signal indicator</td>
<td>12 V - 1.7 W x 2</td>
</tr>
<tr>
<td>High beam indicator</td>
<td>12 V - 1.7 W</td>
</tr>
<tr>
<td>Gear position indicator</td>
<td>LED x 5</td>
</tr>
<tr>
<td>Neutral indicator</td>
<td>12 V - 1.7 W</td>
</tr>
<tr>
<td>Fuse</td>
<td>Main</td>
</tr>
<tr>
<td></td>
<td>Sub</td>
</tr>
<tr>
<td>Fuel level sensor resistance (20°C/68°F)</td>
<td>Full</td>
</tr>
<tr>
<td></td>
<td>Empty</td>
</tr>
</tbody>
</table>
### GENERAL INFORMATION

### TORQUE VALUES

#### STANDARD TORQUE VALUES

<table>
<thead>
<tr>
<th>FASTENER TYPE</th>
<th>TORQUE</th>
<th>FASTENER TYPE</th>
<th>TORQUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 mm bolt and nut</td>
<td>5 (0.5, 3.7)</td>
<td>5 mm screw</td>
<td>4 (0.4, 3.0)</td>
</tr>
<tr>
<td>6 mm bolt and nut</td>
<td>10 (1.0, 7)</td>
<td>6 mm screw</td>
<td>9 (0.9, 6.6)</td>
</tr>
<tr>
<td>(Include SH flange bolt)</td>
<td>6 mm flange bolt</td>
<td>12 (1.2, 9)</td>
<td></td>
</tr>
<tr>
<td>8 mm bolt and nut</td>
<td>22 (2.2, 16)</td>
<td>(Include NSHF) and nut</td>
<td></td>
</tr>
<tr>
<td>10 mm bolt and nut</td>
<td>34 (3.5, 25)</td>
<td>8 mm flange bolt and nut</td>
<td>27 (2.8, 20)</td>
</tr>
<tr>
<td>12 mm bolt and nut</td>
<td>54 (5.5, 40)</td>
<td>10 mm flange bolt and nut</td>
<td>39 (4.0, 29)</td>
</tr>
</tbody>
</table>

#### ENGINE & FRAME TORQUE VALUES

- Torque specifications listed below are for specified fasteners.
- Others should be tightened to standard torque values listed above.

#### FRAME/BODY PANELS/EXHAUST SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD</th>
<th>TORQUE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side cover screw</td>
<td>1</td>
<td>6</td>
<td>5 (0.5, 3.7)</td>
<td></td>
</tr>
<tr>
<td>Sidestand pivot bolt</td>
<td>1</td>
<td>10</td>
<td>10 (1.0, 7)</td>
<td></td>
</tr>
<tr>
<td>Sidestand pivot nut</td>
<td>1</td>
<td>10</td>
<td>45 (4.6, 33)</td>
<td></td>
</tr>
<tr>
<td>Exhaust pipe stud bolt</td>
<td>2</td>
<td>8</td>
<td>11 (1.1, 8)</td>
<td>See page 2-10</td>
</tr>
</tbody>
</table>

#### MAINTENANCE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD</th>
<th>TORQUE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel strainer cup</td>
<td>1</td>
<td>–</td>
<td>16 (1.6, 12)</td>
<td></td>
</tr>
<tr>
<td>Choke cable lock nut</td>
<td>2</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td></td>
</tr>
<tr>
<td>Air cleaner element mounting screw</td>
<td>1</td>
<td>5</td>
<td>4.2 (0.43, 3.1)</td>
<td></td>
</tr>
<tr>
<td>Spark plug</td>
<td>1</td>
<td>10</td>
<td>16 (1.6, 12)</td>
<td></td>
</tr>
<tr>
<td>Valve adjusting lock nut</td>
<td>2</td>
<td>6</td>
<td>14 (1.4, 10)</td>
<td></td>
</tr>
<tr>
<td>Crankshaft hole cap</td>
<td>1</td>
<td>32</td>
<td>15 (1.5, 11)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Timing hole cap</td>
<td>1</td>
<td>14</td>
<td>10 (1.0, 7)</td>
<td>Apply grease to the threads</td>
</tr>
<tr>
<td>Engine oil drain bolt</td>
<td>1</td>
<td>12</td>
<td>30 (3.1, 22)</td>
<td></td>
</tr>
<tr>
<td>Oil filter rotor cover screw</td>
<td>3</td>
<td>5</td>
<td>4 (0.4, 3.0)</td>
<td></td>
</tr>
</tbody>
</table>

#### LUBRICATION SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD</th>
<th>TORQUE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oil pump cover screw</td>
<td>1</td>
<td>4</td>
<td>3 (0.3, 2.2)</td>
<td></td>
</tr>
</tbody>
</table>

#### FUEL SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD</th>
<th>TORQUE</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tool box cover bolt</td>
<td>2</td>
<td>5</td>
<td>1.8 (0.18, 1.3)</td>
<td></td>
</tr>
<tr>
<td>Choke cable stay screw</td>
<td>1</td>
<td>5</td>
<td>3.4 (0.35, 2.5)</td>
<td></td>
</tr>
<tr>
<td>Carburetor drain screw</td>
<td>1</td>
<td>6</td>
<td>1.5 (0.15, 1.1)</td>
<td></td>
</tr>
<tr>
<td>Slow jet</td>
<td>1</td>
<td>6</td>
<td>1.8 (0.18, 1.3)</td>
<td></td>
</tr>
<tr>
<td>Needle jet holder</td>
<td>1</td>
<td>7</td>
<td>2.5 (0.25, 1.8)</td>
<td></td>
</tr>
<tr>
<td>Main jet</td>
<td>1</td>
<td>5</td>
<td>2.1 (0.21, 1.5)</td>
<td></td>
</tr>
<tr>
<td>Float chamber screw</td>
<td>3</td>
<td>4</td>
<td>2.1 (0.21, 1.5)</td>
<td></td>
</tr>
<tr>
<td>Insulator socket bolt</td>
<td>2</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td></td>
</tr>
<tr>
<td>Fuel valve lock nut</td>
<td>1</td>
<td>16</td>
<td>22 (2.2, 16)</td>
<td></td>
</tr>
<tr>
<td>PAIR check valve cover screw</td>
<td>2</td>
<td>4</td>
<td>2.1 (0.21, 1.5)</td>
<td></td>
</tr>
</tbody>
</table>
### ENGINE REMOVAL/INSTALLATION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front/upper engine hanger nut</td>
<td>4</td>
<td>8</td>
<td>27 (2.8, 20)</td>
<td></td>
</tr>
<tr>
<td>Rear engine hanger nut</td>
<td>2</td>
<td>10</td>
<td>54 (5.5, 40)</td>
<td></td>
</tr>
<tr>
<td>Drive sprocket bolt</td>
<td>2</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td></td>
</tr>
</tbody>
</table>

### CYLINDER HEAD/VALVES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder head cover bolt</td>
<td>2</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td></td>
</tr>
<tr>
<td>Rocker arm shaft bolt</td>
<td>2</td>
<td>5</td>
<td>5 (0.5, 3.7)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Cam sprocket bolt</td>
<td>2</td>
<td>5</td>
<td>9 (0.9, 6.6)</td>
<td></td>
</tr>
<tr>
<td>Camshaft holder nut</td>
<td>4</td>
<td>8</td>
<td>32 (3.3, 24)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Cam chain tensioner lifter plug</td>
<td>1</td>
<td>6</td>
<td>4 (0.4, 3.0)</td>
<td></td>
</tr>
</tbody>
</table>

### CYLINDER/PISTON

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder stud bolt</td>
<td>4</td>
<td>8</td>
<td>11 (1.1, 8)</td>
<td>See page 8-7</td>
</tr>
</tbody>
</table>

### CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch center lock nut</td>
<td>1</td>
<td>14</td>
<td>74 (7.5, 55)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Clutch lifter plate bolt</td>
<td>4</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Oil filter rotor lock nut</td>
<td>1</td>
<td>14</td>
<td>64 (6.5, 47)</td>
<td></td>
</tr>
<tr>
<td>Gearshift cam bolt</td>
<td>1</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Shift drum stopper arm bolt</td>
<td>1</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
</tbody>
</table>

### ALTERNATOR/STARTER CLUTCH

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flywheel nut</td>
<td>1</td>
<td>14</td>
<td>74 (7.5, 55)</td>
<td>Apply engine oil to the threads and seating surface</td>
</tr>
<tr>
<td>Starter clutch bolt</td>
<td>6</td>
<td>6</td>
<td>16 (1.6, 12)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Alternator stator socket bolt</td>
<td>3</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Ignition pulse generator socket bolt</td>
<td>2</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Wire guide socket bolt</td>
<td>1</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
</tbody>
</table>

### CRANKCASE/Crankshaft/Transmission

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainshaft bearing setting plate bolt</td>
<td>2</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Push plug bolt</td>
<td>1</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td>Apply locking agent to the threads</td>
</tr>
<tr>
<td>Gearshift spindle return spring pin</td>
<td>1</td>
<td>8</td>
<td>22 (2.2, 16)</td>
<td>Apply locking agent to the threads</td>
</tr>
</tbody>
</table>
## GENERAL INFORMATION

### FRONT WHEEL/BRAKE/SUSPENSION/STEERING

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front axle nut</td>
<td>1</td>
<td>12</td>
<td>52 (5.3, 38)</td>
<td>U-nut</td>
</tr>
<tr>
<td>Front brake disc bolt (Type 2, 5)</td>
<td>6</td>
<td>8</td>
<td>42 (4.3, 31)</td>
<td>ALOC bolt: replace with a new one</td>
</tr>
<tr>
<td>Spoke (Type 3, 6)</td>
<td>36</td>
<td>BC3.2</td>
<td>3.7 (0.38, 2.7)</td>
<td></td>
</tr>
<tr>
<td>Front brake arm nut (Type 1, 3, 4, 6)</td>
<td>6</td>
<td>8</td>
<td>10 (1.0, 7)</td>
<td></td>
</tr>
<tr>
<td>Handlebar holder bolt</td>
<td>4</td>
<td>6</td>
<td>12 (1.2, 9)</td>
<td></td>
</tr>
<tr>
<td>Clutch lever pivot bolt</td>
<td>1</td>
<td>6</td>
<td>1 (0.1, 0.7)</td>
<td></td>
</tr>
<tr>
<td>Clutch lever pivot nut</td>
<td>1</td>
<td>6</td>
<td>5.9 (0.6, 4.4)</td>
<td></td>
</tr>
<tr>
<td>Rearview mirror lock nut</td>
<td>2</td>
<td>10</td>
<td>34 (3.5, 25)</td>
<td></td>
</tr>
<tr>
<td>Fork socket bolt</td>
<td>2</td>
<td>8</td>
<td>20 (2.0, 15)</td>
<td></td>
</tr>
<tr>
<td>Fork cap</td>
<td>2</td>
<td>26</td>
<td>22 (2.2, 16)</td>
<td></td>
</tr>
<tr>
<td>Bottom bridge pinch bolt</td>
<td>2</td>
<td>8</td>
<td>34 (3.5, 25)</td>
<td></td>
</tr>
<tr>
<td>Top bridge pinch bolt</td>
<td>2</td>
<td>8</td>
<td>23 (2.3, 17)</td>
<td></td>
</tr>
<tr>
<td>Spoke (Type 3, 6)</td>
<td>36</td>
<td>BC3.2</td>
<td>3.7 (0.38, 2.7)</td>
<td></td>
</tr>
<tr>
<td>Steering bearing adjustment nut</td>
<td>1</td>
<td>22</td>
<td>–</td>
<td>For tightening sequence; See page 12-37</td>
</tr>
<tr>
<td>Steering stem nut</td>
<td>1</td>
<td>22</td>
<td>–</td>
<td>For tightening sequence; See page 12-37</td>
</tr>
</tbody>
</table>

### REAR WHEEL/BRAKE/SUSPENSION

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rear brake arm nut</td>
<td>1</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td>U-nut</td>
</tr>
<tr>
<td>Driven sprocket bolt</td>
<td>4</td>
<td>8</td>
<td>34 (3.5, 25)</td>
<td></td>
</tr>
<tr>
<td>Rear axle nut</td>
<td>1</td>
<td>14</td>
<td>59 (6.0, 44)</td>
<td>U-nut</td>
</tr>
<tr>
<td>Shock absorber upper mounting bolt</td>
<td>2</td>
<td>8</td>
<td>29 (3.0, 21)</td>
<td></td>
</tr>
<tr>
<td>Shock absorber lower mounting bolt</td>
<td>2</td>
<td>10</td>
<td>34 (3.5, 25)</td>
<td></td>
</tr>
<tr>
<td>Rear brake stopper arm nut</td>
<td>2</td>
<td>8</td>
<td>22 (2.2, 16)</td>
<td></td>
</tr>
<tr>
<td>Spoke (Type 3, 6)</td>
<td>36</td>
<td>BC3.2</td>
<td>3.7 (0.38, 2.7)</td>
<td></td>
</tr>
<tr>
<td>Swingarm pivot nut</td>
<td>1</td>
<td>12</td>
<td>59 (6.0, 44)</td>
<td>U-nut</td>
</tr>
</tbody>
</table>

### HYDRAULIC DISC BRAKE

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caliper bleed valve</td>
<td>1</td>
<td>8</td>
<td>8 (0.8, 5.9)</td>
<td>ALOC bolt: replace with a new one</td>
</tr>
<tr>
<td>Master cylinder reservoir cap screw</td>
<td>2</td>
<td>4</td>
<td>1.5 (0.15, 1.1)</td>
<td></td>
</tr>
<tr>
<td>Brake caliper mounting bolt</td>
<td>2</td>
<td>8</td>
<td>30 (3.1, 22)</td>
<td></td>
</tr>
<tr>
<td>Front brake light switch screw</td>
<td>1</td>
<td>4</td>
<td>1.0 (0.10, 0.7)</td>
<td></td>
</tr>
<tr>
<td>Brake lever pivot bolt</td>
<td>1</td>
<td>6</td>
<td>1.0 (0.10, 0.7)</td>
<td></td>
</tr>
<tr>
<td>Brake lever pivot nut</td>
<td>1</td>
<td>6</td>
<td>6.0 (0.6, 4.4)</td>
<td></td>
</tr>
<tr>
<td>Brake hose oil bolt</td>
<td>2</td>
<td>10</td>
<td>34 (3.5, 25)</td>
<td></td>
</tr>
<tr>
<td>Brake caliper slide pin</td>
<td>2</td>
<td>8</td>
<td>18 (1.8, 13)</td>
<td></td>
</tr>
<tr>
<td>Pad pin</td>
<td>2</td>
<td>10</td>
<td>18 (1.8, 13)</td>
<td></td>
</tr>
<tr>
<td>Pad pin plug</td>
<td>2</td>
<td>10</td>
<td>2.5 (0.25, 1.8)</td>
<td></td>
</tr>
</tbody>
</table>
### GENERAL INFORMATION

#### BATTERY/CHARGING SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery holder bolt</td>
<td>4</td>
<td>6</td>
<td>1.8 (0.18, 1.3)</td>
<td></td>
</tr>
</tbody>
</table>

#### ELECTRIC STARTER SYSTEM

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Starter motor case bolt</td>
<td>2</td>
<td>4</td>
<td>4.9 (0.50, 3.6)</td>
<td></td>
</tr>
</tbody>
</table>

#### LIGHTS/METERS/SWITCHES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>Q'TY</th>
<th>THREAD DIA. (mm)</th>
<th>TORQUE N·m (kgf·m, lbf·ft)</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel level sensor mounting nut</td>
<td>4</td>
<td>6</td>
<td>10 (1.0, 7)</td>
<td>ALOC bolt: replace with a new one</td>
</tr>
<tr>
<td>Ignition switch mounting bolt</td>
<td>2</td>
<td>8</td>
<td>24 (2.4, 18)</td>
<td></td>
</tr>
</tbody>
</table>

ALOC bolt: replace with a new one
## GENERAL INFORMATION

### LUBRICATION & SEAL POINTS

#### ENGINE

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>LOCATION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sealant (Three bond 1215 or 1207G or equivalent)</td>
<td>Crankcase mating area&lt;br&gt;Alternator wire grommet seating surface</td>
<td>See page 11-18</td>
</tr>
</tbody>
</table>

| Engine oil | Oil pump rotors<br>Oil filter rotor lock nut threads and seating surface<br>Oil through sliding area<br>Rocker arm shaft whole surface<br>Rocker arm inner surface and roller surface<br>Rocker arm tappet adjusting nut threads<br>Cam chain whole surface<br>Camshaft holder nut threads and seating surface<br>Cylinder inner surface<br>Piston sliding surface, piston pin hole and ring grooves<br>Piston rings whole surface<br>Clutch discs whole surface<br>Clutch center lock nut threads and seating surface<br>Clutch lifter arm sliding surface<br>Flywheel nut threads and seating surface<br>Gearshift spindle journal<br>Starter reduction gear shaft whole surface<br>Starter clutch rolling surface<br>Shift fork shaft whole surface<br>Shift drum journals and guide grooves<br>Gear teeth (primary, transmission kickstarter)<br>Each bearing rotating area<br>Each O-ring | |

| Multi-purpose grease | Each oil seal lip<br>Crankshaft hole cap threads | |

| Molybdenum oil solution (a mixture of engine oil and molybdenum disulfide grease in a ratio of 1:1) | Valve stem sliding surface and stem end<br>Camshaft cam whole surface<br>Piston pin outer surface<br>Clutch outer guide outer surface<br>Crankshaft connecting rod big end needle bearing<br>Crankshaft connecting rod small end inner surface<br>Crankshaft bearing push plug whole surface<br>Right crankshaft bearing rotating surface<br>Starter driven gear inner surface<br>M4, M5, C1, C2, C3 gear rotating surface<br>C1, C2, C3 gear bushing whole surface<br>M3, C4, C5 gear shift fork grooves<br>Kickstarter pinion inner surface<br>Kickstarter idle gear inner bush whole surface | Drip 1 - 2 cc |

| Locking agent | Shift drum stopper arm bolt threads<br>Starter clutch bolt threads<br>Ignition pulse generator mounting bolt threads<br>Mainshaft bearing setting plate bolt threads<br>Alternator stator wire guide bolt threads<br>Crankshaft bearing push plug bolt threads | Coating width:<br>6.5 ± 1.0 mm from tip<br>Coating width:<br>6.5 ± 1.0 mm from tip<br>Coating width:<br>6.5 ± 1.0 mm from tip<br>Coating width:<br>6.5 ± 1.0 mm from tip<br>Coating width:<br>6.5 ± 1.0 mm from tip<br>Coating width:<br>6.5 ± 1.0 mm from tip |

| Degreasing | Flywheel and crankshaft contact areas | |
### FRAME

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>LOCATION</th>
<th>REMARKS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-purpose grease with extreme pressure agent (Example: Excelite EP2 manufactured by Kyodo Yushi, Japan/Shell Alvania EP2 or equivalent)</td>
<td>Steering head bearings&lt;br&gt;Steering head bearing dust seal lips</td>
<td>3 g per each bearing</td>
</tr>
<tr>
<td>Multi-purpose grease</td>
<td>Front wheel dust seal lips&lt;br&gt;Driven flange dust seal lips&lt;br&gt;Rear wheel hub O-ring&lt;br&gt;Front brake panel dust seal lips (Type 1, 3, 4, 6)&lt;br&gt;Front brake lever pivot (Type 1, 3, 4, 6)&lt;br&gt;Front brake panel anchor pin sliding surface (Type 1, 3, 4, 6)&lt;br&gt;Rear brake panel anchor pin sliding surface&lt;br&gt;Front brake cam and shoe sliding surface (Type 1, 3, 4, 6)&lt;br&gt;Rear brake cam and shoe sliding surface&lt;br&gt;Speedometer gear teeth&lt;br&gt;Speedometer gear inner surface&lt;br&gt;Speedometer pinion shaft&lt;br&gt;Speedometer pinion seal lip surface&lt;br&gt;Speedometer cable seal lips&lt;br&gt;Sidestand pivot&lt;br&gt;Centerstand/rear brake pivot&lt;br&gt;Clutch lever pivot</td>
<td>Apply 0.2 – 0.3 g</td>
</tr>
<tr>
<td>Gear oil</td>
<td>Front brake cam felt seal (Type 1, 3, 4, 6)&lt;br&gt;Rear brake cam felt seal</td>
<td></td>
</tr>
<tr>
<td>Silicone grease</td>
<td>Front brake lever pivot (Type 2, 5)&lt;br&gt;Front brake lever-to-master piston contacting area (Type 2, 5)&lt;br&gt;Front brake caliper slide pin boot inside (Type 2, 5)&lt;br&gt;Front brake cable inside (Type 1, 3, 4, 6)&lt;br&gt;Throttle cable end boot inside&lt;br&gt;Throttle cable inside&lt;br&gt;Clutch cable inside&lt;br&gt;Choke cable inside</td>
<td>Apply 0.2 g/m</td>
</tr>
<tr>
<td>DOT3 or DOT4 brake fluid</td>
<td>Master cylinder piston and piston cups (Type 2, 5)&lt;br&gt;Brake caliper piston (Type 2, 5)&lt;br&gt;Brake caliper piston seal (Type 2, 5)&lt;br&gt;Brake caliper dust seal (Type 2, 5)</td>
<td>Apply 0.02 g&lt;br&gt;Apply 0.02 g</td>
</tr>
<tr>
<td>Locking agent</td>
<td>Fork socket bolt threads</td>
<td></td>
</tr>
<tr>
<td>Fork fluid</td>
<td>Fork seal lips&lt;br&gt;Fork cap O-ring</td>
<td></td>
</tr>
<tr>
<td>Honda Bond A or equivalent</td>
<td>Handlebar grip rubber inside&lt;br&gt;Air cleaner case-to-connecting hose mating area</td>
<td></td>
</tr>
</tbody>
</table>
GENERAL INFORMATION

CABLE & HARNESS ROUTING

DRUM BRAKE TYPE

DISC BRAKE TYPE
GENERAL INFORMATION

DRUM BRAKE TYPE

DISC BRAKE TYPE
EMISSION CONTROL SYSTEMS

SOURCE OF EMISSIONS

The combustion process produces carbon monoxide (CO), oxides of nitrogen (NOx) and hydrocarbons (HC). Control of carbon monoxide, oxides of nitrogen and hydrocarbons is very important because, under certain conditions, they react to form photochemical smog when subjected to sunlight. Carbon monoxide does not react in the same way, but it is toxic.

Honda Motor Co., Ltd. utilizes appropriate carburetor settings as well as other systems, to reduce carbon monoxide, oxides of nitrogen and hydrocarbons.

CRANKCASE EMISSION CONTROL SYSTEM

The engine is equipped with a closed crankcase system to prevent discharging crankcase emissions into the atmosphere. Blow-by gas is returned to the combustion chamber through the air cleaner housing and carburetor.
GENERAL INFORMATION

EXHAUST EMISSION CONTROL SYSTEM

The exhaust emission control system is composed of a pulsed secondary air supply system and lean carburetor settings, and no adjustment should be made except idle speed adjustment with the throttle stop screw. The exhaust emission control system is separate from the crankcase emission control system.

SECONDARY AIR SUPPLY SYSTEM

The pulsed secondary air supply system introduces filtered air into the exhaust gases in the exhaust port. Fresh air is drawn into the exhaust port by the function of the Pulsed Secondary Air Injection (PAIR) control valve.

This charge of fresh air promotes burning of the unburned exhaust gases and changes a considerable amount of hydrocarbons and carbon monoxide into relatively harmless carbon dioxide and water vapor.

The PAIR check valve prevents reverse air flow through the system. The PAIR control valve reacts to high intake manifold vacuum and will cut off the supply of fresh air during engine deceleration, thereby preventing afterburn in the exhaust system.

No adjustments to the secondary air supply system should be made, although periodic inspection of the components is recommended.
EVAPORATIVE EMISSION CONTROL SYSTEM

Fuel vapor from the fuel tank is routed into the evaporative emission (EVAP) canister where it is absorbed and stored while the engine is stopped. When the engine is running and the evaporative emission (EVAP) one way valve is open, fuel vapor in the EVAP canister is drawn into the engine through the carburetor.
2. FRAME/BODY PANELS/EXHAUST SYSTEM

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HEADLIGHT CASE .............................................. 2-3
HEADLIGHT BACK PLATE ...................................... 2-3
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SIDE COVER .......................................................... 2-4
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SERVICE INFORMATION

GENERAL
• This section covers removal and installation of the body panels, fuel tank and exhaust system.
• Always replace the gasket when removing the exhaust system.
• Always inspect the exhaust system for leaks after installation.
• For centerstand service, see Rear Wheel/Brake/Suspension section (page 13-16).

TORQUE VALUE

<table>
<thead>
<tr>
<th>Component</th>
<th>Torque Value (N·m, kgf·m, lbf·ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Side cover screw</td>
<td>5 (0.5, 3.7)</td>
</tr>
<tr>
<td>Sidestand pivot bolt</td>
<td>10 (1.0, 7)</td>
</tr>
<tr>
<td>Sidestand pivot nut</td>
<td>45 (4.6, 33)</td>
</tr>
<tr>
<td>Exhaust pipe stud bolt</td>
<td>11 (1.1, 8)</td>
</tr>
<tr>
<td>Shock absorber upper mounting bolt</td>
<td>29 (3.0, 21)</td>
</tr>
<tr>
<td>Swingarm pivot nut</td>
<td>59 (6.0, 44)</td>
</tr>
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</table>

See page 2-10

TROUBLESHOOTING

Excessive exhaust noise
• Broken exhaust system
• Exhaust gas leak

Poor performance
• Deformed exhaust system
• Exhaust gas leak
• Clogged muffler
HEADLIGHT CASE

REMOVAL/INSTALLATION

The procedure is same for both sides.

Remove the two screws and setting plates.
Release the turn signal light from the rubber and disconnect the turn signal light 2P connector.

The procedure is same for both sides.

Remove the two bolts and rubber mount.
Release the bosses of the headlight case from the hole and hook of headlight back plate.
Pull the headlight case forward while releasing the turn signal light wire connectors from the headlight case hole.
Remove the headlight case by releasing the slot from the mount rubber.

HEADLIGHT BACK PLATE

Remove the ignition switch (page 18-9).

Tape the back plate surface to prevent scratches.

Remove the headlight back plate by pulling the speedometer forward.
Installation is in the reverse order of removal.
SEAT

REMOVAL/INSTALLATION
Remove the two bolts.
Move the seat rearward and remove it.
Install the seat by aligning the two hooks with the frame grooves.
Align the bolt holes in the seat base and frame.
Install the two bolts and tighten them.

SIDE COVER

REMOVAL/INSTALLATION
LEFT SIDE
Unlock the side cover with the ignition key.
Release the two bosses from the grommets and remove the side cover.
Installation is in the reverse order of removal.

RIGHT SIDE
Remove the screw.
Release the two bosses from the grommets and remove the side cover.
Installation is in the reverse order of removal.

TORQUE:
Side cover screw: 5 N·m (0.5 kgf·m, 3.7 lbf·ft)
FUEL TANK

REMOVAL INSTALLATION

Remove the following:
- seat (page 2-4)
- side covers (page 2-4)

Turn the fuel valve to OFF and clamp the fuel hose. Disconnect the fuel hose from the fuel valve.

Remove the mounting bolt, collar and rubber washer.

While raising the fuel tank, disconnect the fuel level sensor 2P connector and fuel tank-to-EVAP canister hose.

Slide the fuel tank rearward to remove it from the rubber mounts.

Installation is in the reverse order of removal.

FRONT FENDER

REMOVAL/INSTALLATION

Be careful not to scratch the fender.

Remove the nut, bolt and cable guide.

Remove the front fender mount bolts and front fender.

Installation is in the reverse order of removal.
REAR CARRIER

REMOVAL/INSTALLATION
Remove the seat (page 2-4).
Loosen the rear shock absorber upper mounting bolts.
Remove the two bolts and seat bottom guide.
Remove the carrier by pulling for rearward.

Install the carrier by inserting it between the washer and collar as shown.
Install the two bolts and seat bottom guide.
Tighten the shock absorber upper mounting bolts to the specified torque.
TORQUE: 29 N·m (3.0 kgf·m, 21 lbf·ft)

Be careful not to scratch the rear cowl.

REAR COWL

REMOVAL/INSTALLATION
Remove the side covers (page 2-4).
Remove the rear carrier (page 2-6).
Disconnect the brake light/rear turn signal light connectors.
Remove the two bolts and rear cowl by pulling it rearward.
Install the rear carrier by inserting it between the collar and frame as shown.
Install the two bolts and tighten them.
Connect the brake light/rear turn signal light connectors.
Install the following:
– rear carrier (page 2-6)
– side covers (page 2-4)

Route the wire harness properly (page 1-16).

Be careful not to scratch the rear cowl.
**DISASSEMBLY/ASSEMBLY**

The procedure is same for both sides. Remove the two screws and setting plates. Remove the turn signal light from the rubber by disconnecting the turn signal light 2P connector.

Remove the following:
- rail rubbers
- screws and bolts/washers
- rubber mounts, rear cowl rail, rear cowl bracket and brake/tail light assembly

Assembly is in the reverse order of disassembly.

**REAR FENDER**

**REAR FENDER A REMOVAL/INSTALLATION**

Remove the rear cowl (page 2-6). Remove the two bolts and nuts. Remove the rear fender A by pulling it backward.

Installation is in the reverse order of removal.
REAR FENDER B REMOVAL/INSTALLATION

Remove the rear fender A (page 2-5).
Remove the nut and bolt stay.
Remove the rear fender B by sliding it rearward.
Install the rear fender B by sliding it forward.
Install the bolt stay and nut, then tighten it.
Install the rear fender A (page 2-7).

DRIVE SPROCKET COVER

REMOVAL/INSTALLATION

Remove the following:
– two bolts
– drive sprocket cover
– chain guide

Installation is in the reverse order of removal.

SIDESTAND

REMOVAL/INSTALLATION

Place the motorcycle on its centerstand and retract the sidestand.
Remove the following:
– return spring
– nut
– bolt
– sidestand

Apply grease to the pivot sliding surface.
Install the sidestand and pivot bolt, then tighten it to the specified torque.

TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the pivot nut and tighten it to the specified torque while holding the pivot bolt.

TORQUE: 45 N·m (4.6 kgf·m, 33 lbf·ft)

Install the return spring in the shown direction.
FOOTPEG BAR

Place the motorcycle on its centerstand and retract the sidestand.

Remove the muffler (page 2-9).

Remove the four bolts and footpeg bar while pushing down the rear brake pedal.

Installation is in the reverse order of removal.

EXHAUST PIPE/MUFFLER

REMOVAL

Place the motorcycle on its centerstand.

Release the hoses from the clamps of the muffler.

Remove the following:
- joint nuts
- swingarm pivot nut
- muffler
- spacer and collar
- gasket
INSTALLATION

EXHAUST PIPE STUD BOLT
Thread two nuts to the stud bolt and tighten them together, then use a wrench on them to turn the stud bolt out.
Install and tighten new stud bolts into the cylinder head to the specified torque.

TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)
After tightening the stud bolts, check that the length from the bolt head to the cylinder head surface is within specification.

Always replace the gasket with a new one.

Install a new gasket into the exhaust port of the cylinder head.

Install the following:
– spacer and collar
– muffler
Temporarily install the swingarm pivot nut, but do not tighten it yet.

Install the joint nuts and tighten them.
Retract the centerstand carefully and support the motorcycle securely, then tighten the swingarm pivot nut to the specified torque.

**TORQUE:** 59 N·m (6.0 kgf·m, 44 lbf·ft)

*Route the hoses properly (page 1-16).*

Insert the hoses into the clamps.

After installation, inspect the exhaust system for leaks.
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# SERVICE INFORMATION

## GENERAL

- Place the motorcycle on a level ground before starting any work.
- The exhaust contains poisonous carbon monoxide gas that may cause loss of consciousness and may lead to death. Run the engine in an open area or with an exhaust evacuation system in an enclosed area.

## SPECIFICATIONS

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<th>SPECIFICATIONS</th>
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<td>Throttle grip freeplay</td>
<td>2.0 – 6.0 mm (0.08 – 0.24 in)</td>
</tr>
<tr>
<td>Spark plug Standard</td>
<td>CPR7EA-9 (NGK)</td>
</tr>
<tr>
<td>Spark plug For extended high speed riding</td>
<td>CPR8EA-9 (NGK)</td>
</tr>
<tr>
<td>Spark plug gap</td>
<td>0.80 – 0.90 mm (0.031 – 0.035 in)</td>
</tr>
<tr>
<td>Valve clearance</td>
<td>Intake 0.08 ± 0.02 mm (0.003 ± 0.001 in)</td>
</tr>
<tr>
<td>Engine oil capacity after draining</td>
<td>0.8 liter (0.8 US qt, 0.7 US lmp qt)</td>
</tr>
<tr>
<td>Recommended engine oil API classification:</td>
<td>SG or higher (except oils labeled as energy conserving on the circular API service label)</td>
</tr>
<tr>
<td>Viscosity:</td>
<td>SAE 10W-30</td>
</tr>
<tr>
<td>JASO T 903 standard:</td>
<td>MA</td>
</tr>
<tr>
<td>Engine idle speed</td>
<td>1,400 ± 100 min⁻¹ (rpm)</td>
</tr>
<tr>
<td>Drive chain slack</td>
<td>15 – 25 mm (0.6 – 1.0 in)</td>
</tr>
<tr>
<td>Drive chain size/link</td>
<td>428H/112</td>
</tr>
<tr>
<td>Recommended brake fluid</td>
<td>DOT 3 or DOT 4</td>
</tr>
<tr>
<td>Brake lever freeplay (Type 1, 3, 4, 6)</td>
<td>10 – 20 mm (0.4 – 0.8 in)</td>
</tr>
<tr>
<td>Brake pedal freeplay</td>
<td>20 – 30 mm (0.8 – 1.2 in)</td>
</tr>
<tr>
<td>Clutch lever freeplay</td>
<td>10 – 20 mm (0.4 – 0.8 in)</td>
</tr>
<tr>
<td>Cold tire pressure Driver only</td>
<td>Front 200 kPa (2.00 kgf/cm², 29 psi)</td>
</tr>
<tr>
<td>Cold tire pressure Driver only</td>
<td>Rear 225 kPa (2.25 kgf/cm², 33 psi)</td>
</tr>
<tr>
<td>Cold tire pressure Driver and passenger</td>
<td>Front 200 kPa (2.00 kgf/cm², 29 psi)</td>
</tr>
<tr>
<td>Cold tire pressure Driver and passenger</td>
<td>Rear 225 kPa (2.25 kgf/cm², 33 psi)</td>
</tr>
<tr>
<td>Tire size</td>
<td>Front 2.75-18 42P</td>
</tr>
<tr>
<td>Tire brand</td>
<td>Front HFC-301E (DURO)</td>
</tr>
<tr>
<td></td>
<td>Rear HFC-329 (DURO)</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## TORQUE VALUES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel strainer cup</td>
<td>16 N·m (1.6 kgf·m, 12 lbf·ft)</td>
</tr>
<tr>
<td>Choke cable lock nut</td>
<td>10 N·m (1.0 kgf·m, 7 lbf·ft)</td>
</tr>
<tr>
<td>Air cleaner element mounting screw</td>
<td>4.2 N·m (0.43 kgf·m, 3.1 lbf·ft)</td>
</tr>
<tr>
<td>Spark plug</td>
<td>16 N·m (1.6 kgf·m, 12 lbf·ft)</td>
</tr>
<tr>
<td>Valve adjusting lock nut</td>
<td>14 N·m (1.4 kgf·m, 10 lbf·ft)</td>
</tr>
<tr>
<td>Crankshaft hole cap</td>
<td>15 N·m (1.5 kgf·m, 11 lbf·ft)</td>
</tr>
<tr>
<td>Timing hole cap</td>
<td>10 N·m (1.0 kgf·m, 7 lbf·ft)</td>
</tr>
<tr>
<td>Engine oil drain bolt</td>
<td>30 N·m (3.1 kgf·m, 22 lbf·ft)</td>
</tr>
<tr>
<td>Oil filter rotor cover screw</td>
<td>4 N·m (0.4 kgf·m, 3.0 lbf·ft)</td>
</tr>
<tr>
<td>Rear axle nut</td>
<td>59 N·m (6.0 kgf·m, 44 lbf·ft)</td>
</tr>
<tr>
<td>Spoke</td>
<td>3.7 N·m (0.38 kgf·m, 2.7 lbf·ft)</td>
</tr>
</tbody>
</table>

Apply engine oil to the threads and seating surface.

Apply grease to the threads.
### TOOLS

<table>
<thead>
<tr>
<th>Spoke wrench, 5.8×6.1</th>
<th>Tappet adjusting wrench, ( □3 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>07701-0020300</td>
<td>07708-0030400</td>
</tr>
</tbody>
</table>
**MAINTENANCE SCHEDULE**

Perform the Pre-ride inspection in the Owner’s Manual at each scheduled maintenance period.


The following items require some mechanical knowledge. Certain items (particularly those marked * and **) may require more technical information and tools. Consult an authorized Honda dealer.

---

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* Should be serviced by an authorized Honda dealer, unless the owner has proper tools and service data and is mechanically qualified.

** In the interest of safety, we recommend these items be serviced only by an authorized Honda dealer.

Honda recommends that an authorized Honda dealer should road test the motorcycle after each periodic maintenance is carried out.

**NOTES:**
1. At higher odometer reading, repeat at the frequency interval established here.
2. Service more frequently when riding in unusually wet or dusty areas.
3. Replace every 2 years. Replacement requires mechanical skill.
4. Replace the PAIR air filter every 3 years or 24,000km (16,000 mile). Replacement requires mechanical skill.
MAINTENANCE

FUEL LINE

Check the fuel hose between the fuel tank and carburetor for deterioration, damage or leakage. Replace the fuel hose if necessary.

FUEL STRAINER SCREEN

Turn the fuel valve to OFF.

Remove the following:
- fuel strainer cup (and drain the gasoline in the cup)
- O-ring
- strainer screen

Clean the strainer screen thoroughly with non-flammable or high flash point solvent.

Replace the O-ring with new one.

Install the removed parts in the reverse order of removal.

TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)

After filling the fuel tank, turn the fuel valve ON and check that there are no leaks.
MAINTENANCE

THROTTLE OPERATION

Check for any deterioration or damage of the throttle cable. Check the throttle grip for smooth operation. Check that the throttle opens and automatically closes in all steering positions.

If the throttle grip does not return properly, lubricate the throttle cable and clean the throttle housing.

If the throttle grip still does not return properly, replace the throttle cable.

With the engine idling, turn the handlebar all the way to the right and left to ensure that the idle speed does not change. If idle speed increases, check the throttle grip freeplay and throttle cable connection.

Measure the freeplay at the throttle grip flange.

FREEPLAY: 2.0 – 6.0 mm (0.08 – 0.24 in)

Throttle grip freeplay can be adjusted at throttle cable adjuster.

Slide the dust cover from the adjuster.

Loosen the lock nut, turn the adjuster as required and tighten the lock nut.

Recheck the throttle operation.
Replace the any damaged parts if necessary.

CHOKE OPERATION

Check for smooth choke lever operation.

Inspect the cable for cracks which could allow moisture to enter.

Replace the choke cable if necessary.
Remove the right side cover (page 2-4).
Loosen the lock nuts and adjuster of the carburetor side, and make it free.
Align the handlebar side choke lever with the detent line.
Align the carburetor side choke lever end face with detent line of choke cable stay as shown by adjusting the adjuster.
Tighten the lock nut to the specified torque by holding the adjuster.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Operate the handlebar side choke lever several times and align it with the detent line again.
Make sure that the carburetor side choke lever is in detent position as shown.
Install the right side cover (page 2-4).

---

**AIR CLEANER**

**NOTE:**
- If the motorcycle is used in wet or dusty conditions, more frequent service is required.
- The viscous paper element type air cleaner cannot be cleaned because the element contains a dust adhesive.

Remove the right side cover (page 2-4).
Disconnect the following:
  - carburetor air vent hose from the clamps
  - crankcase breather hose from the storage tank
Loosen the air cleaner connecting hose band screw.
Remove the four screws and air cleaner housing cover.
Remove the screw/washer and air cleaner element from the air cleaner housing cover.
Replace the air cleaner element in accordance with the maintenance schedule or any time it is excessively dirty or damaged.
Clean the inside of the air cleaner housing and cover.
Install a new air cleaner element in the reverse order of removal.

**TORQUE:**

**AIR CLEANER ELEMENT MOUNTING SCREW:**
4.2 N·m (0.43 kgf·m, 3.1 lbf·ft)
SPARK PLUG

Clean around the spark plug base with compressed air before removing the plug, and be sure that no debris is allowed to enter into the combustion chamber.

Disconnect the spark plug cap.
Remove the spark plug.

Check the insulator for cracks or damage, and the electrodes for wear, fouling or discoloration. Replace the plug if necessary.

RECOMMENDED SPARK PLUG:
Standard: CPR7EA-9 (NGK)
For extended high speed riding: CPR8EA-9 (NGK)

Clean the spark plug electrodes with a wire brush or special plug cleaner.
Check the gap between the center and side electrodes with a wire-type feeler gauge.

SPARK PLUG GAP: 0.80 – 0.90 mm (0.031 – 0.035 in)
If necessary, adjust the gap by bending the side electrode carefully.
Thread the spark plug into the cylinder head in by hand to prevent cross-threading and tighten it with a spark plug wrench.
TORQUE: 16 N·m (1.6 kgf·m, 12 lbf·ft)
Connect the spark plug cap.
VALVE CLEARANCE

NOTE:
• Inspect and adjust the valve clearance while the engine is cold (below 35°C/95°F).

Remove the cylinder head cover (page 7-6).
Remove the timing and crankshaft hole caps.

Rotate the crankshaft counterclockwise and align the "T" mark on the flywheel with the index notch in the crankcase cover.

Make sure the piston is at TDC (Top Dead Center) on the compression stroke.
This position can be obtained by confirming that there is slack in each rocker arm. If there is no slack, it is because the piston is moving through the exhaust stroke to TDC. Rotate the crankshaft one full turn and match up the "T" mark again.

When checking the clearance, slide the feeler gauge from the center toward the outside.

Check the clearances of the intake and exhaust valves by inserting the feeler gauge between the adjusting screw and valve stem.

VALVE CLEARANCE:
IN: 0.08 ± 0.02 mm (0.003 ± 0.001 in)
EX: 0.12 ± 0.02 mm (0.005 ± 0.001 in)

Adjust by loosening the lock nut and turning the adjusting screw until there is a slight drag on the feeler gauge.

TOOL:
Valve adjusting wrench 07708-0030400

Apply engine oil to the lock nut.
Hold the adjusting screw and tighten the lock nut.

TORQUE: 14 N·m (1.4 kgf·m, 10 lbf·ft)

After tightening the lock nut, recheck the valve clearance.
MAINTENANCE

Coat new O-rings with engine oil and install them onto the crankshaft hole cap and timing hole cap. Apply grease to crankshaft hole cap threads. Install the caps and tighten them to the specified torque.

TORQUE:
- Crankshaft hole cap: 15 N·m (1.5 kgf·m, 11 lbf·ft)
- Timing hole cap: 10 N·m (1.0 kgf·m, 7 lbf·ft)

Install the cylinder head cover (page 7-6).

ENGINE OIL

LEVEL CHECK

Place the motorcycle on its centerstand on a level surface.

Start the engine and let it idle for 3 – 5 minutes.
Stop the engine and wait for 2 – 3 minutes.

Remove the oil filler cap/dipstick and wipe the oil from the dipstick with a clean cloth.

Insert the filler cap/dipstick without screwing it in, remove it and check the oil level.

The level should be between the upper and lower level lines on the dipstick.

If the oil level is below or near the lower level line, add the recommended oil to the upper level line.

RECOMMENDED ENGINE OIL:
- API classification: SG or higher (except oils labeled as energy conserving on the circular API service label)
- Viscosity: SAE 10W-30
- JASO T 903 standard: MA

NOTE:
- Other viscosities shown in the chart may be used when the average temperature in your riding area is within the indicated range.

Make sure the O-ring is in good condition and install the oil filler cap/dipstick.
**OIL CHANGE**

Start the engine, warm it up and stop it.
Remove the oil drain bolt and filler cap/dipstick, and drain the engine oil.
After draining the oil completely, install the drain bolt with a new sealing washer and tighten it to the specified torque.

**TORQUE**: 30 N·m (3.1 kgf·m, 22 lbf·ft)

Pour the recommended oil into the crankcase to the upper level line on the dipstick.

**OIL CAPACITY**:
- 0.8 liter (0.8 US qt, 0.7 lmp qt) at draining
- 1.0 liter (1.1 US qt, 0.9 lmp qt) at disassembly

Install the filler cap/dipstick.
Check the oil level (page 3-10).
Make sure there are no oil leaks.

---

**ENGINE OIL STRAINER SCREEN**

Remove the right crankcase cover (page 9-5).
Remove the oil strainer screen out of the crankcase.
Wash the strainer screen thoroughly in non-flammable or high flash point solvent until all accumulated dirt has been removed.
Blow dry it with compressed air to clean completely.
Before installing the strainer, the screen mesh should be examined closely for damage.
Install the strainer screen in the direction as shown.
Install the right crankcase cover (page 9-18).
ENGINE OIL CENTRIFUGAL FILTER

Remove the right crankcase cover (page 9-5).

Remove the following:
- three screws
- filter rotor cover
- gasket

Do not allow dust and dirt to enter the oil passage in the crankshaft. Never use compressed air for cleaning.

Clean the inside of the centrifugal filter rotor with a lint-free cloth.

Remove the clip while holding the oil through. Remove the oil through and spring.
Blow compressed air through the oil through hole and the rotor cover to clean them.
Apply engine oil to the oil through sliding area. Install the spring and oil through, and secure it with the clip.
Check that the oil through operates freely, without binding.

Install the rotor cover with a new gasket and tighten the three screws.
TORQUE: 4 N·m (0.4 kgf·m, 3.0 lbf·ft)
Install the right crankcase cover (page 9-18).
ENGINE IDLE SPEED

NOTE:
- Inspect and adjust the idle speed after all other engine maintenance items have been performed and are within specifications.
- The engine must be warm for accurate idle speed inspection and adjustment. Ten minutes of stop-and-go riding is sufficient.

Warm up the engine, shift the transmission into neutral and support the motorcycle upright on a level surface. Check the engine idle speed.

**IDLE SPEED: 1,400 ± 100 min⁻¹ (rpm)**

If the adjustment is necessary, turn the throttle stop screw as required.

SECONDARY AIR SUPPLY SYSTEM

NOTE:
- The pulsed secondary air injection (PAIR) control valve and the PAIR check valve are combined in one assembly.

Remove the fuel tank (page 2-5).
Check the air supply hoses for cracks, deterioration, damage or loose connections.
Check the vacuum hose between the air suction valve and carburetor insulator for cracks, deterioration or loose connections.
If the air supply hose show any signs of heat damage, replace the air suction valve (page 5-21).
Check the air supply pipe between the air suction valve and cylinder head cover for damage or loose fasteners.
MAINTENANCE

EVAPORATIVE EMISSION CONTROL SYSTEM

Remove the following:
- canister cover (page 5-21)
- right side cover (page 2-4)

Check the hoses between the fuel tank, EVAP canister, EVAP one way valve and carburetor for deterioration, damage or loose connection.
Check the EVAP canister for cracks or other damage.
Refer to the Cable & Harness Routing for hose connections (page 1-16).

DRIVE CHAIN

CHAIN SLACK INSPECTION

Never inspect and adjust the drive chain while the engine is running.

Turn the ignition switch to OFF, place the motorcycle on its centerstand and shift the transmission into neutral.
Check the slack in the drive chain lower run midway between the sprockets.

CHAIN SLACK: 15 – 25 mm (0.6 – 1.0 in)

NOTICE

Excessive chain slack, 50 mm (2.0 in) or more, may damage the frame.
**ADJUSTMENT**

Place the motorcycle on its centerstand.

Loosen the rear axle nut and both adjuster lock nuts. Turn both adjust bolts an equal number of turn until the correct drive chain slack is obtained.

Make sure that the both chain adjust plates are in same position on each scale of the chain adjuster stay. Tighten the rear axle nut.

**TORQUE: 59 N·m (6.0 kgf·m, 44 lbf·ft)**

Tighten each adjuster lock nut while holding the adjust bolt securely.

Recheck the drive chain slack and free wheel rotation.

Check the rear brake pedal freeplay (page 3-20).

**CLEANING, INSPECTION AND LUBRICATION**

If the drive chain becomes extremely dirty, it should be removed and cleaned prior to lubrication.

Remove the drive sprocket cover (page 2-8).

Carefully remove the retaining clip with pliers.

Remove the link plate, master link and drive chain.

Clean the chain with non-flammable or high-flash point solvent and wipe it dry.

Be sure the chain has dried completely before lubricating.

Lubricate the drive chain with #80 – 90 gear oil or chain lubricant.

Wipe off excess oil.

Inspect the drive chain for possible damage or wear.

Replace any chain that has damaged rollers, loose fitting links, or otherwise appears unserviceable.

Measure the drive chain length between a span of 41 pins from pin center to pin center with the chain held straight.

**SERVICE LIMIT: 518 mm (20.4 in)**
MAINTENANCE

Inspect the drive and driven sprocket teeth for wear or damage. Replace if necessary.

Never use a new drive chain on worn sprockets.
Both chain and sprockets must be in good condition, or the new replacement parts will wear rapidly.

Check the attaching bolts and nuts on the drive and driven sprockets. If any are loose, torque them.

Install the drive chain onto the sprockets.
Install the master link and link plate, and the retaining clip so that its open end is opposite the normal rotation of the chain.

Install the drive sprocket cover (page 2-8).

BATTERY

Remove the battery (page 15-5).

Inspect the electrolyte level.

When the electrolyte level nears the lower level, remove the filler caps and add distilled water to the upper level line.

After filling, install each filler cap firmly.

Make sure that the battery breather hose is correctly positioned, not kinked, trapped or bent in such a way as to obstruct the passage of the air.
• If the hose is blocked, the battery’s internal pressure will not be relieved, the breather may come off, or the battery crack as a result.

Install the battery (page 15-5).
BRAKE FLUID (DISC BRAKE)

**NOTICE**

Spilling fluid can damage painted, plastic or rubber parts. Place a rag over these parts whenever the system is serviced.

**NOTE:**
- Do not mix different types of fluid, as they are not compatible with each other.
- Do not allow foreign material to enter the system when filling the reservoir.
- When the fluid level is low, check the brake pads for wear (page 3-17). A low fluid level may be due to worn brake pads. If the brake pads are worn, the caliper pistons are pushed out, and this causes a low reservoir level. If the brake pads are not worn and the fluid level is low, check entire system for leaks (page 3-19).

Turn the handlebar to the left side so the reservoir is level and check the fluid level through the sight glass.

If the level is near the lower level mark, check the brake pads for wear (page 3-18).

BRAKE SHOES WEAR (DRUM BRAKE)

**FRONT DRUM BRAKE SHOES (TYPE 1, 3, 4, 6)**

Check the wear indicator position when the brake is applied.

If the arrow on the brake arm aligns with the reference mark "Δ" on the brake panel, inspect the brake drum (page 3-2).
REAR BRAKE SHOES

Check the wear indicator position when the brake is applied.

If the arrow on the brake arm aligns with the reference mark "△" on the brake panel, inspect the brake drum (page 13-14).

Replace the brake shoes if the drum I.D. is within the service limit (page 13-14).

BRAKE PADS WEAR (DISC BRAKE)

FRONT DISC BRAKE PADS (TYPE 2, 5)

Check the brake pads for wear.
Replace the brake pads if either pad is worn to the wear limit groove.

See hydraulic disc brake section for brake pads replacement (page 14-7).
BRAKE SYSTEM

HYDRAULIC SYSTEM (TYPE 2, 5)
Firmly apply the brake lever and check that no air has entered the system. If the lever feels soft or spongy when operated, bleed air from the system (page 14-5).
See Hydraulic Disc Brake section for air bleeding procedure.
Inspect the brake hose and fittings for deterioration, cracks, damage and signs of leakage. Tighten any loose fittings.
Replace hose and fittings as required.

FRONT DRUM BRAKE (TYPE 1, 3, 4, 6)
Inspect the brake cable for kinks or damage, and lubricate the cable if necessary.
Measure the brake lever freeplay at the end of the lever.
FREEPLAY: 10 – 20 mm (0.4 – 0.8 in)
Minor adjustments are made with the upper adjuster at the brake lever.
Slide the dust cover off the lever bracket, loosen the lock nut and turn the adjuster to obtain the freeplay. Tighten the lock nut and install the dust cover.
If the adjuster is threaded out near its limit and the correct freeplay cannot be obtained, turn the adjuster all the way in and back out one turn. Tighten the lock nut and make a major adjustments as described below.
MAINTENANCE

Major adjustments are made with the lower adjusting nut at the brake panel.

Turn the adjusting nut to obtain correct freeplay. Make sure the cutout of the adjusting nut is seated on the brake arm joint pin.

REAR DRUM BRAKE

PEDAL FREEPLAY

Check the brake pedal and brake rod for deformation or damage.

Measure the brake pedal freeplay.

FREEPLAY: 20 – 30 mm (0.8 – 1.2 in)

Adjust the freeplay by turning the adjusting nut. Make sure the cutout of the adjusting nut is seated on the brake arm joint pin.

Check for brake light switch operation after adjustment (page 3-21).
BRAKE LIGHT SWITCH

NOTE:
• The front brake light switch cannot be adjusted. If the front brake light switch actuation and brake engagement are not synchronized, either replace the switch unit or the malfunctioning parts of the system.

Check that the brake light comes on just prior to the brake actually being engaged.
If the light fails to come on, adjust the switch so that the light comes on at the proper time.
Hold the switch body and turn the adjusting nut. Do not turn the switch body.

HEADLIGHT AIM

Adjust the headlight beam as specified by local laws and regulations.
Support the motorcycle upright on a level surface.
Adjust the headlight beam vertically by turning the adjusting screw.

CLUTCH SYSTEM

Inspect the clutch cable for kinks or damage, and lubricate the cable if necessary.
Measure the clutch lever freeplay at the end of the lever.
FREEPLAY: 10 – 20 mm (0.4 – 0.8 in)
MAINTENANCE

Minor adjustment are made with the upper adjuster at the clutch lever.

Slide the dust cover off the lever bracket, loosen the lock nut and turn the adjuster to obtain the freeplay. Tighten the lock nut and install the dust cover.

If the adjuster is threaded out near its limit and the correct freeplay cannot be obtained, turn the adjuster all the way in and back out one turn. Tighten the lock nut and make a major adjustments as described below.

Major adjustments are made with the lower adjusting nut at the engine.

Loosen the lock nut and turn the adjusting nut. After adjustment is complete, tighten the lock nut while holding the adjusting nut.

Check the clutch operation. If the correct freeplay cannot be obtained, or the clutch slips during the test ride, disassemble and inspect the clutch (page 9-4).

SIDESTAND

Place the motorcycle on its centerstand.

Check the sidestand spring for damage or loss of tension. Check the sidestand operation for freedom of movement and lubricate the sidestand pivot if necessary.

Check that the sidestand pivot bolt and lock nut are tightened.
SUSPENSION

FRONT
Check the action of the forks by applying the front brake and compressing them several times. Check the entire fork assembly for leaks, damage or loose fasteners. Replace damaged components which cannot be repaired. Tighten all nuts and bolts. Refer to Front Wheel/Brake/Suspension/Steering section for front suspension service (page 12-26).

REAR
Check the action of the shock absorber by compressing it several times. Check the entire shock absorber assembly for signs of leaks, damage or loose fasteners. Replace damaged components which cannot be repaired. Tighten all nuts and bolts. Refer to Rear Wheel/Brake/Suspension section for rear suspension service (page 13-19).

Place the motorcycle on its centerstand. Check for worn swingarm bearings by grabbing the swingarm and attempting to move the wheel side to side. Check the pivot bushings if any looseness is noted (page 13-20).
NUTS, BOLTS, FASTENERS

Check that all chassis nuts and bolts are tightened to their correct torque values (page 1-10). Check that all cotter pins, safety clips, hose clamps and cable stays are in place and properly secured.

WHEELS/TIRES

Support the motorcycle securely and raise the front wheel off the ground. Hold the fork leg and move the front wheel sideways with force to see if the wheel bearing are worn.

Check for worn wheel bearings by holding the swingarm and move the rear wheel sideways. Replace the wheel bearings if any looseness is noted (page 13-9).

Check the cold tire pressure.

RECOMMENDED TIRE PRESSURE:

Driver only:
Front: 200 kPa (2.00 kgf/cm², 29 psi)
Rear: 225 kPa (2.25 kgf/cm², 33 psi)

Driver and passenger:
Front: 200 kPa (2.00 kgf/cm², 29 psi)
Rear: 225 kPa (2.25 kgf/cm², 33 psi)

Check the tires for cuts, embedded nails, or other damage.
Check the front and rear wheels for trueness.
Check the wear indicator to check for insufficient tread depth. If the wear indicator is visible, the tire should be replaced.
Type 3, 6. Inspect the wheel rims and spokes for damage. Tighten any loose spokes.

**TOOL:**
Spoke wrench, 5.8 x 6.1 mm 07701-0020300

**TORQUE:** 3.7 N·m (0.38 kgf·m, 2.7 lbf·ft)

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**STEERING HEAD BEARINGS**

Place the motorcycle on its centerstand and raise the front wheel off the ground.

Check that the handlebar moves freely from side to side. Make sure the control cables do not interfere with the handlebar rotation.

Check for steering stem bearings by grabbing the fork legs and attempting to move the front fork side to side. If the handlebar moves unevenly, binds, or has vertical movement, inspect the steering head bearings (page 12-33).
4. LUBRICATION SYSTEM

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TROUBLESHOOTING ............................. 4-3
OIL PUMP ................................... 4-4
SERVICE INFORMATION

GENERAL

**CAUTION**

Used engine oil may cause skin cancer if repeatedly left in contact with the skin for prolonged periods. Although this is unlikely unless you handle used oil on a daily basis, it is still advisable to thoroughly wash your hands with soap and water as soon as possible after handling used oil.

- The oil pump can be serviced with the engine installed in the frame.
- When removing and installing the oil pump, use care not to allow dust or dirt to enter the engine.
- If any portion of the oil pump is worn beyond the specified service limit, replace the oil pump as an assembly.
- After the oil pump has been installed, check that there are no oil leaks and that oil pressure is correct.
- Engine oil level inspection (page 3-10)
- Engine oil change (page 3-11)
- Engine oil centrifugal filter cleaning (page 3-12)
- Engine oil strainer screen cleaning (page 3-11)

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine oil capacity</td>
<td>After draining 0.8 liter (0.8 US qt, 0.7 Imp qt)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>After disassembly 1.0 liter (1.1 US qt, 0.9 Imp qt)</td>
<td>–</td>
</tr>
<tr>
<td>Recommended engine oil</td>
<td>API classification: SG or higher (except oils labeled as energy conserving on the circular API service label)</td>
<td>–</td>
</tr>
<tr>
<td></td>
<td>Viscosity: SAE 10W-30 JASO T 903 standard: MA</td>
<td>–</td>
</tr>
<tr>
<td>Oil pump rotor</td>
<td>Tip clearance 0.15 (0.006)</td>
<td>0.20 (0.008)</td>
</tr>
<tr>
<td></td>
<td>Body clearance 0.15 – 0.21 (0.006 – 0.008)</td>
<td>0.25 (0.010)</td>
</tr>
<tr>
<td></td>
<td>Side clearance 0.05 – 0.10 (0.002 – 0.004)</td>
<td>0.12 (0.005)</td>
</tr>
</tbody>
</table>

TORQUE VALUE

- Oil pump cover screw 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

TROUBLESHOOTING

**Engine oil level too low, high oil consumption**
- External oil leaks
- Worn valve guide or stem seal
- Worn piston rings or incorrect piston ring installation
- Worn cylinder

**Engine oil contamination**
- Oil not changed often enough
- Clogged oil strainer
- Oil centrifugal filter not cleaned often enough
- Worn piston rings
LUBRICATION SYSTEM

OIL PUMP

REMOVAL
Remove the right crankcase cover (page 9-5).
Remove the oil pump driven gear.

Remove the two mounting bolts and oil pump.

DISASSEMBLY/INSPECTION
Remove the screw, dowel pins and oil pump cover.

Measure at several places and use the largest reading to compare to the service limit.

Measure the rotor tip clearance.
SERVICE LIMIT: 0.20 mm (0.008 in)
Measure the pump body clearance.
SERVICE LIMIT: 0.25 mm (0.010 in)

Remove the rotor shaft.
Measure the side clearance.
SERVICE LIMIT: 0.12 mm (0.005 in)

ASSEMBLY

SCREW
3 N·m (0.3 kgf·m, 2.2 lbf·ft)
Apply engine oil to the outer and inner rotors and install them into the oil pump body.
Inert the oil pump shaft into the inner rotor by aligning the flats and into the oil pump body.

Install the dowel pins into the oil pump body.
Install the oil pump cover and screw, and tighten the screw.
TORQUE: 3 N·m (0.3 kgf·m, 2.2 lbf·ft)

INSTALLATION
Install the oil pump onto the right crankcase by aligning the dowel pins with the holes.
Install the two mounting bolts and tighten them.

Install the oil pump driven gear.
Install the right crankcase cover (page 9-18).
SERVICE INFORMATION

GENERAL

• Bending or twisting the control cables will impair smooth operation and could cause the cables to stick or bind, resulting in loss of vehicle control.
• Work in a well ventilated area. Smoking or allowing flames or sparks in the work area or where gasoline is stored can cause a fire or explosion.
• If the vehicle is to be stored for more than one month, drain the float chamber. Fuel left in the float chamber may cause clogged jets, resulting in hard starting or poor driveability.
• Before removing the carburetor, place an approved gasoline container under the carburetor drain hose, loosen the drain screw and drain the carburetor.
• When disassembling the fuel system parts, note the locations of the O-rings. Replace them with new ones on reassembly.
• After removing the carburetor, wrap the intake port of the engine with a shop towel or cover it with a piece of tape to prevent any foreign material from dropping into the engine. Be sure to remove the cover when reinstalling the carburetor.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATIONS</th>
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<tr>
<td>Carburetor identification number</td>
<td>PDCBV</td>
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<tr>
<td>Main jet</td>
<td>#98</td>
</tr>
<tr>
<td>Slow jet</td>
<td>#38</td>
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<tr>
<td>Pilot screw opening</td>
<td>See page 5-16</td>
</tr>
<tr>
<td>Float level</td>
<td>14.0 mm (0.55 in)</td>
</tr>
<tr>
<td>Idle speed</td>
<td>1,400 ± 100 min⁻¹ (rpm)</td>
</tr>
<tr>
<td>Throttle grip free play</td>
<td>2 – 6 mm (0.08 – 0.24 in)</td>
</tr>
</tbody>
</table>

TORQUE VALUES

- Battery holder bolt: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
- Tool box cover bolt: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
- Choke cable stay screw: 3.4 N·m (0.35 kgf·m, 2.5 lbf·ft)
- Carburetor drain screw: 1.5 N·m (0.15 kgf·m, 1.1 lbf·ft)
- Slow jet: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
- Needle jet holder: 2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)
- Main jet: 2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)
- Float chamber screw: 2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)
- Insulator socket bolt: 12 N·m (1.2 kgf·m, 9 lbf·ft)
- Fuel valve lock nut: 22 N·m (2.2 kgf·m, 16 lbf·ft)
- PAIR check valve cover screw: 2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)

TOOLS

- Float level gauge: 07401-0010000
FUEL SYSTEM

TROUBLESHOOTING

Engine won’t start
• No fuel in tank
• No fuel to carburetor
  – Clogged fuel strainer
  – Clogged fuel line
  – Clogged fuel tank breather
• Too much fuel getting to the engine
  – Clogged air cleaner
  – Flooded carburetor
• Intake air leak
• Contaminated/deteriorated fuel
• Clogged jets
• Improper choke operation
• Improper throttle operation
• No spark at plug (faulty ignition system)

Lean mixture
• Clogged fuel jets
• Faulty float valve
• Float level too low
• Restricted fuel line
• Clogged carburetor air vent hose
• Restricted fuel tank breather
• Intake air leak
• Faulty throttle valve

Rich mixture
• Faulty float valve
• Float level too high
• Clogged air jets
• Clogged air cleaner
• Worn jet needle or needle jet
• Faulty vacuum piston

Engine stall, hard to start, rough idling
• Restricted fuel line
• Fuel mixture too lean/rich
• Contaminated/deteriorated fuel
• Intake air leak
• Misadjusted idle speed
• Misadjusted pilot screw
• Clogged slow circuit
• Clogged air cleaner
• Faulty ignition system

Afterburn when engine braking is used
• Lean mixture in slow circuit
• Faulty secondary air supply system
  – Faulty PAIR control valve
  – Clogged hose of the secondary air supply system
• Faulty ignition system

Backfiring or misfiring during acceleration
• Fuel mixture too lean
• Faulty ignition system

Poor performance (driveability) and poor fuel economy
• Clogged fuel system
• Faulty ignition system
AIR CLEANER HOUSING

REMOVAL/INSTALLATION

Remove the following:
- seat (page 2-4)
- battery (page 15-5)
- air cleaner cover (page 3-7)
Release the breather hose from the hole.

Remove the four battery holder bolts and battery stays.

Remove the two tool box cover bolts/washers and tool box cover.

Remove the tool box by releasing the boss from the grommet of the frame and sliding it to left side.
FUEL SYSTEM

Remove the air cleaner housing by releasing the bosses from the fuel tank mount rubber holes.
Remove the rubber cover from the air cleaner housing.

Installation is in the reverse order of removal.

TORQUE:

- TOOL BOX COVER BOLT: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)
- BATTERY HOLDER BOLT: 1.8 N·m (0.18 kgf·m, 1.3 lbf·ft)

STORAGE TANK

Remove the right side cover (page 2-4).
Remove the crankcase breather hose, clip and storage tank.
Check breather hose for deterioration, damage or loose connection.
Make sure that the hose is not cracked.
Check the storage tank for clogging, damage or fatigue.
Installation is in the reverse order of removal.

CARBURETOR REMOVAL

Remove the right side cover (page 2-4).
Place a suitable container under the carburetor drain hose and drain fuel from the carburetor by loosening the drain screw.
Tighten the carburetor drain screw to the specified torque.

TORQUE: 1.5 N·m (0.15 kgf·m, 1.1 lbf·ft)

Disconnect the following:
- fuel hose
- drain hose
- EVAP one way valve-to-carburetor hose
- air vent hose

Route the hoses and wire harness properly (page 1-16)
Loosen the lock nuts and release the choke cable from the cable holder stay. Remove the choke cable from the carburetor side choke lever.

Remove the carburetor top and throttle valve from the carburetor.

Release the spark plug wire from the cable holder. Loosen the air cleaner connecting hose band screw. Remove the carburetor mounting nuts, cable holder, and carburetor from the insulator.

Remove the O-ring from the carburetor groove.
FUEL SYSTEM

INSULATOR REMOVAL

Disconnect the vacuum hose.
Remove the insulator socket bolts and insulator from the cylinder head.

Remove the O-ring and gasket.

CARBURETOR DISASSEMBLY/INSPECTION

THROTTLE VALVE

Remove the throttle cable from the throttle valve while compressing the throttle valve spring.

Remove the retainer, spring, and jet needle while pushing the retainer with a screwdriver slightly and turning it counterclockwise.
Check the throttle valve and jet needle for scratches, wear or damage.
Replace them if necessary.
FLOAT AND JETS

Remove the three screws and float chamber.

Remove the O-ring from the float chamber groove.

Remove the float pin, float and float valve.
Inspect the float for deformation or damage.
Replace the float if there is fuel in the float.

Check the float valve and valve seat for scoring, scratches, clogging or damage.
Check the tip of the float valve, where it contacts the valve seat, for stepped wear or contamination.
Check the operation of the float valve.
Push the pin on the float valve and make sure that it returns smoothly.
FUEL SYSTEM

Handle the jets with care. They can easily be scored or scratched.

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Remove the following:
- main jet for clogging
- needle jet holder

Turn the pilot screw in and carefully count the number of turn until it seats lightly. Make a note of this to use as a reference when reinstalling the pilot screw.

Remove the pilot screw, spring, washer and O-ring.

Check the following:
- each jet for clogging
- each passage for clogging
- pilot screw needle for wear or damage
- pilot screw spring for deterioration

Replace the damaged parts, if necessary.

Clean the jets with cleaning solvent and blow them open with compressed air.

CARBURETOR BODY CLEANING

Remove the all jets and pilot screw (page 5-9).

Blow open each air and fuel passage in the carburetor body with compressed air.
FLOAT AND JETS

Damage to the pilot screw seat will occur if the pilot screw is tightened against the seat.

Install the pilot screw with the spring, washer and a new O-ring, and return it to its original position as noted during removal. Perform the pilot screw adjustment if a new pilot screw is installed.

Install the throttle stop screw with the spring and a new O-ring, and return it to its original position as noted during removal.

Install the following:
- needle jet
- needle jet holder
- main jet
- slow jet

Tighten to the specified torque.

**TORQUE:**
- Slow jet 1.8 Nm (0.18 kgf·m, 1.3 lbf·ft)
- Needle jet holder 2.5 N·m (0.25 kgf·m, 1.8 lbf·ft)
- Main jet 2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)

Hang the float valve onto the float arm lip. Install the float valve and float, and insert the float pin.

Check the float level after checking the float valve, valve seat and float.

With the float valve seated and the float arm just touching the valve, measure the float level with the float level gauge.

**TOOL:**
Carburetor float level gauge 07401-0010000

**FLOAT LEVEL: 14.0 mm (0.55 in)**

The float level cannot be adjusted. Replace the float assembly if the float level is out of specification.

Install a new O-ring into the float chamber groove.

Handle the jets with care. They can easily be scored or scratched.
Install the float chamber with the three screws and tighten them to the specified torque.

**TORQUE:** 2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)

**THROTTLE VALVE**
Install the jet needle into the throttle valve. Secure the jet needle with retainer and spring while pushing the retainer with a screwdriver slightly and turning it clockwise.

Install the throttle valve spring onto the throttle cable. Connect the throttle cable to the throttle valve while compressing the throttle valve spring.

**INSULATOR INSTALLATION**
Install the new O-ring and gasket.
FUEL SYSTEM

Install the insulator to the cylinder head by tightening the insulator socket bolt.

**TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Connect the vacuum hose.

CARBURETOR INSTALLATION

Install a new O-ring into the carburetor groove.

Install the carburetor to the insulator.
Install the cable holder and tighten the carburetor mounting nuts.
Install the spark plug wire to the cable holder.
Tighten the air cleaner connecting hose band screw.

Install the throttle valve into the carburetor body by aligning its cut-out with the throttle stop screw.
Tighten the carburetor top.

Connect the choke cable to the carburetor side choke lever.
Install the choke cable to the cable holder stay.

Connect the following:
- air vent hose
- EVAP one way valve-to-carburetor hose
- drain hose
- fuel hose

Install the right side cover (page 2-4).

After installing the carburetor, check for the following:
- throttle grip free play (page 3-6)
- choke operation (page 3-6)
- engine idle speed (page 3-13)
PILOT SCREW ADJUSTMENT

IDLE DROP PROCEDURE

• The pilot screw is factory pre-set and no adjustment is necessary unless the carburetor is overhauled or the pilot screw is replaced.
• Use a tachometer with graduations of 50 min⁻¹ (rpm) or smaller that will accurately indicate a 50 min⁻¹ (rpm) change.

1. Remove the left side cover (page 2-5).
   
   Turn the pilot screw clockwise until it seats lightly, then back it out to specification given.
   
   This is an initial setting prior to the final pilot screw adjustment.

   INITIAL OPENING: 1 - 1/2 turns out

2. Warm up the engine to operating temperature. Stop and go riding for 10 minutes is sufficient.

3. Stop the engine and connect the tachometer according to its manufacturer's instructions.

4. Disconnect the PAIR control valve vacuum hose from the intake manifold and plug the hose joint. Connect the vacuum pump to the vacuum hose.

5. Apply the vacuum more than 57 kPa (430 mmHg) to the PAIR control valve.

6. Start the engine and adjust the idle speed with the throttle stop screw.
   
   IDLE SPEED: 1,400 ± 100 min⁻¹ (rpm)

7. Turn the pilot screw in or out slowly to obtain the highest engine speed.

8. Lightly open the throttle 2 or 3 times, then adjust the idle speed with the throttle stop screw.

9. Turn the pilot screw in until the engine speed drops by 100 min⁻¹ (rpm).

10. Turn the pilot screw out to the final opening from the position obtained step 9.
   
   FINAL OPENING: 1/2 turn out

11. Disconnect the plug from the vacuum joint, then remove the vacuum pump from the PAIR control valve vacuum hose and connect the vacuum hose to the vacuum joint.

12. Readjust the idle speed with the throttle stop screw.
   
   IDLE SPEED: 1,400 ± 100 min⁻¹ (rpm)

   Install the left side cover (page 2-5).
FUEL STRAINER

CLEANING
Remove the fuel tank (page 2-5).
Drain the fuel from the fuel tank into the approved gasoline container.
Loosen the lock nut and remove the fuel valve from the fuel tank.
Remove the O-ring and fuel strainer from the fuel valve.
Clean the fuel strainer with compressed air.
Install the fuel strainer and a new O-ring to the fuel valve.
Install the fuel valve into the fuel tank and tighten the lock nut.
TORQUE: 22 N·m (2.2 kgf·m, 16 lbf·ft)
Install the fuel tank (page 2-5).

SECONDARY AIR SUPPLY SYSTEM
PAIR CHECK VALVE INSPECTION
Remove the screws and check valve cover from the PAIR control valve body.
Remove the check valve from the PAIR control valve body.
FUEL SYSTEM

Check the reed for damage or fatigue, replace if necessary.

Replace the PAIR check valve if the rubber seat is cracked, deteriorated or damaged, or if there is clearance between the reed and seat.

Installation is in the reverse order of removal.

TORQUE:
PAIR check valve cover screw:
2.1 N·m (0.21 kgf·m, 1.5 lbf·ft)

PAIR CONTROL VALVE REMOVAL/INSTALLATION

Disconnect the vacuum hose and air supply hoses from the PAIR control valve.

Remove the bolts and PAIR control valve.
Installation is in the reverse order of removal.
SYSTEM INSPECTION

Start the engine and warm it up to normal operating temperature and stop the engine.

Disconnect the air supply hose from the separate air filter (page 5-19).

Remove the PAIR check valve (page 5-17) and check the inside of PAIR control valve is clean and free of carbon deposits.

Check the PAIR check valve if the inside of PAIR control valve is carbon fouled.

Disconnect the PAIR control valve vacuum hose from the inlet pipe and plug the hose joint.

Connect the vacuum pump to the PAIR control valve vacuum hose.

Start the engine and open the throttle slightly to be certain that air is sucked in through the air supply hose. If the air is not drawn in, check the air supply hose for clogging.

With the engine running, gradually apply vacuum to the PAIR control valve vacuum hose. Check that the air supply hose stops drawing air, and that the vacuum does not bleed.

SPECIFIED VACUUM: 57 kPa (430 mmHg)

If the air is drawn in or if the specified vacuum is not maintained, install a new PAIR control valve. If afterburn occurs on deceleration, even when the secondary air supply system is normal.

Install the removed parts in the reverse order of removal.

SEPARATE AIR FILTER

Remove the fuel tank (page 2-5).

Release the front side hose clip and disconnect the front side air supply hose from the separate air filter. Release the separate air filter from the clamp of the frame and remove the rear side hose clip, rear side air supply hose and separate air filter.

AIR INJECTION PIPE REMOVAL

Disconnect the air supply hose.

Remove the two bolts and air injection pipe from the cylinder head cover.

Remove the O-ring from the air injection pipe.
FUEL SYSTEM

AIR INJECTION PIPE INSPECTION
Check the air supply pipe for crack or damage.

AIR INJECTION PIPE INSTALLATION
Coat a new O-ring with engine oil and install it onto the air injection pipe.

Install the air injection pipe onto the cylinder head cover and tighten the two bolts. Connect the air supply hose.

EVAP ONE WAY VALVE

REMOVAL/INSTALLATION
Remove the right side cover (page 2-4).
Disconnect the EVAP canister-to-one way valve hose and one way valve-to-carburetor hose.
Remove the EVAP one way valve by releasing it from the holder tab.

Route the hoses properly (page 1-16).
Installation is in the reverse order of removal.
**EVAP CANISTER**

**REMOVAL/INSTALLATION**

Remove the two special screws.

Remove the canister cover by releasing the tab from the grommet of the canister cover stay.

Disconnect the following hoses from the EVAP canister.
- Fuel tank-to-EVAP canister hose
- EVAP canister-to-one way valve hose
- EVAP canister breather hose
- EVAP canister drain hose

Release the EVAP canister from the holder tabs of the frame and remove it.

Installation is in the reverse order of removal.

**DISASSEMBLY**

Loosen the screw and remove the canister cover stay.
Remove the canister rubber from the canister.

**ASSEMBLY**

Install the canister rubber onto the canister.

Install the canister cover stay by aligning the slot with the boss of the canister rubber, then tighten the screw until the band ends are fully seated.
6. ENGINE REMOVAL/INSTALLATION

SYSTEM COMPONENTS ········································· 6-2
SERVICE INFORMATION ········································· 6-3
ENGINE REMOVAL ···························································· 6-4
ENGINE INSTALLATION ································································ 6-6
54 N·m (5.5 kgf·m, 40 lbf·ft)

27 N·m (2.8 kgf·m, 20 lbf·ft)

12 N·m (1.2 kgf·m, 9 lbf·ft)
SERVICE INFORMATION

GENERAL

• A floor jack or other adjustable support is required to support and maneuver the engine.
• When removing/installing the engine, tape the frame around the engine beforehand for frame protection.
• The following components require engine removal for service:
  – cylinder head (page 7-17)
  – transmission (page 11-8)
  – crankshaft (page 11-14)
  Other components can be serviced with the engine installed in the frame.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engine oil capacity</td>
<td>After draining 0.8 liter (0.8 US qt, 0.7 lmp qt)</td>
</tr>
<tr>
<td></td>
<td>After disassembly 1.0 liter (1.1 US qt, 0.9 lmp qt)</td>
</tr>
<tr>
<td>Engine dry weight</td>
<td>28.6 kg (63.1 lbs)</td>
</tr>
</tbody>
</table>

TORQUE VALUES

Front/upper engine hanger nut 27 N·m (2.8 kgf·m, 20 lbf·ft)
Rear engine hanger nut        54 N·m (5.5 kgf·m, 40 lbf·ft)
Drive sprocket bolt           12 N·m (1.2 kgf·m, 9 lbf·ft)
ENGINE REMOVAL/INSTALLATION

ENGINE REMOVAL

Drain the engine oil (page 3-11).
Place the motorcycle on its centerstand.
Remove the following:
- drive sprocket cover (page 2-8)
- fuel tank (page 2-5)
- carburetor (page 5-6)
- exhaust pipe/muffler (page 2-9)

Disconnect the following:
- alternator 3P connector
- ignition pulse generator 2P connector
- gear position switch 6P connector

Release the wires from the wire clamp.
- spark plug cap
- air supply hose

Release the spark plug wire, throttle cable and choke cable from the wire clamp.

Remove the wind guard rubber by releasing the slots from the tabs as shown.

Disconnect the following:
- crankcase breather hose
- battery (–) cable (by removing the motor mounting bolt)
- starter motor cable (by removing the rubber cap and terminal nut)
- clutch cable (by removing the two bolts)
Loosen the rear axle nut, and the adjuster lock nuts and adjusting bolts fully to loosen the drive chain.

Remove the following:
- two bolts
- fixing plate (by aligning the splines of the plate and countershaft)
- drive sprocket (pull it off the countershaft and remove from the chain)

Remove the rear brake switch rod and brake pedal return spring.

Place a jack or other adjustable support under the engine.

**NOTE:**
- The jack height must be continually adjusted to relieve stress for ease of bolt removal.

Remove the following:
- upper engine hanger nut and bolt
- cap nuts, bolts and upper engine hanger plates
ENGINE REMOVAL/INSTALLATION

- front engine hanger nuts and bolts
- hanger plate
- rear engine hanger nuts and bolts

Carefully maneuver the engine and remove it out of the frame to the left.

ENGINE INSTALLATION

NOTE:

- Note the installation direction of the engine hanger bolts. All the hanger bolts are installed from the left side.
- Route the wires, hoses and cables properly (page 1-16).

Using a jack or other adjustable support, carefully place the engine into the frame and maneuver it into place.

Carefully align the bolt holes in the frame and engine.

Align the mounting bolt holes and install the following fasteners:
- rear engine hanger bolts and nuts
- hanger plate
- front engine hanger bolts and nuts

- cap nuts, bolts and upper engine hanger plates
- upper engine hanger nut and bolt

After installing all the engine mounting fasteners, tighten them to the specified torque.

**TORQUE:**
- Rear (10 mm): 54 N·m (5.5 kgf·m, 40 lbf·ft)
- Front/upper (8 mm): 27 N·m (2.8 kgf·m, 20 lbf·ft)

Install the brake pedal return spring and rear brake switch rod.

Place the drive sprocket onto the drive chain with the stamp ("14T") facing out and install it onto the countershaft.

Install the fixing plate with the chamfered edge facing in, and set it into the countershaft groove to align the bolt holes in the plate and sprocket, then install the bolts.

Tighten the sprocket bolts.

**TORQUE:** 12 N·m (1.2 kgf·m, 9 lbf·ft)
Connect the clutch cable and install the clutch cable stay bolts and tighten it.

Connect the starter motor cable with the terminal nut and tighten it as specified. Install the rubber cap over the motor terminal properly.

Connect the battery (−) cable with the starter motor mounting bolt and tighten it.

Connect the crankcase breather hose.

Install the wind guard rubber by aligning the slots with the tabs as shown.

Set the following items to the clamp:
- plug wire
- choke cable
- throttle cable

Connect the following:
- spark plug cap
- air supply hose
Connect the following:
- alternator 3P connector
- ignition pulse generator 2P connector
- gear position switch 6P connector

Secure the wires with the clamp.

Adjust the drive chain slack (page 3-15).

Install the following:
- carburetor (page 5-14)
- fuel tank (page 2-5)
- exhaust pipe/muffler (page 2-10)
- drive sprocket cover (page 2-8)

Fill the crankcase with engine oil (page 3-11).

Check the exhaust system for leaks.
SERVICE INFORMATION

GENERAL

- This section covers service of the cylinder head, valves, rocker arms and camshaft.
- The camshaft can be serviced with the engine installed in the frame.
- The cylinder head service requires engine removal.
- Be careful not to damage the mating surfaces when removing the cylinder head cover and cylinder head. Do not strike the cylinder head cover and cylinder head too hard during removal.
- When disassembling, mark and store the disassembled parts to ensure that they are reinstalled in their original locations.
- Clean all disassembled parts with cleaning solvent and dry them by blowing them off with compressed air before inspection.
- Camshaft and rocker arm lubricating oil is fed through oil passages in the cylinder head and camshaft holder. Clean the oil passages before assembling cylinder head.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder compression at 800 min⁻¹ (rpm)</td>
<td>1,196 kPa (12.2 kgf/cm², 176 psi)</td>
<td>–</td>
</tr>
<tr>
<td>Valve clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IN</td>
<td>0.08 ± 0.02 (0.003 ± 0.001)</td>
<td>–</td>
</tr>
<tr>
<td>EX</td>
<td>0.12 ± 0.02 (0.005 ± 0.001)</td>
<td>–</td>
</tr>
<tr>
<td>Valve, valve guide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Valve stem O.D.</td>
<td>IN</td>
<td>4.975 – 4.990 (0.1959 – 0.1965)</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>4.955 – 4.970 (0.1951 – 0.1957)</td>
</tr>
<tr>
<td>Valve guide I.D.</td>
<td>IN/EX</td>
<td>5.000 – 5.012 (0.1969 – 0.1973)</td>
</tr>
<tr>
<td>Stem-to-guide clearance</td>
<td>IN</td>
<td>0.010 – 0.037 (0.0004 – 0.0015)</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>0.030 – 0.057 (0.0012 – 0.0022)</td>
</tr>
<tr>
<td>Valve seat width</td>
<td>IN/EX</td>
<td>0.9 – 1.1 (0.0035 – 0.0043)</td>
</tr>
<tr>
<td>Valve spring</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Free length</td>
<td>INNER</td>
<td>38.76 (1.526)</td>
</tr>
<tr>
<td></td>
<td>OUTER</td>
<td>35.95 (1.415)</td>
</tr>
<tr>
<td>Rocker arm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arm I.D.</td>
<td>IN/EX</td>
<td>10.000 – 10.015 (0.3937 – 0.3943)</td>
</tr>
<tr>
<td>Shaft O.D.</td>
<td>IN/EX</td>
<td>9.972 – 9.987 (0.3926 – 0.3932)</td>
</tr>
<tr>
<td>Arm-to-shaft clearance</td>
<td>IN/EX</td>
<td>0.013 – 0.043 (0.0005 – 0.0017)</td>
</tr>
<tr>
<td>Camshaft</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cam lobe height</td>
<td>IN</td>
<td>32.9935 – 33.2335 (1.29895 – 1.30840)</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>32.8804 – 33.1204 (1.29450 – 1.30395)</td>
</tr>
<tr>
<td>Cylinder head warpage</td>
<td></td>
<td>–</td>
</tr>
</tbody>
</table>

TORQUE VALUES

- Cylinder head cover bolt 10 N·m (1.0 kgf·m, 7 lbf·ft)
- Rocker arm shaft bolt 5 N·m (0.5 kgf·m, 3.7 lbf·ft)
- Camshaft holder nut 32 N·m (3.3 kgf·m, 24 lbf·ft)  
  Apply engine oil to the threads and seating surface.
- Cam sprocket bolt 9 N·m (0.9 kgf·m, 6.6 lbf·ft)
- Cam chain tensioner lifter plug 4 N·m (0.4 kgf·m, 3.0 lbf·ft)
- Spark plug 16 N·m (1.6 kgf·m, 12 lbf·ft)
- Crankshaft hole cap 15 N·m (1.5 kgf·m, 11 lbf·ft)  
  Apply grease to the threads.
- Timing hole cap 10 N·m (1.0 kgf·m, 7 lbf·ft)
### CYLINDER HEAD/VALVES

#### TOOLS

<table>
<thead>
<tr>
<th>Tool Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tensioner stopper</td>
<td>070MG-0010100</td>
</tr>
<tr>
<td>Valve spring compressor set</td>
<td>07757-0010000</td>
</tr>
<tr>
<td>Seat cutter, 24.5</td>
<td>07780-0010100</td>
</tr>
<tr>
<td>Seat cutter, 27.5</td>
<td>07780-0010200</td>
</tr>
<tr>
<td>Flat cutter, 25</td>
<td>07780-0012000</td>
</tr>
<tr>
<td>Flat cutter, 28</td>
<td>07780-0012100</td>
</tr>
<tr>
<td>Interior cutter, 30</td>
<td>07780-0014000</td>
</tr>
<tr>
<td>Interior cutter, 22</td>
<td>07780-0014202</td>
</tr>
<tr>
<td>Cutter holder, 5.0</td>
<td>07781-0010400</td>
</tr>
<tr>
<td>Valve guide driver</td>
<td>07942-8920000</td>
</tr>
<tr>
<td>Valve guide reamer, 5.010</td>
<td>07984-MA60001</td>
</tr>
</tbody>
</table>
TROUBLESHOOTING

- Engine top-end problems usually affect engine performance. These problems can be diagnosed by a compression test, or by tracing top-end noise with a sounding rod or stethoscope.
- If the performance is poor at low speeds, check for white smoke in the crankcase breather hose. If the hose is smoky, check for a seized piston ring.

Compression too low, hard starting or poor performance at low speed

- Valves
  - Incorrect valve clearance
  - Burned or bent valve
  - Incorrect valve timing
  - Weak valve spring
  - Uneven valve seating
  - Valve stuck open
- Cylinder head
  - Leaking or damaged cylinder head gasket
  - Warped or cracked cylinder head
  - Loose spark plug
- Cylinder/piston problem.

Compression too high

- Excessive carbon build-up on piston head or combustion chamber

Excessive smoke

- Worn valve stem or valve guide
- Damaged stem seal
- Cylinder/piston problem (page 8-3)

Excessive noise

- Incorrect valve clearance
- Sticking valve or broken valve spring
- Excessive worn valve seat
- Worn or damaged camshaft
- Worn rocker arm and/or shaft
- Worn rocker arm and valve stem end
- Worn cam sprocket teeth
- Worn cam chain
- Worn or damaged cam chain tensioner
- Cylinder/piston problem (page 8-3)

Rough idle

- Low cylinder compression
CYLINDER HEAD/VALVES

CYLINDER COMPRESSION

Warm up the engine to normal operating temperature. Stop the engine and remove the spark plug (page 3-8).

Install the compression gauge into the spark plug hole. Shift the transmission into neutral. Open the throttle all the way and crank the engine with the starter motor until the gauge reading stops rising. The maximum reading is usually reached within 4 – 7 seconds.

**COMPRESSN PRESSURE:**

\[
1,196 \text{ kPa (12.2 kgf/cm}^2, 176 \text{ psi}) \text{ at 800 min}^{-1} (\text{rpm})
\]

If compression is high, it indicates that carbon deposits have accumulated on the combustion chamber and/or the piston crown.

If compression is low, pour 3 – 5 cc (0.1 – 0.2 oz) of engine oil into the cylinder through the spark plug hole and recheck the compression.

If the compression increases from the previous value, check the cylinder, piston and piston rings.

- Leaking cylinder head gasket
- Worn piston ring
- Worn cylinder and piston

If compression is the same as the previous value, check the valves for leakage.

CYLINDER HEAD COVER

REMOVAL

Release the vacuum hose from the hose clamp and remove the bolt and hose clamp.

Disconnect the air supply hose from the air injection pipe. Remove the cylinder head cover special bolts/mounting rubbers and cylinder head cover.
Remove the gasket and O-ring from the cylinder head cover.

Remove the dowel pin and O-ring from the camshaft holder.

**INSTALLATION**

Install the dowel pin into the camshaft holder. Coat a new O-ring with engine oil and install it onto the dowel pin.

Coat a new O-ring with engine oil and install it onto the dowel pin. Install a new gasket into the cylinder head cover groove. Install the cylinder head cover onto the cylinder head.
Install the mounting rubbers onto the cylinder head cover with their “UP” marks facing up.

Install the head cover bolts/mounting rubbers and tighten them.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**

Connect the air supply hose to the air injection pipe.

Install the hose clamp and tighten the bolt. Set the vacuum hose to the hose clamp.

**CAMSHAFT**

**CAM SPROCKET REMOVAL**

Remove the cylinder head cover (page 7-6).
Remove the timing and crankshaft hole caps. Remove the O-rings from the hole caps.
Rotate the crankshaft counterclockwise and align the "T" mark on the flywheel with the index notch on the left crankcase cover.

Make sure the piston is at TDC (Top Dead Center) on the compression stroke.
This position can be confirmed by checking for slack in the rocker arms.
If there is no slack, rotate the crankshaft counterclockwise one full turn and align the "T" mark with the index notch again.

Remove the plug and O-ring from the cam chain tensioner lifter.

Turn the cam chain tensioner lifter shaft clockwise fully and secure it using the special tool.

**TOOL:**
Tensioner stopper 070MG-0010100

Remove the cam sprocket bolts.
Remove the cam sprocket off the camshaft flange and cam chain.
Attach a piece of wire to the cam chain to prevent it from falling into the crankcase.
CAMSHAFT REMOVAL

Remove the bolt and camshaft retainer plate.
Remove the camshaft from the camshaft holder.

INSPECTION

Turn the outer race of each bearing with your finger.
The bearings should turn smoothly and quietly. Also
check that the bearing inner race fits tightly on the
camshaft.

Measure the height of each cam lobe.

SERVICE LIMITS: IN: 32.96 mm (1.298 in)
EX: 32.85 mm (1.293 in)

Inspect the cam lobes for damage or excessive wear.

CAMSHAFT INSTALLATION

Lubricate the camshaft bearings with engine oil.
Apply molybdenum oil solution to the cam lobes.
Make sure the tab of camshaft is facing the upward.

Install the camshaft, retainer plate and tighten the bolt.

**CAM SPROCKET INSTALLATION**

*Be careful not to jam the cam chain.*

Rotate the crankshaft counterclockwise and align the “T” mark on the flywheel with the index notch on the left crankcase cover.

Make sure the piston is at TDC (Top Dead Center).

Apply engine oil to the cam chain.

Install the cam sprocket onto the cam chain so that the index line aligns with the upper surface of the cylinder head.

Install the cam sprocket onto the camshaft flange.
Tighten the "o" mark side bolt first.

Install the cam sprocket bolts and tighten them.

**TORQUE: 9 N·m (0.9 kgf·m, 6.6 lbf·ft)**

Remove the tensioner stopper from the cam chain tensioner lifter.

Turn the crankshaft counterclockwise one full turn (360°).
Be sure that the index line on the cam sprocket aligns with the upper surface of the cylinder head when the "T" mark on the flywheel is aligned with the index notch on the crankcase cover.

Coat a new O-ring with engine oil and install it into the tensioner lifter groove.
Install the plug and tighten it.

**TORQUE: 4 N·m (0.4 kgf·m, 3.0 lbf·ft)**
Coat new O-rings with engine oil and install them onto the timing and crankshaft hole caps. Apply grease to the crankshaft hole cap threads. Install the crankshaft hole cap and tighten it.

**TORQUE: 15 N·m (1.5 kgf·m, 11 lbf·ft)**
Install the timing hole cap and tighten it.

**TORQUE: 10 N·m (1.0 kgf·m, 7 lbf·ft)**
Install the cylinder head cover (page 7-7)

### CAMSHAFT HOLDER

#### REMOVAL
Remove the cam sprocket (page 7-8).
Loosen the cylinder head bolts. Remove the camshaft holder nuts, washers and the camshaft holder.

#### DISASSEMBLY
Remove the bolt and camshaft retainer plate. Remove the camshaft from the camshaft holder.

Remove the rocker arm shaft bolts.
Remove the rocker arm shafts and rocker arms from the holder.

INSPECTION

Turn the rocker arm roller with your finger. The roller should turn smoothly and quietly.

Measure the rocker arm I.D.

SERVICE LIMIT: 10.10 mm (0.398 in)

Measure the rocker arm shaft O.D.

SERVICE LIMIT: 9.91 mm (0.390 in)

Calculate the rocker arm-to-shaft clearance.

SERVICE LIMIT: 0.10 mm (0.004 in)
ASSEMBLY

Apply engine oil to the rocker arm inner surfaces, rollers and rocker arm shaft entire surfaces.

Note the directions of the bolt holes in the rocker arm shafts.

Set the rocker arms in the camshaft holder, then install the rocker arm shafts into the camshaft holder through the rocker arms.

* : molybdenum oil solution to cam lobes

ROCKER ARM SHAFT BOLTS
5 N·m (0.5 kgf·m, 3.7 lbf·ft)
Align the bolt holes in the camshaft holder and rocker arm shafts using a screwdriver, and install the rocker arm shaft bolts.

Tighten the rocker arm shaft bolts.
TORQUE: 5 N·m (0.5 kgf·m, 3.7 lbf·ft)

Lubricate the camshaft bearings with engine oil. Apply molybdenum oil solution to the cam lobes.

Make sure the tab of camshaft is facing the upward. Install the camshaft into the camshaft holder.
Install the camshaft retainer plate and tighten the bolt securely.

INSTALLATION
Install the camshaft holder onto the cylinder head by aligning the pins with the holes.

Apply engine oil to the threads and seating surfaces of the camshaft holder nuts.
Install the washers onto the camshaft holder nuts.
Install the camshaft holder nuts and tighten them.
TORQUE: 32 N·m (3.3 kgf·m, 24 lbf·ft)
Tighten the cylinder head bolts.
Install the cam sprocket (page 7-11).

CYLINDER HEAD
REMOVAL
Remove the following:
- engine (page 6-4)
- camshaft holder (page 7-13)
- spark plug
- two cylinder head bolts and cylinder head.
Remove the cylinder head gasket and two dowel pins. Be careful not to damage the mating surfaces.

Remove the carbon deposits from the combustion chamber.

Clean off any gasket materials from the cylinder head mating surface.

DISASSEMBLY

While compressing the valve spring with a valve spring compressor, remove the valve cotters.

TOOL:
Valve spring compressor 07757 – 0010000

Mark all disassembled parts to ensure correct reassembly.

Remove the following:
- spring retainers
- inner and outer valve springs
- intake and exhaust valves
- stem seals
- spring seats

Remove the carbon deposits from the combustion chamber.

INSPECTION

CYLINDER HEAD

Remove the carbon deposits from the combustion chamber

Check the spark plug hole and valve areas for cracks.
Check the cylinder head for warpage with a straight edge and a feeler gauge.

**SERVICE LIMIT:** 0.05 mm (0.002 in)

**VALVE SPRING**

Measure the valve spring free length.

**SERVICE LIMITS:**
- **INNER:** 37.89 mm (1.492 in)
- **OUTER:** 35.14 mm (1.383 in)

**VALVE/VALVE GUIDE**

Inspect the valve for trueness, burning, scratches or abnormal stem wear.

Measure each valve stem O.D. and record it.

**SERVICE LIMITS:**
- **IN:** 4.92 mm (0.194 in)
- **EX:** 4.90 mm (0.193 in)

Insert each valve into the valve guide and check the valve movement in the guide.

*Take care not to tilt or lean the reamer in the guide while reaming.*

Ream the valve guide to remove the carbon build-up before checking the valve guide.

Insert the reamer from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.

**TOOL:**
- Valve guide reamer 07984-MA60001
CYLINDER HEAD/VALVES

Measure each valve guide I.D. and record it.

**SERVICE LIMIT: IN/EX: 5.04 mm (0.198 in)**

Calculate the stem-to-guide clearance.

**SERVICE LIMITS: IN: 0.07 mm (0.003 in)  
EX: 0.09 mm (0.004 in)**

If the stem-to-guide clearance exceeds the service limit, determine if a new guide with standard dimensions would bring the clearance within tolerance. If so replace the guides as necessary and ream to fit.

If the stem-to-guide clearance still exceeds the service limit with a new guide, replace the valve and guide.

Inspect and reface the valve seat whenever new valve guides are installed.

**VALVE GUIDE REPLACEMENT**

Chill the replacement valve guides in the freezer section of a refrigerator for about an hour.

Heat the cylinder head to 130°C – 140°C (275°F – 290°F) with a hot plate or oven. Do not heat the cylinder head beyond 150°C (300°F). Use temperature indicator sticks, available from welding supply stores, to be sure the cylinder head is heated to the proper temperature.

Wear insulated gloves to avoid burns when handling the heated cylinder head. Using a torch to heat the cylinder head may cause warping.

Be careful not to damage the mating surface.

Support the cylinder head and drive the valve guides and clips out of the cylinder head from the combustion chamber side.

**TOOL:**
Valve guide driver 07942-8920000

While the cylinder head is still heated, take off the new valve guides from the freezer and install the new clips to the new guides. Drive new guides in the cylinder head from the camshaft side.

**TOOL:**
Valve guide driver 07942-8920000

Let the cylinder head cool to room temperature.

Take care not to tilt or lean the reamer in the guide while reaming.

Use cutting oil on the reamer during this operation.
Ream the new valve guides. Insert the reamer from the combustion chamber side of the cylinder head and always rotate the reamer clockwise.

**TOOL:**
Valve guide reamer 07984-MA60001

Clean the cylinder head thoroughly to remove any metal particles after reaming, and inspect and reface the valve seats (page 7-22).

**VALVE SEAT INSPECTION**

Clean the intake and exhaust valves thoroughly to remove the carbon deposits.

Apply light coating of Prussian Blue to the valve seats. Tap the valve against the valve seat several times without rotating the valve, using a rubber hose or other hand lapping tool.

*The valve cannot be grounded. If the valve face is burned or badly worn or if it contacts the seat unevenly, replace the valve.*

Remove the valve and inspect the width of each valve seat. The valve seat contact should be within the specified width and even all around the circumference.

**STANDARD:** 0.9 – 1.1 mm (0.035 – 0.043 in)
**SERVICE LIMIT:** 1.5 mm (0.06 in)

If the valve seat width is not within specification, reface the valve seat.

Inspect the valve seat face for:
- **Damaged face:**
  - Replace the valve and reface the valve seat.
- **Uneven seat width:**
  - Bent or collapsed valve stem;
  - Replace the valve and reface the valve seat.
• Contact area (too high or too low area)
  – Reface the valve seat.

VALVE SEAT REFACING

Follow the refacing manufacturer’s operating instructions.

Valve Seat Cutters, a grinder or equivalent valve seat refacing equipment are recommended to correct a worn valve seat.

If the contact area is too high on the valve, the seat must be lowered using a 32 degree flat cutter.
If the contact area is too low on the valve, the seat must be raised using a 60 degree inner cutter.

Reface the valve seat with a 45 degree cutter when a valve guide is replaced.

Use a 45 degree cutter to remove the roughness or irregularities from the seat.

TOOLS:
Seat cutter, 27.5 (IN) 07780-0010200
Seat cutter, 24.5 (EX) 07780-0010100
Cutter holder 07781-0010400
Using 32 degree cutter, remove top 1/4 of the existing valve seat material.

**TOOLS:**
- Flat cutter, 28 (IN) 07780-0012100
- Flat cutter, 25 (EX) 07780-0012000
- Cutter holder 07781-0010400

Using 60 degree cutter, remove the bottom 1/4 of the old seat.

**TOOLS:**
- Interior cutter, 30 (IN) 07780-0014000
- Interior cutter, 22 (EX) 07780-0014202
- Cutter holder 07781-0010400

Remove the cutter and inspect the area you have just removed.

Install a 45 degree finish cutter and cut the seat to proper width.

**STANDARD SEAT WIDTH:**
0.9 – 1.1 mm (0.035 – 0.043 in)

Make sure that all pitting and irregularities are removed.

*Excessive lapping pressure may deform or damage the seat.*

*Lapping compound can cause damage if it enters between the valve stem and guide.*

After cutting the seat, apply lapping compound to the valve face and lap the valve using light pressure.

Change the angle of lapping tool frequently to prevent uneven seat wear.

After lapping, wash any residual compound off the cylinder head and valve.

Recheck the seat contact after lapping.
Clean the cylinder head assembly with solvent and blow through all oil passage with compressed air.
Install the spring seats and new valve stem seals.
Lubricate each valve stem with molybdenum oil solution.
Insert the intake and exhaust valves into the valve guides.

To avoid damage to the seal, turn the valve slowly when inserting.

Install the inner and outer valve springs with the tightly wound coils facing the combustion chamber.
Install the spring retainers.
Compress the valve spring and install the valve cotters.

**TOOL:**
Valve spring compressor 07757-0010000

Support the cylinder head above the work bench surface to prevent valve damage.

Tap the stems gently with a bar and hammer to firmly seat the cotters.

**INSTALLATION**

Be careful not to damage the mating surfaces. Do not allow gasket material to enter the engine.

Clean any gasket material from the cylinder mating surface.

Install the dowel pins and a new gasket.

Route the cam chain through the cylinder head and install the cylinder head onto the cylinder.

Loosely install the cylinder head bolts. Install the spark plug and tighten it.

**TORQUE:** 16 N·m (1.6 kgf·m, 12 lbf·ft)

Install the following:
- camshaft holder (page 7-17).
- engine (page 6-6)
CAM CHAIN TENSIONER LIFTER
REMOVAL/INSPECTION

Remove the plug and O-ring from the cam chain tensioner lifter.

Turn the cam chain tensioner lifter shaft clockwise fully and secure it using the special tool.

**TOOL:**
Tensioner stopper 070MG-0010100

Remove the two mounting bolts.

Remove the cam chain tensioner lifter and gasket from the cylinder.

Remove the tensioner stopper from the tensioner lifter.

Check the cam chain tensioner lifter operation:
- The tensioner lifter shaft should not go into the body when it is pushed.
- When it is turned clockwise with a screwdriver, the tensioner lifter shaft should be pulled into the body. The shaft should spring out of the body as soon as the screwdriver is released.
INSTALLATION

Turn the cam chain tensioner lifter shaft clockwise fully and secure it using the special tool.

TOOL:
Tensioner stopper 070MG-0010100

Install a new gasket and cam chain tensioner lifter onto the cylinder.

Install the two mounting bolts and tighten them.
Remove the tensioner stopper from the tensioner lifter.

Coat a new O-ring with engine oil and install it into the tensioner lifter groove.
Install the plug and tighten it.

TORQUE: 4 N·m (0.4 kgf·m, 3.0 lbf·ft)
8. CYLINDER/PISTON

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CYLINDER/PISTON REMOVAL ..................... 8-4
PISTON/CYLINDER INSTALLATION ............. 8-8
SERVICE INFORMATION

GENERAL
• The cylinder and piston services require engine removal.
• Take care not to damage the cylinder wall and piston.
• Be careful not to damage the mating surfaces when removing the cylinder. Do not strike the cylinder too hard during removal.
• Camshaft and rocker arm lubricating oil is fed through an oil passage in the cylinder. Clean the oil passage before installing cylinder.

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder I.D.</td>
<td>52.400 – 52.410 (2.0630 – 2.0634)</td>
<td>52.50 (2.067)</td>
</tr>
<tr>
<td>Cylinder Out-of-round</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Cylinder Taper</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Cylinder Warpage</td>
<td>–</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Piston O.D. at 10 mm (0.4 in) from bottom</td>
<td>52.370 – 52.390 (2.0618 – 2.0626)</td>
<td>52.3 (2.059)</td>
</tr>
<tr>
<td>Piston pin hole I.D.</td>
<td>13.002 – 13.008 (0.5119 – 0.5121)</td>
<td>13.04 (0.513)</td>
</tr>
<tr>
<td>Piston pin O.D.</td>
<td>12.994 – 13.000 (0.5116 – 0.5118)</td>
<td>12.96 (0.510)</td>
</tr>
<tr>
<td>Piston-to-piston pin clearance</td>
<td>0.002 – 0.014 (0.0001 – 0.0006)</td>
<td>0.02 (0.001)</td>
</tr>
<tr>
<td>Piston ring end gap Top</td>
<td>0.10 – 0.25 (0.004 – 0.010)</td>
<td>0.40 (0.016)</td>
</tr>
<tr>
<td>Piston ring end gap Second</td>
<td>0.10 – 0.25 (0.004 – 0.010)</td>
<td>0.40 (0.016)</td>
</tr>
<tr>
<td>Piston ring end gap Oil (side rail)</td>
<td>0.20 – 0.70 (0.008 – 0.028)</td>
<td>0.85 (0.033)</td>
</tr>
<tr>
<td>Piston ring-to-ring groove clearance Top</td>
<td>0.030 – 0.065 (0.0012 – 0.0026)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Piston ring-to-ring groove clearance Second</td>
<td>0.030 – 0.065 (0.0012 – 0.0026)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Cylinder-to-piston clearance</td>
<td>0.010 – 0.040 (0.0004 – 0.0016)</td>
<td>0.10 (0.004)</td>
</tr>
<tr>
<td>Connecting rod small end I.D.</td>
<td>13.016 – 13.034 (0.5124 – 0.5131)</td>
<td>13.04 (0.513)</td>
</tr>
<tr>
<td>Connecting rod-to-piston pin clearance</td>
<td>0.016 – 0.040 (0.0006 – 0.0016)</td>
<td>0.03 (0.001)</td>
</tr>
</tbody>
</table>

TORQUE VALUE

Cylinder stud bolt 11 N·m (1.1 kgf·m, 8 lbf·ft) See page 8-7

TROUBLESHOOTING

Compression too low, hard starting or poor performance at low speed
• Leaking cylinder head gasket
• Worn, stuck or broken piston ring
• Worn or damaged cylinder and piston

Compression too high, overheating or knocking
• Excessive carbon built-up on piston or combustion chamber.

Excessive smoke
• Worn cylinder, piston or piston rings
• Improper installation of piston rings
• Scored or scratched piston or cylinder wall

Abnormal noise (piston)
• Worn piston pin or piston pin hole
• Worn cylinder, piston or piston ring
• Worn connecting rod small end
CYLINDER/PISTON

CYLINDER/PISTON REMOVAL

CYLINDER REMOVAL
Remove the following:
– cam chain tensioner lifter if necessary (page 7-26)
– cylinder head (page 7-17)
– cam chain guide

Do not strike the cylinder too hard and do not damage the mating surface with a screwdriver.

Lift the cylinder and remove it, being careful not to damage the piston.
Clean the top of the cylinder thoroughly.

Remove the dowel pins and gasket.

PISTON REMOVAL
Place a clean shop towel over the crankcase to prevent the possibility of the clip falling into the crankcase.
Remove the piston pin clip using the pair of pliers.
Push the piston pin out of the piston and connecting rod, and remove the piston.

Do not strike the piston too hard and do not damage the mating surface with a screwdriver.

Spread each piston ring and remove it by lifting it up at a point just opposite the gap.
Never use a wire brush; it will scratch the grooves.

Clean carbon deposits from the piston ring grooves with a ring that will be discarded.

**INSPECTION**

**CYLINDER**

Inspect the cylinder wall for scratches and wear.

Measure and record the cylinder I.D. at three levels in both the X and Y axes. Take the maximum reading to determine the cylinder wear.

**SERVICE LIMIT: 52.50 mm (2.067 in)**

Calculate the cylinder-to-piston clearance (Piston O.D. measurement: page 8-6).

**SERVICE LIMIT: 0.10 mm (0.004 in)**

Calculate the cylinder for taper and out of round at three levels in an X and Y axis. Take the maximum reading to determine the out of round.

**SERVICE LIMITS: Taper: 0.10 mm (0.004 in)**

**Out of round: 0.10 mm (0.004 in)**

The cylinder must be rebored, and an oversize piston and rings be fitted if the service limit is exceeded.

The 0.25 mm, 0.50 mm, 0.75 mm and 1.00 mm oversize pistons and rings are available.

The cylinder must be rebored so that the clearance for an oversize piston is 0.010 – 0.040 mm (0.0004 – 0.0016 in).

Check the cylinder for warpage by placing a straight edge and a feeler gauge across the stud bolt holes as shown.

**SERVICE LIMIT: 0.10 mm (0.004 in)**
PISTON/PISTON PIN/CONNECTING ROD

Inspect the piston for cracks or other damage.

Measure the piston O.D. at 10 mm (0.4 in) from the bottom, and 90° to the piston pin hole.

SERVICE LIMIT: 52.3 mm (2.059 in)

Compare this measurement against the maximum cylinder I.D. measurement and calculate the cylinder-to-piston clearance (page 8-5).

Measure the piston pin hole I.D. Take the maximum reading to determine I.D.

SERVICE LIMIT: 13.04 mm (0.513 in)

Measure the piston pin O.D. at three points.

SERVICE LIMIT: 12.96 mm (0.510 in)

Calculate the piston-to-piston pin clearance.

SERVICE LIMIT: 0.02 mm (0.001 in)

Measure the connecting rod small end I.D.

SERVICE LIMIT: 13.04 mm (0.513 in)

Calculate the connecting rod small end-to-piston pin clearance.

SERVICE LIMIT: 0.03 mm (0.001 in)
PISTON RING
Insert each piston ring into the bottom of the cylinder squarely using the piston.
Measure the ring end gap using a feeler gauge.

SERVICE LIMITS: Top: 0.40 mm (0.016 in)
Second: 0.40 mm (0.016 in)
Oil: 0.85 mm (0.033 in)

Reinstall the piston rings (page 8-8) into the piston ring grooves.
Inspect the piston rings for smooth movement by rotating them. The rings should be able to move in their grooves without catching.
Push in the ring until the outer surface of the piston ring is nearly flush with the piston and measure the ring-to-ring groove clearance using a feeler gauge.

SERVICE LIMITS: Top: 0.10 mm (0.004 in)
Second: 0.10 mm (0.004 in)

STUD BOLT REPLACEMENT
Thread two 8 mm nuts onto the stud bolt and tighten them together, and use a wrench on them to turn the stud bolt out.
Install new stud bolts into the crankcase and tighten them
TORQUE: 11 N·m (1.1 kgf·m, 8 lbf·ft)
After installing the stud bolts, measure the stud height from the crankcase surface.
STANDARD: 113.4 – 115.4 mm (4.46 – 4.54 in)
Adjust the height if necessary.
PISTON/CYLINDER INSTALLATION

PISTON INSTALLATION

Carefully install the piston rings into the piston ring grooves with the markings facing up.

- Do not damage the piston ring by spreading the ends too far.
- Be careful not to scratch the piston surface.
- Do not confuse the top and second rings.

Stagger the ring end gaps 120 degrees apart from each other.
Stagger the side rail end gaps as shown.

Apply molybdenum oil solution to the piston pin outer surface and connecting rod small end inner surface.
Apply engine oil to the piston pin holes.
Install the piston with its "IN" mark toward the intake side and insert the piston pin through the piston and connecting rod.
Place a shop towel over the crankcase opening to prevent piston pin clips from falling into the crankcase.

Install new piston pin clips into the grooves in the piston pin holes.
- Make sure that the piston pin clips are seated securely.
- Do not align the piston pin clip end gap with the piston cutout.

**CYLINDER INSTALLATION**

*Be careful not to damage the mating surfaces. Do not allow gasket material to enter the crankcase.*

Clean any gasket material from the cylinder mating surface of the crankcase.

Install the two dowel pins and a new gasket.

Apply engine oil to the cylinder wall, piston outer surface and piston rings.

*Be careful not to damage the piston rings and cylinder wall.*

Route the cam chain through the cylinder and install the cylinder over the piston while compressing the piston rings with your fingers.

Insert the cam chain guide into the cylinder and crankcase grooves.

Install the cylinder head (page 7-25).
SYSTEM COMPONENTS

12 N·m (1.2 kgf·m, 9 lbf·ft)

12 N·m (1.2 kgf·m, 9 lbf·ft)

12 N·m (1.2 kgf·m, 9 lbf·ft)

64 N·m (6.5 kgf·m, 47 lbf·ft)

4 N·m (0.4 kgf·m, 3.0 lbf·ft)

74 N·m (7.5 kgf·m, 55 lbf·ft)
SERVICE INFORMATION

GENERAL

• This section covers service of the clutch, gearshift linkage and kickstarter. These services can be performed with the engine installed in the frame.
• Engine oil viscosity, oil level and the use of oil additives have an effect on clutch operation. Oil additives of any kind are specifically not recommended. When the clutch does not disengage or the vehicle creeps with the clutch disengaged, inspect the engine oil viscosity and oil level before servicing the clutch system.
• Engine lubricating oil is fed through the oil passages in the right crankcase cover. Clean the oil passages before installing the right crankcase cover.
• The crankcase must be separated when the transmission, shift drum and shift forks require service (page 11-6).

SPECIFICATIONS

<table>
<thead>
<tr>
<th>ITEM</th>
<th>STANDARD</th>
<th>SERVICE LIMIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch lever free play</td>
<td>10 – 20 (0.4 – 0.8)</td>
<td>-</td>
</tr>
<tr>
<td>Clutch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring free length</td>
<td>40.5 (1.59)</td>
<td>39.6 (1.56)</td>
</tr>
<tr>
<td>Disc thickness</td>
<td>2.80 – 2.90 (0.110 – 0.114)</td>
<td>2.6 (0.10)</td>
</tr>
<tr>
<td>Plate warpage</td>
<td>-</td>
<td>0.20 (0.008)</td>
</tr>
<tr>
<td>Clutch outer I.D.</td>
<td>23.000 – 23.021 (0.9055 – 0.9063)</td>
<td>23.08 (0.909)</td>
</tr>
<tr>
<td>Clutch outer guide O.D.</td>
<td>22.959 – 22.980 (0.9039 – 0.9047)</td>
<td>22.93 (0.903)</td>
</tr>
<tr>
<td>Clutch outer guide I.D.</td>
<td>16.991 – 17.009 (0.6689 – 0.6696)</td>
<td>17.04 (0.671)</td>
</tr>
<tr>
<td>Mainshaft O.D. at clutch outer guide</td>
<td>16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.95 (0.667)</td>
</tr>
<tr>
<td>Kickstarter idle gear I.D.</td>
<td>20.500 – 20.521 (0.8071 – 0.8079)</td>
<td>20.58 (0.810)</td>
</tr>
<tr>
<td>Kickstarter idle gear bushing O.D.</td>
<td>20.459 – 20.480 (0.8055 – 0.8063)</td>
<td>20.43 (0.804)</td>
</tr>
<tr>
<td>Kickstarter idle gear bushing I.D.</td>
<td>17.000 – 17.018 (0.6693 – 0.6700)</td>
<td>17.04 (0.671)</td>
</tr>
<tr>
<td>Countershaft O.D. at kickstarter idle gear</td>
<td>16.966 – 16.984 (0.6680 – 0.6687)</td>
<td>16.94 (0.667)</td>
</tr>
<tr>
<td>Kickstarter drive gear I.D.</td>
<td>16.016 – 16.034 (0.6305 – 0.6313)</td>
<td>16.06 (0.632)</td>
</tr>
<tr>
<td>Kickstarter spindle O.D. at kickstarter drive gear</td>
<td>15.966 – 15.984 (0.6286 – 0.6293)</td>
<td>15.94 (0.628)</td>
</tr>
</tbody>
</table>

TORQUE VALUES

<table>
<thead>
<tr>
<th>ITEM</th>
<th>TORQUE (N·m)</th>
<th>COMMON INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clutch center lock nut</td>
<td>74 (7.5 kgf·m, 55 lbf·ft)</td>
<td>Apply engine oil to the threads and seating surface.</td>
</tr>
<tr>
<td>Clutch lifter plate bolt</td>
<td>12 (1.2 kgf·m, 9 lbf·ft)</td>
<td></td>
</tr>
<tr>
<td>Oil filter rotor lock nut</td>
<td>64 (6.5 kgf·m, 47 lbf·ft)</td>
<td>Apply engine oil to the threads and seating surface.</td>
</tr>
<tr>
<td>Gearshift cam bolt</td>
<td>12 (1.2 kgf·m, 9 lbf·ft)</td>
<td>Apply locking agent to the threads.</td>
</tr>
<tr>
<td>Shift drum stopper arm bolt</td>
<td>12 (1.2 kgf·m, 9 lbf·ft)</td>
<td>Apply locking agent to the threads.</td>
</tr>
<tr>
<td>Oil filter rotor cover screw</td>
<td>4 (0.4 kgf·m, 3.0 lbf·ft)</td>
<td></td>
</tr>
</tbody>
</table>
Faulty clutch operation can usually be corrected by adjusting the freeplay.

**Clutch lever difficult to pull in**
- Damaged, kinked or dirty clutch cable
- Improperly routed clutch cable
- Damaged clutch lifter mechanism
- Faulty clutch lifter plate bearing

**Clutch will not disengage or motorcycle creeps with clutch disengaged**
- Excessive clutch lever free play
- Clutch plate warped
- Oil level too high, improper oil viscosity, or additive used

**Clutch slips**
- Clutch lifter sticking
- Worn clutch discs
- Weak clutch springs
- No clutch lever free play

**Hard to shift**
- Misadjusted clutch cable
- Damaged or bent shift fork
- Bent shift fork shaft
- Damaged gearshift spindle assembly
- Damaged shift drum guide grooves

**Transmission jumps out of gear**
- Worn shift drum stopper arm
- Worn or broken gearshift spindle return spring
- Bent shift fork shaft
- Damaged shift drum guide grooves
- Worn gear dogs or dog holes

**Gearshift pedal will not return**
- Weak or broken gearshift spindle return spring
- Bent gearshift spindle
RIGHT CRANKCASE COVER REMOVAL

Drain the engine oil (page 3-11).
Remove the footpeg bar (page 2-8).

Remove the bolt and kickstarter pedal

When removing the kickstarter pedal, mark the pedal position to ensure the original position.

Remove the two bolts and clutch cable stay.
Disconnect the clutch cable from the clutch lifter arm.

Loosen the ten right crankcase cover bolts in a crisscross pattern in 2 or 3 steps.
Remove the bolts and right crankcase cover.

Remove the two dowel pins and gasket.
CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER

CLUTCH LIFTER ARM

REMOVAL

Remove the right crankcase cover (page 9-5).
Remove the clutch lifter piece by turning the lifter arm clockwise slightly.

Drive the spring pin into the clutch lifter arm until the pin end is flush with the lifter arm surface, using the pin driver.

TOOL:
Pin driver 07744-0010200

Pull the clutch lifter arm out and remove the return spring.

Remove the kickstarter spindle dust seal.
Remove the clutch lifter arm and dust seal.
Check the lifter piece and arm for wear or damage.
Check the return spring for fatigue or damage.
Replace them if necessary.
INSTALLATION

Apply grease to a new kickstarter spindle dust seal lip and install it into the right crankcase cover as specified.

Apply grease to a new clutch lifter arm dust seal lip and install it into the right crankcase cover as specified.

Apply engine oil to the clutch lifter arm sliding surface and install it into the right crankcase cover.

Install the return spring onto the lifter arm end.

From the opposite side, drive the spring pin until it projects as specified, using the pin driver.

**TOOL:**
Pin driver 07744-0010200

Install the lifter piece into the lifter arm groove while turning the lifter arm clockwise slightly.

Install the right crankcase cover (page 9-18).
CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER

CLUTCH

REMOVAL

Remove the following:

– right crankcase cover (page 9-5)
– oil pump driven gear
– three screws
– oil filter rotor cover and gasket

Install the gear holder between the primary drive and driven gears, and loosen the oil filter rotor lock nut.

TOOLS:

Gear holder 07724-0010200
Lock nut wrench 07716-0020100

Remove the washer and oil filter rotor.

Loosen the clutch lifter plate bolts in a crisscross pattern in several steps.

Remove the bolts, lifter plate and clutch springs.
Attach the clutch center holder to the pressure plate using four clutch lifter plate bolts to hold the clutch center, and then loosen the lock nut.

**TOOL:**
Clutch center holder 07GMB-KT70101

Remove the clutch center holder.

Remove the washer.

- clutch center
- clutch disc A
- three clutch plates and two discs B
- clutch disc A
- pressure plate

- washer
- clutch outer
INSPECTION

CLUTCH LIFTER BEARING
Turn the inner race of the lifter bearing with your finger. The bearing should turn smoothly and quietly. Also check that the outer race fits tightly in the lifter plate.
Replace the bearing if the inner race does not turn smoothly, quietly, or if the outer race fits loosely in the lifter plate.

CLUTCH SPRING
Replace the clutch springs as a set.
Check the clutch spring for fatigue or damage.
Measure the clutch spring free length.
SERVICE LIMIT: 39.6 mm (1.56 in)

CLUTCH CENTER
Check the grooves of the clutch center for damage or wear caused by the clutch plates.
CLUTCH DISC
Replace the clutch discs and plates as a set.
Check the clutch discs for signs of scoring or discoloration.
Measure the thickness of each disc.
SERVICE LIMIT: 2.6 mm (0.10 in)

CLUTCH PLATE
Replace the clutch discs and plates as a set.
Check the plate for discoloration.
Check the clutch plate for warpage on a surface plate using a feeler gauge.
SERVICE LIMIT: 0.20 mm (0.008 in)

CLUTCH OUTER/OUTER GUIDE
Check the slots in the clutch outer for nicks, cuts or indentations made by the clutch discs.
Check the primary driven gear teeth for wear or damage.
Measure the clutch outer I.D.
SERVICE LIMIT: 23.08 mm (0.909 in)

Measure the clutch outer guide I.D. and O.D.
SERVICE LIMITS: O.D.: 22.93 mm (0.903 in)
I.D.: 17.04 mm (0.671 in)
MAINSHAFT
Measure the mainshaft O.D. at the clutch outer guide.

SERVICE LIMIT: 16.95 mm (0.667 in)

INSTALLATION
Apply molybdenum oil solution to the outer surface of the clutch outer guide and install it onto the mainshaft.

Apply engine oil to the primary driven gear teeth. Install the clutch outer and washer.

Coat the clutch discs with engine oil.
Install the clutch disc A, three clutch plates and two discs B alternately, and clutch disc A onto the clutch center.
Install the pressure plate onto clutch center by aligning the "o" marks as shown.

Install the tabs of clutch disc A (outside) into the shallow slots in the clutch outer.

Install the clutch center assembly into the clutch outer.

Install the washer onto the mainshaft.

Apply engine oil to the threads and seating surface of the clutch center lock nut.
Install the lock nut onto the mainshaft.
Attach the clutch center holder to the pressure plate using four clutch lifter plate bolts to hold the clutch center, and then tighten the lock nut.

TOOL:
Clutch center holder 07GMB-KT70101

TORQUE: 74 N·m (7.5 kgf·m, 55 lbf·ft)
Install the clutch springs, lifter plate and bolts. Tighten the bolts in a crisscross pattern in several steps.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)

Install the oil filter rotor and washer onto the crankshaft.

Apply engine oil to the threads and seating surface of the oil filter rotor lock nut, and install it.

Install the gear holder between the primary drive and driven gears, and tighten the oil filter rotor lock nut.

TOOLS:
- Gear holder 07724-0010200
- Lock nut wrench 07716-0020100

TORQUE: 64 N·m (6.5 kgf·m, 47 lbf·ft)

Install a new gasket onto the oil filter rotor cover.
Install the oil filter rotor cover with the three screws and tighten screws.

**TORQUE:** 4 N·m (0.4 kgf·m, 3.0 lbf·ft)

Install the oil pump driven gear.

Install the right crankcase cover (page 9-18).

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**GEARSHIFT LINKAGE**

**REMOVAL/INSPECTION**

Remove the following:
- pinch bolt and gearshift pedal
- clutch (page 9-8)

Clean the left end of the gearshift spindle.

When removing the gearshift pedal, mark the pedal position to ensure the original position.

Pull the gearshift spindle out of the crankcase being careful not to damage the oil seal lip and remove the thrust washer from the spindle.

Remove the following:
- gearshift cam bolt
- gearshift cam
CLUTCH/GEARSHIFT LINKAGE/KICKSTARTER

- dowel pins
- stopper arm bolt
- stopper arm
- washer
- return spring

Inspect the gearshift spindle oil seal for deterioration or damage, replace if necessary. If replacing the oil seal, install it as specified.

Check the gearshift spindle for wear or bend. Check the spindle plate for wear, damage or deformation. Check the return spring for fatigue or damage.

INSTALLATION

Apply locking agent to the stopper arm bolt threads. Install the return spring, washer, stopper arm and bolt, while holding the spring end to the groove on the stopper arm. Tighten the stopper arm bolt to the specified torque.

TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)
Install the dowel pins into the shift drum holes. Hold the stopper arm using a screwdriver and install the gearshift cam by aligning the holes with the dowel pins.

Apply locking agent to the gearshift cam bolt threads. Install the gearshift cam bolt and tighten it. **TORQUE: 12 N·m (1.2 kgf·m, 9 lbf·ft)**

Apply engine oil to the gearshift spindle journals. Install the thrust washer onto the gearshift spindle and insert the spindle into the crankcase.

*Be careful not to damage the oil seal lip in the left crankcase.*

Install the spindle over the spring pin by aligning the return spring ends with the spring pin.
Install the clutch (page 9-12)
Install the gearshift pedal in the original position noted during removal.
Install the pinch bolt and tighten it.

**PRIMARY DRIVE GEAR**

**REMOVAL/INSTALLATION**

Remove the following:
- clutch (page 9-8)
- primary drive gear

Be careful not to damage the crankshaft.

Install the woodruff key into the crankshaft key groove.
Apply engine oil to the primary drive gear teeth.
Install the spacer and primary drive gear onto the crankshaft by aligning the key grooves with the woodruff key.
Install the clutch (page 9-12).

**RIGHT CRANKCASE COVER INSTALLATION**

Be careful not to damage the mating surfaces.
Clean off any gasket material from the right crankcase and cover mating surfaces.
Install the dowel pins and a new gasket.
Install the right crankcase cover and bolts. Tighten the bolts in a crisscross pattern in 2 or 3 steps.

Connect the clutch cable to the clutch lifter arm. Install the clutch cable stay onto the right crankcase cover and tighten the two bolts.

Install the kickstarter pedal in the original position noted during removal and tighten the bolt. Install the footpeg bar (page 2-8). Fill the crankcase with the recommended engine oil (page 3-11).

**KICKSTARTER IDLE GEAR**

**REMOVAL**

Remove the clutch assembly (page 9-8). Remove the snap ring, washer and kickstarter idle gear.
Remove the bushing and washer.

**INSPECTION**

Measure the kickstarter idle gear I.D.

**SERVICE LIMIT:** 20.58 mm (0.810 in)

Measure the bushing I.D. and O.D.

**SERVICE LIMIT:**

- I.D.: 17.04 mm (0.671 in)
- O.D.: 20.43 mm (0.804 in)

Measure the countershaft O.D. at the kickstarter idle gear.

**SERVICE LIMIT:** 16.94 mm (0.667 in)

**INSTALLATION**

Apply molybdenum oil solution to the bushing.

Install the washer and bushing.
Apply engine oil to the kickstarter idle gear teeth.
Install the idle gear, washer and snap ring.
Install the clutch assembly (page 9-12).

**KICKSTARTER**

**REMOVAL**

Remove the right crankcase cover (page 9-5).
Unhook the return spring from the crankcase.

Remove the following:
- kickstarter assembly
- ratchet spring
- washer

**DISASSEMBLY**

Remove the following:
- collar
- return spring
- starter ratchet gear
Remove the following:
- snap ring
- washer A
- kickstarter drive gear
- washer B

**INSPECTION**
Check the following:
- Ratchet gear and drive gear for excessive wear or damage.
- Spindle for bend or damage.

Measure the drive gear I.D. and spindle O.D. at the drive gear.

**SERVICE LIMIT:**
- DRIVE GEAR I.D.: 16.06 mm (0.632 in)
- SPINDLE O.D.: 15.94 mm (0.628 in)

**ASSEMBLY**
Install the following:
- washer B
- kickstarter drive gear
- washer A
- snap ring

Install the ratchet gear.
Hook the return spring to the hole of the spindle.

Install the collar to the return spring, aligning the cut-out of the collar with the spring.

**INSTALLATION**

Apply engine oil to the kickstarter drive gear teeth.
Install the ratchet spring and washer to the spindle.
Install the kickstarter assembly.

Hook the return spring to the crankcase.
Install the right crankcase cover (page 9-18).