

**Kawasaki**

**ZZR250**



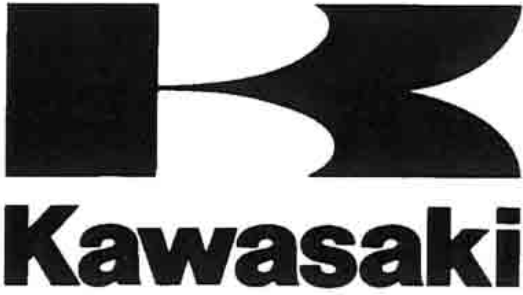
# **Motorcycle Service Manual**

# Quick Reference Guide

<b>General Information</b>	<b>1</b>
<b>Periodic Maintenance</b>	<b>2</b>
<b>Fuel System</b>	<b>3</b>
<b>Cooling System</b>	<b>4</b>
<b>Engine Top End</b>	<b>5</b>
<b>Clutch</b>	<b>6</b>
<b>Engine Lubrication System</b>	<b>7</b>
<b>Engine Removal/Installation</b>	<b>8</b>
<b>Crankshaft/Transmission</b>	<b>9</b>
<b>Wheels/Tires</b>	<b>10</b>
<b>Final Drive</b>	<b>11</b>
<b>Brakes</b>	<b>12</b>
<b>Suspension</b>	<b>13</b>
<b>Steering</b>	<b>14</b>
<b>Frame</b>	<b>15</b>
<b>Electrical System</b>	<b>16</b>
<b>Appendix</b>	<b>17</b>

This quick reference guide will assist you in locating a desired topic or procedure.

- Bend the pages back to match the black tab of the desired chapter number with the black tab on the edge at each table of contents page.
- Refer to the sectional table of contents for the exact pages to locate the specific topic required.



**ZZR250**

# Motorcycle Service Manual

---

All rights reserved. No parts of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic mechanical photocopying, recording or otherwise, without the prior written permission of Quality Assurance Department/Consumer Products & Machinery Company/Kawasaki Heavy Industries, Ltd., Japan.

No liability can be accepted for any inaccuracies or omissions in this publication, although every possible care has been taken to make it as complete and accurate as possible.

The right is reserved to make changes at any time without prior notice and without incurring an obligation to make such changes to products manufactured previously. See your Motorcycle dealer for the latest information on product improvements incorporated after this publication.

All information contained in this publication is based on the latest product information available at the time of publication. Illustrations and photographs in this publication are intended for reference use only and may not depict actual model component parts.

## LIST OF ABBREVIATIONS

A	ampere(s)	lb	pound(s)
ABDC	after bottom dead center	m	meter(s)
AC	alternating current	min	minute(s)
ATDC	after top dead center	N	newton(s)
BBDC	before bottom dead center	Pa	pascal(s)
BDC	bottom dead center	PS	horsepower
BTDC	before top dead center	psi	pound(s) per square inch
°C	degree(s) Celsius	r	revolution
DC	direct current	rpm	revolution(s) per minute
F	farad(s)	TDC	top dead center
°F	degree(s) Fahrenheit	TIR	total indicator reading
ft	foot, feet	V	volt(s)
g	gram(s)	W	watt(s)
h	hour(s)	Ω	ohm(s)
L	liter(s)		

**Read OWNER'S MANUAL before operating.**

# Foreword

This manual is designed primarily for use by trained mechanics in a properly equipped shop. However, it contains enough detail and basic information to make it useful to the owner who desires to perform his own basic maintenance and repair work. A basic knowledge of mechanics, the proper use of tools, and workshop procedures must be understood in order to carry out maintenance and repair satisfactorily. Whenever the owner has insufficient experience or doubts his ability to do the work, all adjustments, maintenance, and repair should be carried out only by qualified mechanics.

In order to perform the work efficiently and to avoid costly mistakes, read the text, thoroughly familiarize yourself with the procedures before starting work, and then do the work carefully in a clean area. Whenever special tools or equipment are specified, do not use makeshift tools or equipment. Precision measurements can only be made if the proper instruments are used, and the use of substitute tools may adversely affect safe operation.

**For the duration of the warranty period,** we recommend that all repairs and scheduled maintenance be performed in accordance with this service manual. Any owner maintenance or repair procedure not performed in accordance with this manual may void the warranty.

To get the longest life out of your vehicle:

- Follow the Periodic Maintenance Chart in the Service Manual.
- Be alert for problems and non-scheduled maintenance.
- Use proper tools and genuine Kawasaki Motorcycle parts. Special tools, gauges, and testers that are necessary when servicing Kawasaki motorcycles are introduced by the Special Tool Catalog or Manual. Genuine parts provided as spare parts are listed in the Parts Catalog.
- Follow the procedures in this manual carefully. Don't take shortcuts.
- Remember to keep complete records of maintenance and repair with dates and any new parts installed.

---

## How to Use This Manual

---

In this manual, the product is divided into its major systems and these systems make up the manual's chapters.

The Quick Reference Guide shows you all of the product's system and assists in locating their chapters. Each chapter in turn has its own comprehensive Table of Contents.

For example, if you want ignition coil information, use the Quick Reference Guide to locate the Electrical System chapter. Then, use the Table of Contents on the first page of the chapter to find the ignition coil section.

Whenever you see these WARNING and CAUTION symbols, heed their instructions! Always follow safe operating and maintenance practices.

### **▲ WARNING**

**This warning symbol identifies special instructions or procedures which, if not correctly followed, could result in personal injury, or loss of life.**

### **CAUTION**

**This caution symbol identifies special instructions or procedures which, if not strictly observed, could result in damage to or destruction of equipment.**

This manual contains four more symbols (in addition to WARNING and CAUTION) which will help you distinguish different types of information.

### **NOTE**

○ *This note symbol indicates points of particular interest for more efficient and convenient operation.*

- Indicates a procedural step or work to be done.
- Indicates a procedural sub-step or how to do the work of the procedural step it follows. It also precedes the text of a NOTE.
- ★ Indicates a conditional step or what action to take based on the results of the test or inspection in the procedural step or sub-step it follows.

In most chapters an exploded view illustration of the system components follows the Table of Contents. In these illustrations you will find the instructions indicating which parts require specified tightening torque, oil, grease or a locking agent during assembly.

# General Information



## Table of Contents

Before Servicing .....	1-2
Model Identification.....	1-5
General Specifications.....	1-6
Unit Conversion Table .....	1-9

## 1-2 GENERAL INFORMATION

### Before Servicing

---

Before starting to perform an inspection service or carry out a disassembly and reassembly operation on a motorcycle, read the precautions given below. To facilitate actual operations, notes, illustrations, photographs, cautions, and detailed descriptions have been included in each chapter wherever necessary. This section explains the items that require particular attention during the removal and reinstallation or disassembly and reassembly of general parts.

#### **Especially note the following:**

(1) Dirt

Before removal and disassembly, clean the motorcycle. Any dirt entering the engine will shorten the life of the motorcycle. For the same reason, before installing a new part, clean off any dust or metal filings.

(2) Battery Lead

Disconnect the negative (–) lead from the battery before performing any disassembly operations on the motorcycle. This prevents the engine from accidentally turning over while work is being carried out, sparks from being generated while disconnecting the leads from electrical parts, as well as damage to the electrical parts themselves. For reinstallation, first connect the positive lead to the positive (+) terminal of the battery

(3) Installation, Assembly

Generally, installation or assembly is the reverse of removal or disassembly. However, if installation or assembly sequence is given in this Service Manual, follow it. Note parts locations and cable, wire, and hose routing during removal or disassembly so they can be installed or assembled in the same way. It is preferable to mark and record the locations and routing whenever possible.

(4) Tightening Sequence

Generally, when installing a part with several bolts, nuts, or screws, start them all in their holes and tighten them to a snug fit. Then tighten them evenly in a cross pattern. This is to avoid distortion of the part and/or causing gas or oil leakage. Conversely when loosening the bolts, nuts, or screws, first loosen all of them by about a quarter turn and then remove them. Where there is a tightening sequence indication in this Service Manual, the bolts, nuts, or screws must be tightened in the order and method indicated.

(5) Torque

When torque values are given in this Service Manual, use them. Either too little or too much torque may lead to serious damage. Use a good quality, reliable torque wrench.

(6) Force

Common sense should dictate how much force is necessary in assembly and disassembly. If a part seems especially difficult to remove or install, stop and examine what may be causing the problem. Whenever tapping is necessary, tap lightly using a wooden or plastic-faced mallet. Use an impact driver for screws (particularly for the removing screws held by non-permanent locking agent) in order to avoid damaging the screw heads.

(7) Edges

Watch for sharp edges, especially during major engine disassembly and assembly. Protect your hands with gloves or a piece of thick cloth when lifting the engine or turning it over.

(8) High-Flash Point Solvent

A high-flash point solvent is recommended to reduce fire danger. A commercial solvent commonly available in North America is standard solvent (generic name). Always follow manufacturer and container directions regarding the use of any solvent.

(9) Gasket, O-Ring

Do not reuse a gasket or O-ring once it has been in service. The mating surfaces around the gasket should be free of foreign matter and perfectly smooth to avoid oil or compression leaks.

(10) Liquid Gasket, Non-Permanent Locking Agent

Follow manufacturer's directions for cleaning and preparing surfaces where these compounds will be used. Apply them sparingly. Excessive amounts may block engine oil passages and cause serious damage. An example of a non-permanent locking agent commonly available in North America is Loctite Lock'n Seal (Blue).

(11) Press

When using a press or driver to install a part such as a wheel bearing, apply a small amount of oil to the area where the two parts come in contact to ensure a smooth fit.

**Before Servicing**

(12) Ball Bearing and Needle Bearing

Do not remove a ball bearing or a needle bearing unless it is absolutely necessary. Replace any ball or needle bearings that were removed with new ones, as removal generally damages bearings. Install bearings with the marked side facing out applying pressure evenly with a suitable driver. Only press on the race that forms the press fit with the base component to avoid damaging the bearings. This prevents severe stress on the balls or needles and races, and prevent races and balls or needles from being dented. Press a ball bearing until it stops at the stopper in the hole or on the shaft.

(13) Oil Seal and Grease Seal

Replace any oil or grease seals that were removed with new ones, as removal generally damages seals. When pressing in a seal which has manufacturer's marks, press it in with the marks facing out. Seals should be pressed into place using a suitable driver, which contacts evenly with the side of seal, until the face of the seal is even with the end of the hole. Before a shaft passes through a seal, apply a little high temperature grease on the lips to reduce rubber to metal friction.

(14) Circlip, Retaining Ring, and Cotter Pin

Replace any circlips, retaining rings, and cotter pins that were removed with new ones, as removal weakens and deforms them. When installing circlips and retaining rings, take care to compress or expand them only enough to install them and no more.

(15) Lubrication

Engine wear is generally at its maximum while the engine is warming up and before all the sliding surfaces have an adequate lubricative film. During assembly, make sure to apply oil to any sliding surface or bearing that has been cleaned. Old grease or dirty oil could have lost its lubricative quality and may contain foreign particles that act as abrasives; therefore, make sure to wipe it off and apply fresh grease or oil. Some oils and greases in particular should be used only in certain applications and may be harmful if used in an application for which they are not intended.

(16) Direction of Engine Rotation

To rotate the crankshaft manually, make sure to do so in the direction of positive rotation. Positive rotation is counterclockwise as viewed from the left side of the engine. To carry out proper adjustment, it is furthermore necessary to rotate the engine in the direction of positive rotation as well.

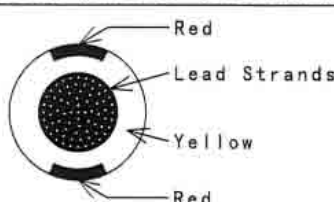

(17) Replacement Parts

When there is a replacement instruction, replace these parts with new ones every time they are removed.

Replacement parts will be damaged or lose their original function once they are removed. Therefore, always replace these parts with new ones every time they are removed. Although the previously mentioned gasket, O-ring, ball bearing, needle bearing, grease seal, oil seal, circlip, and cotter pin have not been so designated in their respective text, they are replacement parts.

(18) Electrical Wires

All the electrical wires are either single-color or two-color and, with only a few exceptions, must be connected to wires of the same color. On any of the two-color wires there is a greater amount of one color and a lesser amount of a second color, so a two-color wire is identified by first the primary color and then the secondary color. For example, a yellow wire with thin red stripes is referred to as a "yellow/red" wire; it would be a "red/yellow" wire if the colors were reversed to make red the main color.

Lead (cross-section)	Color Indicated on the Lead	Color Indicated on the Wiring Diagram
 <p>Red Lead Strands Yellow Red</p>	Yellow/Red	

BB02001BW1 C

(19) Inspection

When parts have been disassembled, visually inspect these parts for the following conditions or other damage. If there is any doubt as to the condition of them, replace them with new ones.



## 1-4 GENERAL INFORMATION

---

### Before Servicing

---

Abrasion  
Bent  
Color change

Crack  
Dent  
Deterioration

Hardening  
Scratch  
Seizure

Warp  
Wear

#### (20) Specifications

Specification terms are defined as follows:

“Standards” show dimensions or performances which brand-new parts or systems have.

“Service Limits” indicate the usable limits. If the measurement shows excessive wear or deteriorated performance, replace the damaged parts.

Model Identification

EX250-H15 Left Side View



EX250-H15 Right Side View



## 1-6 GENERAL INFORMATION

### General Specifications

Items	EX250-H15 ~
<b>Dimensions</b>	
Overall Length	2 050 mm (80.7 in.)
Overall Width	700 mm (27.6 in.)
Overall Height	1 125 mm (44.3 in.)
Wheelbase	1 405 mm (55.3 in.)
Road Clearance	135 mm (5.3 in.)
Seat Height	760 mm (29.9 in.)
Dry Mass	150 kg, (AU) 146 kg
Curb Mass:	
Front	81 kg (179 lb), (AU) 80 kg (176 lb)
Rear	91 kg (201 lb), (AU) 88 kg (194 lb)
Fuel Tank Capacity	18.0 L (4.8 US gal)
<b>Performance</b>	
Minimum Turning Radius	2.8 m (9.2 ft)
<b>Engine</b>	
Type	4-stroke, DOHC, 2-cylinder
Cooling System	Liquid-cooled
Bore And Stroke	62.0× 41.2 mm (2.5 × 1.6 in.)
Displacement	248 mL (15.1 cu in.)
Compression Ratio	12.4
Maximum Horsepower	24 kW (32.6 PS) @12 500 r/min (rpm), (AU) 26.5 kW (36 PS) @12 500 r/min (rpm)
Maximum Torque	21 N·m (2.14 kg·m, 15.5 ft·lb) @9 000 r/min (rpm), (AU) 21.6 N·m (2.2 kg·m, 15.5 ft·lb) @9 000 r/min (rpm)
Carburetion System	Carburetor, Keihin CVK 30× 2
Starting System	Electric starter
Ignition System	Battery and coil (transistorized)
Timing Advance	Electronically advanced
Ignition Timing	From 10° BTDC @1 200 r/min (rpm) 42.5° BTDC @4 500 r/min (rpm) (AU) From 10° BTDC @1 200 r/min (rpm) 42° BTDC @4 500 r/min (rpm)
Spark Plug	NGK CR8HSA or ND U24FSR-U
Cylinder Numbering Method	Left to Right, 1-2
Firing Order	1-2
Valve Timing:	
Inlet	
Open	26° BTDC
Close	66° ABDC
Duration	272°
Exhaust	
Open	66° BBDC
Close	26° ATDC
Duration	272°
Lubrication System	Forced ubrication (wet sump with cooler)

## General Specifications

Items	EX250-H15 ~
Engine Oil: Grade Viscosity Capacity	API SE, SF or SG API SH or SJ with JASO MA SAE10W-40 1.9 L (2.01 US qt)
<b>Drive Train</b> Primary Reduction System: Type Reduction Ratio Clutch Type Transmission: Type Gear Ratios: 1st 2nd 3rd 4th 5th 6th Final Drive System: Type Reduction Ratio Overall Drive Ratio	Gear 3.086 (71/23) Wet multi disc 6-speed, constant mesh, return shift 2.600 (39/15) 1.789 (34/19) 1.409 (31/22) 1.160 (29/25) 1.000 (27/27) 0.892 (25/28) Chain drive 3.357 (47/14) 9.252 @Top gear
<b>Frame</b> Type Caster (Rake Angle) Trail Front Tire: Type Size Rear Tire: Type Size Front suspension: Type Wheel Travel Rear Suspension: Type Wheel Travel Brake Type: Front Rear	Tubular, diamond 26.5° 88 mm (3.5 in.) Tubeless 100/80-17M/C 52S Tubeless 140/70-17M/C 66S Telescopic fork 125 mm (4.9 in.) Swingarm (uni-trak) 110 mm (4.3 in.) Single disc Single disc

## 1-8 GENERAL INFORMATION

### General Specifications

Items	EX250-H15 ~
<b>Electrical Equipment</b>	
Battery	12 V 6 Ah
Headlight:	
Type	Semi-sealed beam
Bulb	12 V 60/55 W (quartz-halogen)
Tail/brake Light	12 V 5/21 W AC
Alternator:	
Type	Three-phase AC
Rated Output	16 A @10 000 r/min (rpm), 14V, (AU) 17 A @10 000 r/min (rpm), 14V

Specifications are subject to change without notice, and may not apply to every country.

AU: Australia Model

US: United States

**Unit Conversion Table**

**Prefixes for Units:**

Prefix	Symbol	Power
mega	M	× 1 000 000
kilo	k	× 1 000
centi	c	× 0.01
milli	m	× 0.001
micro	μ	× 0.000001

**Units of Mass:**

kg	×	2.205	=	lb
g	×	0.03527	=	oz

**Units of Volume:**

L	×	0.2642	=	gal (US)
L	×	0.2200	=	gal (imp)
L	×	1.057	=	qt (US)
L	×	0.8799	=	qt (imp)
L	×	2.113	=	pint (US)
L	×	1.816	=	pint (imp)
mL	×	0.03381	=	oz (US)
mL	×	0.02816	=	oz (imp)
mL	×	0.06102	=	cu in

**Units of Force:**

N	×	0.1020	=	kg
N	×	0.2248	=	lb
kg	×	9.807	=	N
kg	×	2.205	=	lb

**Units of Length:**

km	×	0.6214	=	mile
m	×	3.281	=	ft
mm	×	0.03937	=	in

**Units of Torque:**

N·m	×	0.1020	=	kgf·m
N·m	×	0.7376	=	ft·lb
N·m	×	8.851	=	in·lb
kgf·m	×	9.807	=	N·m
kgf·m	×	7.233	=	ft·lb
kgf·m	×	86.80	=	in·lb

**Units of Pressure:**

kPa	×	0.01020	=	kgf/cm <sup>2</sup>
kPa	×	0.1450	=	psi
kPa	×	0.7501	=	cm Hg
kgf/cm <sup>2</sup>	×	98.07	=	kPa
kgf/cm <sup>2</sup>	×	14.22	=	psi
cm Hg	×	1.333	=	kPa

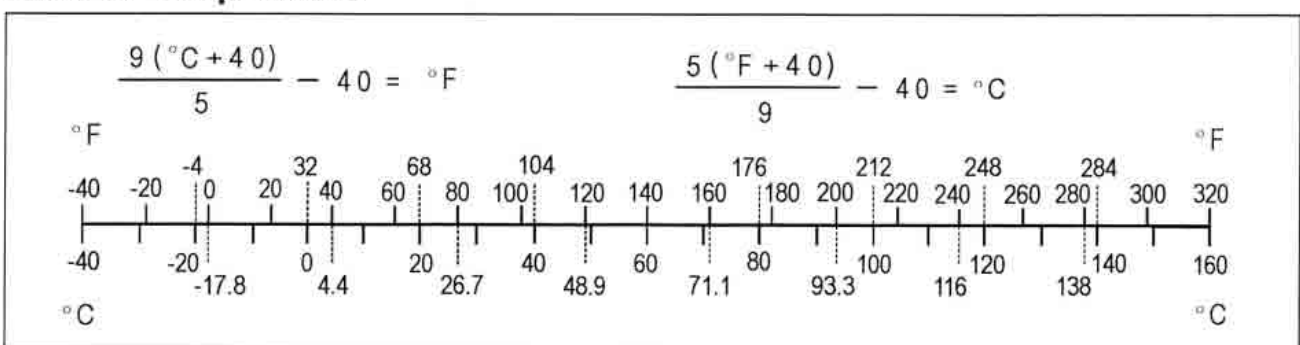
**Units of Speed:**

km/h	×	0.6214	=	mph
------	---	--------	---	-----

**Units of Power:**

kW	×	1.360	=	PS
kW	×	1.341	=	HP
PS	×	0.7355	=	kW
PS	×	0.9863	=	HP

**Units of Temperature:**



# Periodic Maintenance

## Table of Contents

Periodic Maintenance Chart .....	2-2	Drive Chain Lubrication.....	2-24
Torque and Locking Agent.....	2-4	Brakes.....	2-24
Specifications .....	2-7	Brake Pad Wear Inspection .....	2-24
Special Tools .....	2-9	Brake Light Switch Inspection.....	2-24
Maintenance Procedure .....	2-10	Caliper Piston Seal and Dust Seal	
Fuel System .....	2-10	Replacement.....	2-25
Fuel Hose and Connection		Brake Master Cylinder Cup and	
Inspection.....	2-10	Dust Seal Replacement .....	2-26
Throttle Cable Inspection.....	2-10	Brake Fluid Level Inspection.....	2-26
Idle Speed Inspection .....	2-11	Brake Fluid Change .....	2-27
Carburetor Synchronization		Brake Hoses and Connections	
Inspection.....	2-12	Inspection.....	2-30
Air Cleaner Element Cleaning.....	2-13	Suspension.....	2-31
Coolant Filter Cleaning .....	2-13	Front Fork Oil Leak Inspection.....	2-31
Cooling System.....	2-13	Rear Shock Absorber Oil Leak	
Radiator Hoses and Connections		Inspection.....	2-31
Inspection.....	2-13	Swingarm Pivot Lubrication .....	2-31
Coolant Change .....	2-14	Uni-trak Linkage Lubrication .....	2-31
Engine Top End .....	2-16	Steering .....	2-31
Valve Clearance Inspection .....	2-16	Steering Inspection .....	2-31
Clutch.....	2-18	Steering Stem Bearing	
Clutch Adjustment.....	2-18	Lubrication.....	2-32
Engine Lubrication System.....	2-19	Electrical System .....	2-32
Engine Oil Change.....	2-19	Spark Plug Inspection .....	2-32
Oil Filter Replacement .....	2-20	General Lubrication .....	2-33
Wheels/Tires.....	2-20	Lubrication .....	2-33
Tire Wear Inspection .....	2-20	Nut, Bolt, and Fastener Tightness	
Final Drive.....	2-21	Inspection.....	2-34
Drive Chain Slack Inspection.....	2-21	Tightness Inspection .....	2-34
Drive Chain Wear Inspection .....	2-23		

## 2-2 PERIODIC MAINTENANCE

### Periodic Maintenance Chart

The scheduled maintenance must be done in accordance with this chart to keep the motorcycle in good running condition. **The initial maintenance is vitally important and must not be neglected.**

OPERATION	FREQUENCY	* ODOMETER READING × 1 000 km (× 1 000 mile)							See Page
		Whichever comes first ↓ Every	1 (0.6)	6 (4)	12 (7.5)	18 (12)	24 (15)	30 (20)	
Fuel hoses, Connections - inspect †			●	●	●	●	●	●	2-10
Throttle cable - inspect †		●		●		●		●	2-10
Idle speed - inspect †		●		●		●		●	2-11
Carburetor synchronization - inspect †				●		●		●	2-12
Air cleaner element - clean †#				●		●		●	2-13
Radiator hoses, connections - inspect †		●							2-13
Coolant filter - clean	year								2-13
Coolant - change	2 years					●			2-14
Valve clearance - inspect †						●			2-16
Clutch - adjust		●	●	●	●	●	●	●	2-18
Engine oil - change #	year	●		●		●		●	2-19
Oil filter - replace	year	●		●		●		●	2-20
Tire wear - inspect †			●	●	●	●	●	●	2-21
Drive chain slack - inspect †#	1 000 km								2-22
Drive chain wear - inspect †#			●	●	●	●	●	●	2-23
Drive chain - lubricate #	600 km								2-24
Brake lining or pad wear - inspect †#			●	●	●	●	●	●	2-25
Brake light switch - inspect †		●	●	●	●	●	●	●	2-25
Brake master cylinder cup and dust seal - replace	4 years								2-26
Caliper piston seal and dust seal - replace	4 years								2-26
Brake fluid level - inspect †	month	●	●	●	●	●	●	●	2-27
Brake fluid - change	2 years					●			2-28
Brake hoses, connections - inspect †			●	●	●	●	●	●	2-31
Front fork oil leak - inspect †				●		●		●	2-31
Rear shock absorber oil leak - inspect †				●		●		●	2-31
Swingarm pivot, Uni-trak linkage - lubricate				●		●		●	2-31
Steering - inspect †		●	●	●	●	●	●	●	2-31
Steering stem bearing - lubricate	2 years					●			2-32
Spark plug - inspect †			●	●	●	●	●	●	2-32
General lubrication - perform				●		●		●	2-33
Nut, bolts, and fasteners tightness - inspect †		●		●		●		●	2-34



---

**Periodic Maintenance Chart**

---

- #: Service more frequently when operating in severe conditions; dusty, wet, muddy, high speed or frequent starting/stopping.
- \*: For higher odometer readings, repeat at the frequency interval established here.
- †: Replace, add, adjust, clean, or torque if necessary.

## 2-4 PERIODIC MAINTENANCE

### Torque and Locking Agent

Use a torque wrench to tighten bolts and nuts to their specified torque values. If too little torque is applied, the bolts and nuts could loosen and fall out. If too much torque is applied, the threads could be sheared off.

To tighten a bolt or a nut, or to check their torque, loosen the bolt or nut one-half turn before tightening it to the specified torque.

Letters used in the "Remarks" column mean:

L: Apply a non-permanent locking agent to the threads.

O: Apply oil to the threads and seating surface.

S: Tighten the fasteners following the specified sequence.

SS: Apply silicone sealant.

The table below, relating tightening torque to thread diameter, lists the basic torque for the bolts and nuts. Use this table for only the bolts and nuts which do not require a specific torque value. All of the values are for use with dry solvent-cleaned threads.

#### Basic Torque for General Fasteners

Threads dia. (mm)	Torque		
	N·m	kgf·m	ft·lb
5	3.4 ~ 4.9	0.35 ~ 0.50	30 ~ 43 in·lb
6	5.9 ~ 7.8	0.60 ~ 0.80	52 ~ 69 in·lb
8	14 ~ 19	1.4 ~ 1.9	10.0 ~ 13.5
10	25 ~ 34	2.6 ~ 3.5	19.0 ~ 25
12	44 ~ 61	4.5 ~ 6.2	33 ~ 45
14	73 ~ 98	7.4 ~ 10.0	54 ~ 72
16	115 ~ 155	11.5 ~ 16.0	83 ~ 115
18	165 ~ 225	17.0 ~ 23.0	125 ~ 165
20	225 ~ 325	23 ~ 33	165 ~ 240

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Cooling System</b>				
Drain Bolt	9.8	1.0	95 in·lb	
Fan Switch	18	1.8	13	
Water Temperature sensor	7.8	0.80	69 in·lb	SS
Radiator Hose Clamp Screw	2.0	0.20	17 in·lb	
<b>Engine Top End</b>				
Cylinder Head Cover Bolts	9.8	1.0	87 in·lb	
Camshaft Cap Bolts	12	1.2	104 in·lb	
Camshaft Sprocket Bolts	15	1.5	11	L
Rear Chain Guide Bolts:				
Upper	25	2.5	18	
Lower	27	2.8	20	L
Chain Tensioner Mounting Bolts	11	1.1	95 in·lb	L
Valve Adjusting Screw Locknuts	20	2.0	14.5	
Cylinder Head Bolts:				
8 mm dia.	25	2.5	18	S
6 mm dia.	12	1.2	104 in·lb	S
Cylinder Head Plugs	—	—	—	L

**Torque and Locking Agent**

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
<b>Clutch</b>				
Clutch Lever Holder Clamp Bolts	8.8	0.90	78 in·lb	
Clutch Spring Bolts	8.8	0.90	78 in·lb	
Clutch Hub Nut	132	13.5	98	
<b>Engine Lubrication System</b>				
Oil Pressure Switch	15	1.5	11	SS
Oil Hose Banjo Bolts (10 mm dia.)	20	2.0	14.5	
Oil Pipe Banjo Bolts (8 mm dia.)	12	1.2	104 in·lb	
Crankcase Oil Passage Plug	15	1.5	11	
Oil Pressure Relief Valve	15	1.5	11	L
Oil Pump Mounting Bolts	12	1.2	104 in·lb	L
Oil Drain Bolt	20	2.0	14.5	
Oil Filter Mounting Bolts	20	2.0	14.5	
<b>Engine Removal/Installation</b>				
Engine Mounting Bolt	44	4.5	33	
Engine Mounting Nuts	44	4.5	33	
Engine Mounting Bracket Bolts	25	2.5	18	
Engine Mounting Bracket Nuts	25	2.5	18	
<b>Crankshaft/Transmission</b>				
Connecting Rod Big End Cap Nuts	27	2.8	20	O
Starter Clutch Bolts	34	3.5	26	L
Shift Drum Bearing Holder Bolts	12	1.2	104 in·lb	L
Oil Breather Mounting Bolts	9.8	1.0	87 in·lb	L
Crankcase Bolts:				
8 mm dia.	27	2.8	20	S
6 mm dia.	12	1.2	104 in·lb	
Shift Drum Position Bolt	25	2.5	18	
Neutral Switch	15	1.5	11	
Shift Drum Pin Plate Bolt	8.8	0.90	78 in·lb	L
External Shift Mechanism Return Spring Pin	20	2.0	14.5	L
<b>Wheels/Tires</b>				
Front Axle Nut	88	9.0	65	
Rear Axle Nut	110	11.0	80	
Front Axle Clamp Bolts	20	2.0	14.5	
<b>Final Drive</b>				
Engine Sprocket Bolts	9.8	1.0	87 in·lb	
Rear Sprocket Nuts	74	7.5	54	
Rear Sprocket Studs	–	–	–	L
<b>Brakes</b>				
Front Brake Light Switch Screw	1.0	0.10	9 in·lb	
Brake Lever Pivot Nut	5.9	0.60	52 in·lb	
Brake Lever Pivot Bolt	1.0	0.10	9 in·lb	
Front Master Cylinder Clamp Bolts	11	1.1	95 in·lb	S

**2-6 PERIODIC MAINTENANCE****Torque and Locking Agent**

Fastener	Torque			Remarks
	N·m	kgf·m	ft·lb	
Brake Hose Banjo Bolts	25	2.5	18	L
Brake Pedal Pivot Bolt	7.8	0.80	69 in·lb	
Front Caliper Mounting Bolts	32	3.3	24	
Brake Disc Mounting Bolts	23	2.3	16.5	
Brake Pedal Pivot Bolts	8.8	0.90	78 in·lb	
Rear Master Cylinder Mounting Bolts	23	2.3	16.5	
Reservoir Mounting Bolt	6.9	0.70	61 in·lb	
Push Rod Nut	18	1.8	13	
Rear Caliper Mounting Bolts	23	2.3	16.5	
<b>Suspension</b>				L
Front Fork Top Plugs	23	2.3	16.5	
Front Fork Clamp Bolts				
Upper	20	2.0	14.5	
Lower	30	3.1	22	
Front Fork Bottom Allen Bolts	30	3.1	22	
Front Axle Clamp Bolts	20	2.0	14.5	
Rear Shock Absorber Mounting Nuts	59	6.0	43	
Swingarm Pivot Nut	98	10	72	
Rocker Arm Pivot Nut	44	4.5	33	
Tie-rod Nuts	44	4.5	33	
<b>Steering</b>				L
Handlebar Holder Mounting Bolts	25	2.5	18	
Steering Stem Head Bolt	47	4.8	35	
Steering Stem Nut	4.9	0.5	43 in·lb	
Front Fork Clamp Bolts:				
Upper	20	2.0	14.5	
Lower	30	3.1	22	
<b>Frame</b>				L
Rear Frame Mounting Bolts	44	4.5	33	
Rear Frame Mounting Nuts	44	4.5	33	
Side Stand Bracket Mounting Bolts	49	5.0	36	
Side Stand Switch Screws	–	–	–	
Center Stand Spring Hook Bolts	–	–	–	
Front Footpeg End Bolts	–	–	–	
<b>Electrical System</b>				SS
Spark Plugs	14	1.4	10	
Alternator Stator Bolts	12	1.2	104 in·lb	
Alternator Rotor Bolt	69	7.0	51	
Oil Pressure Switch	15	1.5	11	
Neutral Switch	15	1.5	11	
Starter Motor Assembly Bolts	3.5	0.36	31 in·lb	
Starter Motor Terminal Locknut	6.9	0.70	61 in·lb	